Master Thesis

Exploring Human-Animal Relationships in Welfare-Promoting Pig Housing Systems: A Perspective of Austrian Farmers

submitted by

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Affidavit

I hereby declare that I have authored this master thesis independently, and that I have not used any assistance other than that which is permitted. The work contained herein is my own except where explicitly stated otherwise. All ideas taken in wording or in basic content from unpublished sources or from published literature, as well as those which were generated using artificial intelligence tools, are duly identified and cited, and the precise references included.

I further declare that this master thesis has not been submitted, in whole or in part, in the same or a similar form, to any other educational institution as part of the requirements for an academic degree.

I hereby confirm that I am familiar with the standards of Scientific Integrity and with the guidelines of Good Scientific Practice, and that this work fully complies with these standards and guidelines.

Vienna, 29.08.2025 Zoë Josefina KÖHLER *(manu propria)*

This thesis is dedicated to the participating farmers.

Thank you for your stories, your insights and your trust.

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Abstract

Public perception of pig farming has shifted in recent years, with an increasing emphasis on both the importance of animal welfare and human-animal relationships in livestock production. Despite this growing concern, little is known about how pig farmers perceive and engage in relationships with their animals, particularly fattening pigs, whose short lifespan and economic utility are assumed to limit emotional attachment. The thesis addresses this research gap by exploring how Austrian pig farmers operating in animal welfare-promoting husbandry systems (TW60/TW100) perceive and engage in relationships with their fattening pigs. Based on a semi-qualitative element and semi-structured interviews with 28 participants of the IBeSt+ project, the thesis examines how human-animal relationships are formed, maintained, and influenced by both personal attitudes and the husbandry system. Farmers described what they consider a "good life" for pigs, how their housing systems shape daily interactions, and the extent of their emotional attachment to their pigs. Findings show that farmers see themselves as responsible for providing a "good life", often defined by both the physical and psychological well-being of their animals. Differences between the two husbandry systems were observed in interaction levels, attachment, and the importance placed on the human-animal relationship. Farmers in the higher welfare category (TW100) tended to engage in more enriched interactions, showed stronger attachment, and placed greater value on these relationships than farmers in the TW60 category. Therefore, this thesis illustrates that farmers with animal welfare-promoting systems exhibit strong empathy and commitment towards their fattening pigs. However, the ability to act on these values is shaped by both farmers' attitudes and their housing systems. Therefore, where systems support closer human-animal interactions, stronger and mutually beneficial relationships can develop.

Kurzfassung

Die öffentliche Aufmerksamkeit für die Schweinehaltung hat in den letzten Jahren zugenommen und lenkt den Fokus sowohl auf das Tierwohl als auch auf die Mensch-Tier-Beziehung in der Nutztierhaltung. Trotz dieses wachsenden Interesses ist wenig darüber bekannt, wie Schweinehalter:innen ihre Mensch-Tier-Beziehung wahrnehmen und gestalten, insbesondere bei Mastschweinen, deren kurze Lebensdauer und ökonomischer Nutzen allgemein als hinderlich für emotionale Bindungen gelten. Diese Masterarbeit schließt diese Forschungslücke, indem sie untersucht, wie österreichische Schweinehalter:innen mit tierwohlfördernden Haltungssystemen (TW60/TW100) ihre Beziehung zu Mastschweinen wahrnehmen und gestalten. Basierend auf einem semiqualitativen Element und leitfadengestützten Interviews mit 28 Teilnehmer:innen des IBeSt+ Projekts analysiert die Arbeit, wie Mensch-Tier-Beziehungen entstehen, aufrechterhalten und durch individuelle Einstellungen sowie systemische Rahmenbedingungen beeinflusst werden. Die Landwirt:innen beschrieben, was sie unter einem „guten Leben“ für Schweine verstehen, wie ihre Haltungssysteme Interaktionen prägen und in welchem Ausmaß sie emotionale Bindungen aufbauen. Die Ergebnisse zeigen, dass sich Landwirt:innen als verantwortlich für das Wohlbefinden ihrer Tiere sehen, das häufig physische und psychische Aspekte umfasst. Zwischen den Tierwohlkategorien wurden Unterschiede in den Interaktionen, der Bindungsintensität und der Bedeutung der Mensch-Tier-Beziehung festgestellt. Dabei berichten Landwirt:innen der Kategorie TW100 häufiger von intensiveren Interaktionen, stärkerer emotionaler Bindung und höherer Wertschätzung der Beziehung. Daher wird verdeutlicht, dass Landwirt*innen mit tierwohlfördernden Haltungssystemen eine ausgeprägte Empathie und großes Engagement gegenüber ihren Mastschweinen zeigen. Gleichzeitig werden ihre Handlungsmöglichkeiten, diese Werte umzusetzen, durch ihre persönliche Einstellung und die jeweiligen Haltungssysteme geprägt.

1. Introduction

1.1 Pig Farming in Austria

Pig farming is usually divided into piglet production, fattening, and specialised breeders. These phases are typically done on specialised farms, although some farms produce piglets and fatten them (Augère-Granier 2020, p. 4; Hoy et al. 2016). According to Hoy et al. (2016), the piglet production process includes insemination, gestation, farrowing, and nursery stages. Once piglets reach a live weight of about 25 to 30 kg, they are sold to fattening or breeding farms. The fattening stage accounts for around 70 % of the pigs' life cycle and lasts until the pigs are between 190 and 200 days old and have reached a live weight of about 120 kg. This specialisation allows producers to focus on specific production stages and therefore increases productivity and efficiency within the sector (Hoy et al. 2016). This thesis focuses on the fattening farms in the supply chain of pork production.

In 2023, Austria's pork industry maintained a self-sufficiency rate of 104 %, i.e. domestic production surpassed consumption of pork, which amounted to a per capita annual consumption of 47.5 kg (Statistik Austria 2023b). In Austria, the number of pig farms decreased from 26.700 farms in 2013 to around 17.760 farms in 2023, i.e. a decrease of approximately 33.5 % (Ahrens 2024). Additionally, there has been a noticeable increase in the average number of pigs per farm in Austria. Specifically, the average number of pigs per farm increased from 85 pigs in 2010 to 112 in 2020, representing an increase of approximately 32% over the decade (Statistik Austria 2022). All stages of pig production in Austria are predominantly concentrated in Styria, Upper Austria, and Lower Austria (see Figure 1), contributing to approximately 94% of the total pig production in 2023 (Statistik Austria 2023a).

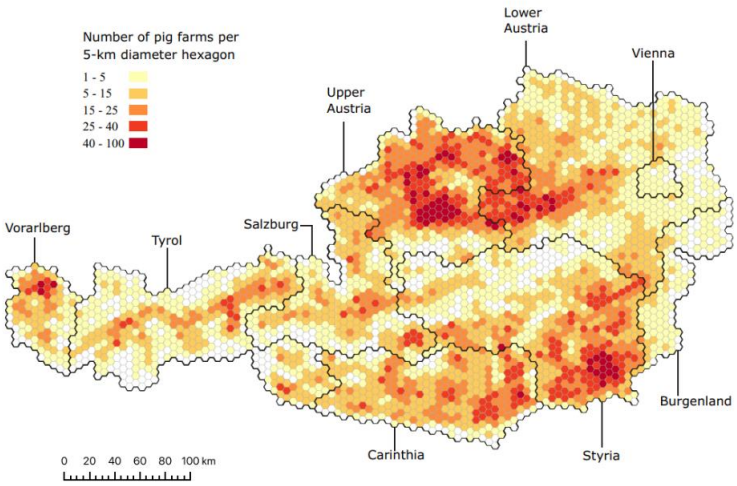

Figure 1: Regional distribution of all pig farms in Austria (Puspitarani et

Regardless of the production stage, systems with either fully (71.6 %) or partially slatted floors (16.4 %) are the prevalent pig housing systems in Austria (Statistik Austria 2020). Hoy et al. (2016) describe that in a fully slatted system, the entire floor of the pig housing is made up of slats, which allow manure to fall through into a collection pit below. Partially slatted housing systems combine solid and slatted flooring. Usually, 40 – 60 % of the pen consists of a solid floor lying area, while the rest is slatted (Hoy et al. 2016, p. 136). This design separates functional zones, allowing pigs to have a designated resting area while maintaining efficient manure management through the slatted area. Especially, the slatted housing systems are prevalent due to their efficient management and reduced labour requirements compared to bedded systems, without slats (Hoy et al. 2016).

1.2 Animal Welfare in Pig Farming

1.2.1 Defining Animal Welfare

The definition of animal welfare is complex and widely discussed in animal welfare science (Stamp Dawkins 2021). Through her book “Animal Machines”, the animal rights advocate Ruth Harrison encouraged the British government to investigate and address the welfare of intensively farmed animals for the first time in 1964. Harrison's book was the first major criticism of intensive production systems and critically reflects on the ethical dilemma surrounding animal welfare (Fraser 2008a) by posing questions such as: “Have we the right to rob [animals] of all pleasure in life simply to make more money more quickly out of their carcasses?" (Harrison et al. 2013, p. 37) .

In 1965, the Brambell Committee published the "Report of the Technical Committee to enquire into the welfare of animals kept under intensive livestock husbandry systems", defining animal welfare. The report highlighted the necessity for farm animals to have adequate space to exhibit five fundamental behaviours: standing, lying, turning, limb stretching, and self-grooming. The report had already addressed the use of fully slatted floors in housing systems, which, while not widespread, were predicted to gain popularity. Therefore, due to the lack of data on its impact on animal welfare, they called for further research into the comfort, mobility, and health effects associated with slatted flooring, advocating for its prohibition should it compromise animal well-being, regardless of labour savings (Brambell 1965). Harrison's advocacy not only influenced British policy but also encouraged public debate and inspired international efforts, including the European Convention for the Protection of Animals Kept for Farming Purposes, to focus on animal welfare (Fraser and Weary 2004; Fraser 2008b).

Through the debate on animal welfare in contemporary Western culture, animal welfare has become a focal point of ethical concern (Fraser 2008a). Therefore, the field of animal welfare science developed three primary definitions of animal welfare (Fraser and Weary 2004; Fraser et al. 1997), which were influenced by different worldviews (Fraser 2008a). Fraser (2008a) classifies these worldviews into the “anti-industrialists” and “pro-industrialists”. The “anti-industrialist” worldview can be described as romantic or agrarian, since this viewpoint values a simple life and sees nature as an ideal state (Fraser 2008a). The “pro-industrial” worldview, on the other hand, values progress, productivity and scientific improvement (Fraser 2008b, 2008a). Through these worldviews, three perspectives on animal welfare arose that primarily consider either the biological functions, natural behaviours, or affective state of animals (Fraser et al. 1997).

Firstly, the definition focusing on the basic health and biological function of animals was influenced by the “pro-industrial” worldview (Fraser 2008a; Fraser et al. 1997). This definition takes the effect of stress on the animal’s physical well-being into consideration, which includes the animal’s health, growth rates, behaviour, and reproduction (Broom 1986). As animal welfare is seen as important to achieve high levels of production and economic success, this definition is usually associated with human-centred ethics (Veit and Browning 2021).

Secondly, both the affective state and natural living definitions are influenced by the “anti-industrial” worldview. The affective state definition is also known as the ‘feelings-based’ approach (Fraser et al. 1997), as this definition delves into the animals’ mental states (Green and Mellor 2011). Veit and Browning (2021) highlight that affective states include positive feelings, such as comfort or curiosity and negative feelings, such as hunger or distress. This definition is guided by utilitarian ethics, which emphasise the importance of pleasure and suffering. According to this perspective, pleasurable experiences influence animal welfare positively and suffering influences it negatively. The number of positive and negative experiences,

therefore, indicates the welfare of an animal. Consequently, according to this definition, when an animal experiences more positive than negative states, a system is categorised as "good animal welfare". However, Veit and Browning (2021) also highlight that this perspective is often inadequate, as it overlooks the fact that an animal can be happy while simultaneously suffering from health issues, which indicate a compromised animal welfare (Veit and Browning 2021).

Brambell (1965) and the philosopher Rollin defined the natural living perspective, which focuses on an animal's ability to live in accordance with their natural behaviour (Fraser and Weary 2004; Fraser et al. 1997). In 1994 Rollin suggests that respecting these natures, such as the "pigness" of pigs or the "cowness" of cows, is essential for their well-being (Rollin 1994). Also Fraser (1999) highlights that an animal's natural and innate needs and behaviours are a vital aspect of animal welfare and that the animal's ability to express their natural behaviour is a fundamental aspect of their life that should be protected (Fraser 1999). Furthermore, this definition includes that animals should be allowed to live and develop in ways that align with their species-specific adaptations, which is not just seen as a matter of comfort but as a moral imperative (Fraser and Weary 2004; Haynes 2010).

Fraser et al. (1997) highlight that while each definition contributes valuable insights into animal welfare, they also have limitations and do not provide a satisfactory definition of animal welfare. They highlight that the definition focusing on biological function emphasises the physical well-being of animals but neglects animals' feelings. An animal can, therefore, be healthy yet still experience boredom, loneliness, and frustration, impacting its overall welfare. The definition highlights the importance of affective states and focuses on mental states (positive and negative feelings), but an animal may feel happiness while their health is compromised, leading to poor overall welfare. Lastly, natural aspects, such as predation or disease, can harm animals' welfare (Fraser et al. 1997). Therefore, the definition of what animal welfare entails is highly controversial and is determined by perspective, worldview and ethics (Blokhuis et al. 2013, p. 24-26).

Fraser et al. (1997) propose an integrative definition of animal welfare (see Figure 2), which suggests that the three definitions of animal welfare are not mutually exclusive but intertwined (Fraser et al. 1997). Fraser (2008a) further elaborates on this definition by emphasising that animal welfare is inherently multidimensional and requires the consideration of different worldviews and perspectives to ensure its comprehensive assessment. Consequently, for a holistic definition of animal welfare, examining each definition separately is insufficient (Fraser 2008a).

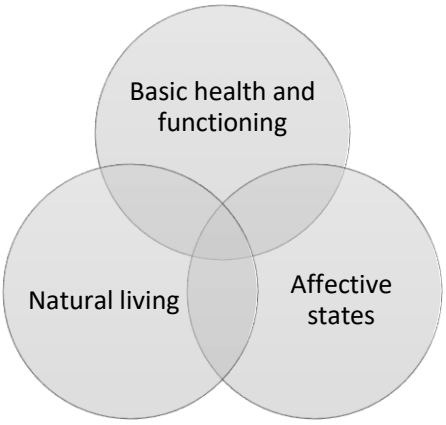

Figure 2: Integrative approach (Fraser 2008a)Figure 2: Integrative approach (Fraser 2008a)

The Farm Animal Welfare Council (FAWC) had already taken a multidimensional approach when they replaced the Five Behaviours with the Five Freedoms in 1979, which has been and still is influencing animal welfare policies. The core principles of the Five Freedoms paradigm were expanded in 1993/1994 when John Webster proposed to include the importance of minimising negative experiences (see Table 1) and have been largely unchanged since (Mellor 2016; FAWC 2009). The Freedoms highlight the importance of both physical and mental health, advocating for environments and care that fulfil an animal's innate needs and behaviours (Mellor 2016; FAWC 2009). The Farm Animal Welfare Council (FAWC) highlights that the Five Freedoms were not designed to represent perfect or unreachable conditions. Instead, it was intended

as a tool for evaluating the positive and negative aspects of animal care practices and therefore what care animals should receive (FAWC 2009).

Table 1: The Five Freedoms and Provisions (Mellor 2016)

Freedoms	Provisions
Freedom from thirst, hunger and malnutrition	By providing ready access to fresh water and a diet to maintain full health and vigour
Freedom from discomfort and exposure	Providing an appropriate environment, including shelter and a comfortable resting area
Freedom from pain, injury and disease	By prevention or rapid diagnosis and treatment
Freedom from fear and distress	Ensuring conditions and treatment which avoid mental suffering
Freedom to express normal behaviour	By providing sufficient space, proper facilities and company of animals' own kind

While the Five Freedoms primarily address avoiding harm, the Five Domains Model emphasises both reducing negative and promoting positive experiences as well as enhancing the overall quality of life for animals (Fraser 2008b; Mellor 2016). According to Webster (2016) this approach considers the complexity of the animals' needs beyond their basic freedoms and therefore sees the model as highly beneficial for animal behaviour and welfare science (Webster 2016).

Mellor et al. (2020) emphasise that the Five Domains model does not intend to define animal welfare but serves as a tool to assess animal welfare. The Five Domain Model was last updated in 2020 and entails the following domains: Nutrition, Physical Environment, Health, Behavioural Interactions and Mental State (see Figure 3)Figure 3: Five Domains (Adapted from Mellor et al. 2020). The first four domains (Nutrition, Physical Environment, Health, and Behavioural Interactions) focus on aspects that generate specific negative or positive subjective experiences (affects). Each domain plays a role in shaping these affects, thereby influencing the animals' overall mental state. These affects, therefore, significantly contribute to and are assessed by the fifth domain, the Mental State. Specifically, the domains of Nutrition, Physical Environment, and Health target inputs associated with animal care and welfare. The Behavioural Interactions domain intends to capture behavioural responses. By serving as indicators of animals' perceptions during interactions with the environment, other non-human animals, and humans, their responses highlight the connection between animal welfare and human-animal relationships. Human actions, therefore, significantly impact animal nutrition, environment, health, behaviour, and mental state.

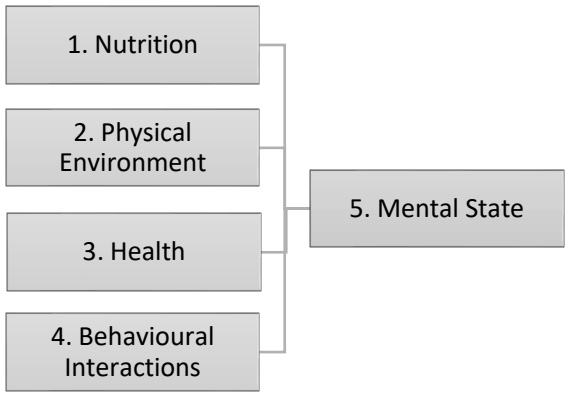

Figure 3: Five Domains (Adapted from Mellor et al. 2020)

Hence, it becomes crucial to consider human-animal relationships in welfare assessments (Mellor et al. 2020).

As depicted in the animal welfare concepts above, physiological and psychological health are essential to ensure animal welfare, but they cannot entirely define what “good animal welfare” entails. Stamp Dawkins (2021) defines "good pig welfare" as “health and what it wants”. This definition incorporates several of the presented concepts, while being universal and understandable, and adds complexity to the definition by incorporating the animal's positive affective states. Therefore, this definition moves towards a more positive understanding of animal welfare, aiming to provide animals with a “good life” (Stamp Dawkins 2021).

1.2.2 Public Perception of Animal Welfare

Both society and farmers consider proper animal care essential to being a “good farmer”. However, discrepancies between societal expectations and the reality of livestock farming (Spiller et al. 2015) lead to differences in defining animal welfare (Vanhonacker et al. 2008). Approximately two-thirds of European consumers consider animal welfare important (Zühlsdorf et al. 2016). However, the growing public awareness of animal husbandry issues is linked to societal scrutiny of current farming practices (Wildraut and Mergenthaler 2020). This increasing awareness, as well as changing values, led to increased pressure on farmers to adopt more animal-friendly practices and treat their animals with empathy and respect (Wildraut and Mergenthaler 2020) instead of merely as production units (Bock et al. 2007). This also includes doubt about farmers' lack of empathy towards their animals, driven by the intensification and mechanisation of animal husbandry systems (Bock et al. 2007).

A report by the European Commission (2023) shows that public acceptance of intensive production systems is decreasing, with 84 % of the EU population, including 76 % of Austrians, believing improvements in animal welfare are necessary (European Commission 2023). However, the general public has little direct contact with farming practices (Zander et al. 2013). This is underlined by the report of the European Commission, which shows that only 6 % of Europeans are in regular contact with farm animals (European Commission 2023). Therefore, public perceptions are dominated by images in advertisements and the media (Zander et al. 2013). While the advertisements paint an idealistic image, images spread by animal protection organisations and activists in the media contribute to the increasing criticism of the intensification of farming systems (Zander et al. 2013).

Farmers are greatly influenced by the level of societal concern (Vogeler 2019). The influence of society can be shown by successful Citizens' Initiatives calling for increasing animal welfare (European Commission 6/30/2021; Austrian Parliament 2021). Firstly, the "End the Cage Age" initiative gathered nearly 1,4 million signatures of support across Europe (European Citizens' Initiative n.d.) and called for the prohibition of cages for various farm animals, requesting the European Commission to change legislation (European Commission 6/30/2021). A second prominent example reflecting public concern for animal welfare is the "Tierschutzvolksbegehren" (Animal Welfare Initiative) in Austria, which was a starting point for changes in Austrian pig farming regulations (see section 1.2.5) (Austrian Parliament 2021). This Citizens' Initiative gathered 416229 signatures of support and aimed to improve animal welfare standards through various legislative changes, including the ban on fully slatted floors in pig farming systems (Austrian Parliament 2021).

In addition to assigning responsibility for animal welfare to the state and farmers, a German survey indicates that consumers consider themselves responsible for ensuring better farming practices (Zühlsdorf et al. 2016; Zander et al. 2013). However, these sentiments do not always translate into purchasing behaviour, creating a 'citizen-consumer gap' (Karpenstein et al. 2021), as despite this recognised

responsibility, the European Commission (2023) found that only 60 % of Europeans, including 58% of Austrians, are willing to pay more for animal welfare products (European Commission 2023). This gap arises from a conflict between citizens' value-based expectations and consumers' practical restrictions, such as time pressure and lack of money (Zander et al. 2013). Consumers demand products from small traditional farms at low prices (Zander et al. 2013), but animal welfare systems lead to higher costs for producers (Karpenstein et al. 2021). This discrepancy is evident as animal welfare-certified pigs slaughtered in 2023 accounted for only 3.3 % (Hagler et al. 2024). The "Österreichische Schweine Börse" (Austrian Pig Exchange) emphasises the need for increased demand to maintain the upward trend in the number of welfare-certified farms (Hagler et al. 2024). Therefore, the success of animal welfare strategies depends on consumers' willingness to pay for welfare-certified products (Karpenstein et al. 2021).

1.2.3 Farmers' Perception of Pig Welfare

Among farmers, the importance of animal welfare is highly recognised, with 90 % of pig farmers finding it important (Heise et al. 2017). German farmers consider animal health to be the most important animal welfare indicator (91%), followed by the handling of animals (80 %), structural factors, such as space requirements and pen structure (50 % - 70 %), as well as the animal's ability to express their natural behaviour (68 %) (Heise et al. 2017). This is underlined by Balzani and Hanlon (2020), who did a comprehensive review of international peer-reviewed studies on farmers' perspectives on animal welfare, revealing key insights into their priorities. Most farmers consider the biological functioning of animals to be the most crucial aspect of "good animal welfare". This is followed by the affective state of the animals, which is regarded as the second most important factor. Lastly, the ability for animals to engage in natural behaviours is also seen as significant, even though it ranks third (Balzani and Hanlon 2020).

Bock and van Huik (2007) highlight differences between farmers in the conception of animal welfare. While farmers who follow basic regulations define animal welfare by health and production outcomes, farmers in animal welfare programs highlight the significance of animals being able to display natural behaviours (Bock and van Huik 2007). According to Hötzel et al. (2024) these differences in farmers' views and attitudes towards animal welfare relate to their personalities, perceived realities and experiences with their husbandry systems (Hötzel et al. 2024).

Farmers define animal welfare based on their perceptions of "good" farming practices, which influences their participation in welfare and organic schemes, as well as the adoption of welfare measures like tail docking and group housing (van Huik and Bock 2007). Therefore, studies have aimed to assess what farmers believe is a "good farmer" to understand the reasoning behind farmers' prioritisation of animal welfare practices (Vigors et al. 2023; Bock et al. 2007; Bock and van Huik 2007; Kirchner et al. 2014). Vigors et al. (2023) highlight that this approach moves beyond just studying attitudes to also examining the practices and ideals that guide farmers' actions, leading to a more comprehensive understanding of what drives farmers' decisions and practices related to animal welfare (Vigors et al. 2023).

Social desirability, bias and norms significantly influence farmers' decision-making process (Vigors et al. 2023; Balzani and Hanlon 2020). Generally, farmers often feel misjudged and believe they are seen as neglectful and uncaring, despite considering themselves to be close and attentive to their animals and their animals' needs (Bock and van Huik 2007). Vigors et al. (2023) highlight that farmers integrate animal welfare aspects into their "good farmer" identity, aiming to meet public and consumer expectations, while enhancing profitability. As a result, consumer demand often outweighs farmers' principles, forcing them to adopt systems that don't align with the farmers' ideas of animal welfare (Vigors et al. 2023). On the other hand, many farmers question consumers' willingness to pay the price for animal welfare products and therefore distrust the economic benefits of animal welfare schemes (Heise 2017).

Even though farmers are driven by economic motives, they view ensuring animal welfare as a fundamental for ”good” farming practices (Bock et al. 2007). According to van Huik and Bock (2007), the primary motivation for farmers in animal welfare programs is ideological, as they believe these production methods offer pigs a better life (van Huik and Bock 2007). Vigors et al. (2023) show that farmers defined “good animal welfare” as the fact that the animal's needs had been met (Vigors et al. 2023). Therefore, farmers try to reduce stress (Borges et al. 2019) and prioritise the physical well-being of the animals, which entails animal health, nutrition, and comfort (Vigors et al. 2023). Hence, even though farmers believe in providing a “good life” for their animals, productivity is considered the primary indicator of good animal welfare, as farmers believe that only healthy and well-cared-for animals can be productive (Vigors et al. 2023).

Vigors et al. (2023) highlight that a “good farmer” does not only focus on the physical appearance of their animals, but also the environment in which they are kept. The ideals of providing a “good” physical environment and caring for an animal's physical body are highly interrelated. Therefore, hygiene, ventilation, space, and comfort are critical aspects of the “good farmer” identity concerning animal welfare (Vigors et al. 2023). However, farmers also prioritise environments that allow natural behaviours to minimise aggression and stereotypes in pigs. Ensuring a “good” environment for their animals is, however, not only seen as beneficial for the animals’ welfare but also as a way to display “good farming practices” to others (Ludwiczak et al. 2021).

Farmers' perception of “good animal welfare” also includes their own well-being and expertise (Hansson and Lagerkvist 2014). This is underlined by studies highlighting that farmers' job satisfaction is heavily influenced by their perception of being a “good farmer” and ensuring “good animal welfare” (Bock et al. 2007; Kirchner et al. 2014). According to the study by Vigors et al. (2023), most farmers rely on animal-based data to assess welfare and management efficacy. While farmers' ability to assess health 'by eye' and understand animal needs and behaviours is crucial, changes in farming systems have altered the role of stockpersons. Technology is now seen as a substitute for traditional skills, redefining what it means to be a “good farmer”. Consequently, decisions based on objective data are considered better practice, highlighting the professionalisation of the farmer (Vigors et al. 2023). However, systems that promote direct contact between farmers and animals foster empathy and improve welfare management (van Huik and Bock 2007). Therefore, modernisation can limit farmers' ability to relate to their animals to the extent that they would like (Porcher 2006).

1.2.4 Husbandry Systems and Pig Welfare

Despite domestication occurring around 6500 B.C. (Bökönyi 1974), pigs still exhibit many of the same innate behaviours as wild boars (Jensen 1986). Therefore, understanding these behaviours can help inform appropriate pig husbandry systems (Jenni et al. 2019). In turn, husbandry systems are crucial for allowing animals to engage in their natural behaviours (Bock et al. 2007).

Pigs are naturally omnivorous animals and spend a significant portion of their active time exploring their surroundings in search of food (Studnitz et al. 2007). Specifically, Stolba and Wood-Gush (1989) observed that domestic pigs in a semi-natural environment spent over half (52 %) of the daylight period foraging and another quarter (23%) in locomotion and investigation of their environment (Stolba and Wood-Gush 1989).

Camerlink and Baxter (2023) note that due to the domestication of farm animals, what they want may differ from what they need to achieve physiological and psychological welfare, due to factors such as selective breeding. An example is the genetic predisposition for fast growth and the corresponding need for food: while the physiological need might be met, the highly concentrated feed provided does not satisfy

the innate need for rooting and foraging (Camerlink and Baxter 2023). Providing environmental enrichment, such as toys, straw, and other manipulable materials, encourages natural behaviours and reduces aggression among pen mates (Bolhuis et al. 2006). Therefore, domesticated pigs require sufficient rooting opportunities, roughage, and enrichment materials, in addition to their feed (Jenni et al. 2019).

Wild boars display complex social behaviours with a clear hierarchy, highlighting the need for housing systems that provide sufficient space and structures for subordinate animals to retreat and establish their place in the group (Jenni et al. 2019). Additionally, pigs enjoy engaging in activities with others, so pen designs should allow them to lie down together, eat simultaneously, and participate in group activities (Becker et al. 2020). To support these natural behaviours and meet the pigs' needs, it is crucial to establish separate functional zones within pig pens to enhance the animals' well-being (Becker et al. 2020; Jenni et al. 2019). Becker et al. (2020) highlight that the pens should be organised to include designated areas for resting, feeding, activity, and defecation. Each zone must cater to specific requirements, such as quiet, dark corners for resting, sufficient feeding places to reduce competition, materials for exploration, and non-slip surfaces to ensure safe movement between the different zones (Becker et al. 2020).

However, in the prevalent husbandry systems (partially and fully slatted systems), pigs' ability to express natural behaviours such as socialisation, exploration, and rooting is inhibited, imposing stress (Delsart et al. 2020; Ludwiczak et al. 2021; Giuliotti et al. 2019). As a result, these systems can compromise animal welfare, leading to physical discomfort and health issues (Ludwiczak et al. 2021; Delsart et al. 2020). Studnitz et al. (2007) highlight that when pigs are unable to express their natural behaviours, abnormal behaviours may develop (Studnitz et al. 2007). Especially barren environments are frequently associated with the development of abnormal behaviours (Day et al. 2002), such as sham chewing, bar biting and tail biting, all of which are indicators of poor welfare (Ludwiczak et al. 2021). To mitigate these welfare issues, providing enrichment materials can help meet pigs' needs for exploration and reduce the probability of harmful, abnormal behaviours that could affect their pen mates (Studnitz et al. 2007). This also lowers stress levels and helps pigs become more approachable and relaxed around humans (Pearce et al. 1989).

Additionally, slatted floors were found to cause health issues for pigs (Scott et al. 2006; Temple et al. 2012; Borell et al. 2007; Delsart et al. 2020). For example, Scott et al. (2006) compared systems with fully slatted floors to straw-bedded systems and found that fully slatted systems are associated with a higher occurrence of lameness, increased instances of tail biting, and more severe sole and heel erosions (Scott et al. 2006). These housing systems were also identified as the primary cause of bursitis in pigs farmed in pens with slatted floors (Temple et al. 2012; Scott et al. 2006). Additionally, the slurry, which is collected under the slatted floors, emits ammonia, which affects the pigs' health (Borell et al. 2007). Therefore, a lack of outdoor access, which is common in the most prevalent systems, may also increase respiratory diseases due to poor air quality and insufficient exposure to natural elements (Delsart et al. 2020).

Furthermore, factors like high stocking density (< 0.8 m^2/pig) (Vermeer et al. 2017), resource competition, unfavourable temperatures, poor ventilation, and high levels of noise, dust, and ammonia can trigger tail-biting (Ludwiczak et al. 2021). As there is a lower occurrence of tail biting if tails are docked, tail docking is often routinely practised to reduce tail biting (Briyne et al. 2018; D'Eath et al. 2016; Lahrmann et al. 2017). According to European legislation, routine tail docking is prohibited and can only be performed if other measures are unsuccessful in preventing tail biting, taking environmental conditions and management practices into account (Council Directive 2008/120/EC, revised 12/14/2019). Nonetheless, according to Winkelmayer and Binder (2020), 90-95 % of pigs in Austria have docked tails (Winkelmayer and Binder 2020).

In contrast to the prevalent husbandry systems, animal welfare-promoting systems aim to provide an alternative that facilitates the expression of natural behaviours by offering more space, enrichment materials, and bedded areas (see Section 1.2.6 for voluntary animal welfare standards).

1.2.5 Legal Requirements in Austria

In Austria, animal welfare is protected by the Animal Welfare Act, which lays out general standards and guidelines for animal management and care (BML n.d.), such as prohibiting causing an animal unjustified pain, suffering, harm, or inducing severe fear ("Es ist verboten, einem Tier ungerechtfertigt Schmerzen, Leiden oder Schäden zuzufügen oder es in schwere Angst zu versetzen.") (TSchG). The Animal Welfare Act outlines detailed requirements for animal handlers, including principles of animal care, housing conditions, feeding and record-keeping (TSchG).

The 1st Animal Husbandry Ordinance (ThVO) details the specifications for managing farm animals. It is based on the Council Directive 2008/120/EC, revised 12/14/2019, which lays out the European minimum standards for protecting pigs, including specific requirements for fattening pigs. These Regulations aim to ensure the welfare of pigs by providing minimum space allowance, environmental enrichment, proper flooring, and access to light, food, and water. They also emphasise the importance of group housing, health care, and minimising painful procedures. Although the EU Directive and Austrian legislation align on procedures like tail docking and castration, light and noise levels, as well as the importance of nutrition and water access, the Austrian 1st Animal Husbandry Ordinance entails partly more specific and stringent requirements in terms of housing regulations (ThVO; Council Directive 2008/120/EC, revised 12/14/2019).

Both the EU Directive and the Austrian regulation stipulate that pigs are to be kept in groups, but allow for the temporary individual housing of particularly aggressive, attacked, sick, or injured pigs (ThVO; Council Directive 2008/120/EC, revised 12/14/2019). However, the Austrian regulation specifies that, unless specific veterinary advice suggests otherwise, the pens must allow the pig to turn around easily (ThVO). Additionally, both the 1st Animal Husbandry Ordinance and the EU Directive state that the maximum width of the openings in perforated floors must not exceed 18 mm for fattening pigs, and the minimum slat width must be 80 mm (ThVO; Council Directive 2008/120/EC, revised 12/14/2019), the Austrian regulation includes that the floors must be non-slip and free of sharp edges to prevent injuries (ThVO). The Austrian regulation also specifies that pigs must have permanent access to sufficient materials for investigation and manipulation, such as straw, hay, wood, sawdust, mushroom compost, peat, or a mixture of these enrichment materials (ThVO). Therefore, the Austrian requirements ensure higher standards for fattening pigs than the EU Directive (ThVO; Council Directive 2008/120/EC, revised 12/14/2019).

In 2022, the 1st Husbandry Ordinance was revised to indicate that, following a transition period, all fully slatted, unstructured pens will be prohibited (Bundesgesetzblatt für die Republik Österreich 2022). Moreover, the updated regulations (Bundesgesetzblatt für die Republik Österreich 2022) prohibit the construction of new or renovated facilities with unstructured, fully slatted pens after January 1st 2023. Under these regulations, a slatted resting area may not exceed a perforation rate of 10 % and can cover a maximum of two-thirds of the pen. Alternatively, the resting area must be equipped with bedding. In pens without a bedded resting area, at least two different enrichment materials must be provided, including one organic enrichment material that should always be accessible. Furthermore, the minimum pen area has been revised and must now be at least 20 m² for fattening pigs. If pens are smaller, the resting area must be enclosed and bedded, and the minimum area per animal must increase by 10 % for animals weighing up to 110 kg (see Table 2) (Bundesgesetzblatt für die Republik Österreich 2022).

Table 2: Minimum pen area/average animal weight (Constitutional Court (VfGH) 2023a, p. 9)

Animal Weight[1]	Minimum Area
Up to 20 kg	0.25 m² / Animal
Up to 30 kg	0.40 m² / Animal
Up to 50 kg	0.50 m² / Animal
Up to 85 kg	0.65 m² / Animal
Up to 110 kg	0.80 m² / Animal
Over 110 kg	1.20 m² / Animal

[1] Average weight of the group

In 2022, the Burgenland government sued against these revised regulations and argued that the existing regulations allowed for practices that were not in line with the latest scientific understanding of animal welfare (Constitutional Court (VfGH) 2023a). Additionally, it was argued that the transition periods until 2040 for implementing new standards were too lenient and did not adequately protect the animals, according to Austrian law (Constitutional Court (VfGH) 2023a; Bandat 2023).

The Constitutional Court (VfGH) (2023a) ruled in favour of the concerns expressed by the Burgenland government (Constitutional Court (VfGH) 2023a, 2023b). As a result, the Constitutional Court (VfGH) (2023a) found that the transition period for existing facilities was unreasonably long and inconsistent with the constitutional mandate for animal protection. The court's decision emphasised that the existing regulations do not adequately protect the welfare of animals, particularly concerning the use of unstructured, fully slatted floors in pig farming. The decision was based on scientific findings that unstructured, fully slatted floors do not meet pigs' physiological and ethological needs and lead to welfare issues. Therefore, the court decided that the welfare of animals should not be compromised through long transition periods and that animal welfare takes precedence over the economic needs of farmers (Constitutional Court (VfGH) 2023a, 2023b).

The Austrian Parliament (2025) established a new transition period until July 1st 2034, when all pens must comply with the new regulations. Additionally, the Austrian Parliament announced more stringent welfare regulations concerning requirements for space and enrichment materials (Austrian Parliament 2025). Previously, the constitutional court established transition rules for facilities built before January 1st 2023. If a facility was compliant with the standards as of January 1st 2023, it can continue to operate under those standards for up to 23 years from the date it first began operating, even if this extends beyond January 1st 2040 (Constitutional Court (VfGH) 2023a, 2023b).

1.2.6 Voluntary Animal Welfare Standards

In addition to the regulations stipulating the minimum requirements for pig welfare (Council Directive 2008/120/EC, revised 12/14/2019; ThVO), voluntary animal welfare standards play a critical role in enhancing the living conditions for pigs. These standards go beyond the legally mandated thresholds, offering additional features that improve animal welfare significantly (Gebhardt and Moog 2016).

The "Österreichische Schweinebörse eGen" has committed to enhancing voluntary animal welfare standards in the pork industry by setting a target to achieve one million animal welfare pigs in Austria by 2030. In the Animal Welfare Report 2024, by the "Österreichische Schweinebörse eGen", the number of organic pigs and pigs raised according to conventional animal welfare-promoting labels has increased in Austria since 2021 from 170,000 to 246,000, i.e. an approximate increase by 44 %. However, despite this positive trend, "Österreichische Schweinebörse eGen" anticipates a stagnation in consumer demand (Österreichische Schweinebörse eGen 2025).

One of the most notable examples of voluntary welfare-promoting standards is the state-issued Quality Seal by AgrarMarkt Austria (AMA), which is widely recognised among Austrian consumers as the most trusted label for animal welfare (Gebhardt and Moog 2016).

Figure 4 illustrates the levels of the AMA Quality Seal, each including additional provisions aiming to improve animal welfare, and detailed tables provide space allowances per pig according to their weight (AMA 2024).

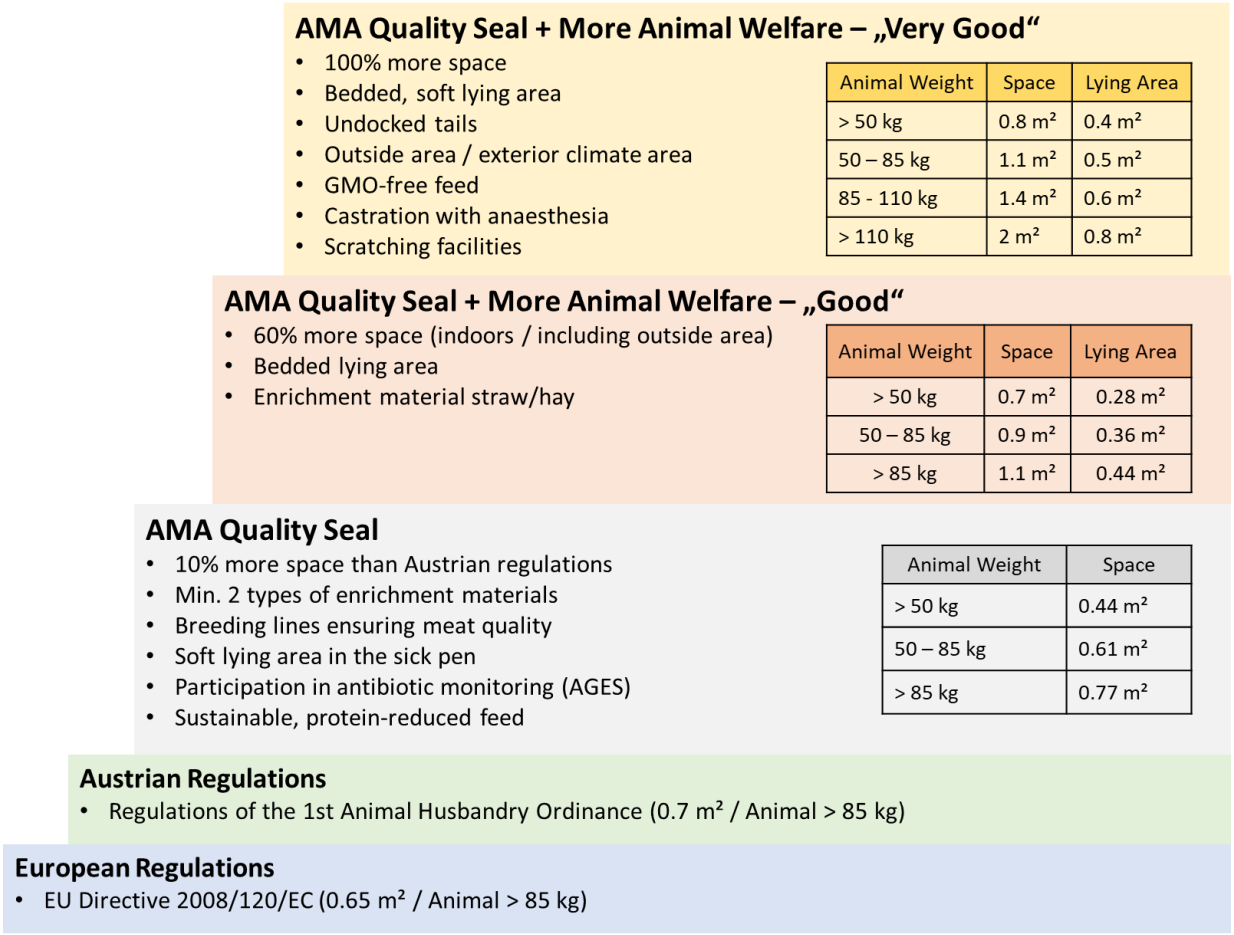

Figure 4: Comparison of Regulations and voluntary welfare standards (adapted and translated from: AMA 2024)

The AMA Quality Seal introduces measures that aim at enhancing basic animal welfare by increasing the allocated space for pigs by 10% compared to the minimum statutory standards. This level also requires the inclusion of at least two types of manipulable enrichment materials and sick pigs are provided with soft lying areas in the sick pens. Additionally, the AMA quality seal focuses on breeding lines selected to ensure high meat quality, and farms are required to participate in antibiotic monitoring. Moreover, feed needs to be sustainable and protein-reduced (AMA 2024).

In addition to the AMA Quality Seal, the AMA introduced two labels that include higher animal welfare standards: “More Animal Welfare - Good” and “More Animal Welfare – Very Good” (AMA 2024). The label “More Animal Welfare - Good" prioritises spatial and environmental improvements, including that the pens offer at least 60% more space than the legal minimum requirements, along with bedding. For pigs weighing over 85 kg, each pen must provide at least 0.44 m² of space. However, there are no specific guidelines regarding the amount of bedding material that should be used. Additionally, enrichment materials such as straw or hay are required (AMA 2024).

In the "More Animal Welfare - Very Good" label, the space allocated for animals is at least doubled compared to the legal minimum requirements. Furthermore, there must be adequate dry and soft bedding provided for all animals, which includes 0.55 m² of space for pigs weighing over 110 kg. The provisions also require access to outdoor areas or at least areas with outdoor climate conditions. Additionally, the feed provided in this system is GMO-free. Tail docking is prohibited, allowing pigs to keep their natural tails, and any necessary castration procedures are performed under anaesthesia to minimise discomfort (AMA 2024).

In addition to the state-issued AMA animal welfare-promoting programs, there are several private labels with similar requirements, such as Fair zum Tier, Hütthaler Tierwohl, Berger Tierwohlinitiative, and GUSTINO Tierwohl. The regulations of these labels can be found in Appendix A.

1.3 Human-Animal Relationship

1.3.1 An Introduction

Pigs and humans share similar sensory abilities, allowing for interactions, which is the basis for diverse relationships (Tallet et al. 2018). Therefore, human-animal relationships can be formed through tactile, visual, olfactory, or auditory interactions (Hemsworth and Coleman 2011). The quality of human-animal interactions can be negative, neutral, or positive (Hosey and Melfi 2014), influencing the well-being of both humans and animals (Hemsworth and Coleman 2011; Prato-Previde et al. 2022).

The reciprocal relationship is illustrated in a model proposed by Hemsworth and Coleman (2011) that shows the relationship between the farmer's attitude and the animals' behavioural response (see Figure 5). The farmers' attitudes influence their behaviour, which might cause fear and stress behaviour, influencing the pigs' welfare. For instance, if a farmer treats a pig negatively, this results in fear and therefore increases behaviours such as baulking and fleeing, making animals more difficult to handle. The animals' fear responses will then reinforce the farmer's negative attitudes towards their animals as well as their negative handling practices, creating a feedback loop (Hemsworth and Coleman 2011). On the other hand, regular positive interactions may lead to a positive human-pig relationship, characterised by pigs willingly approaching and interacting with humans and therefore being easier to handle (Tallet and Brajon 2024).

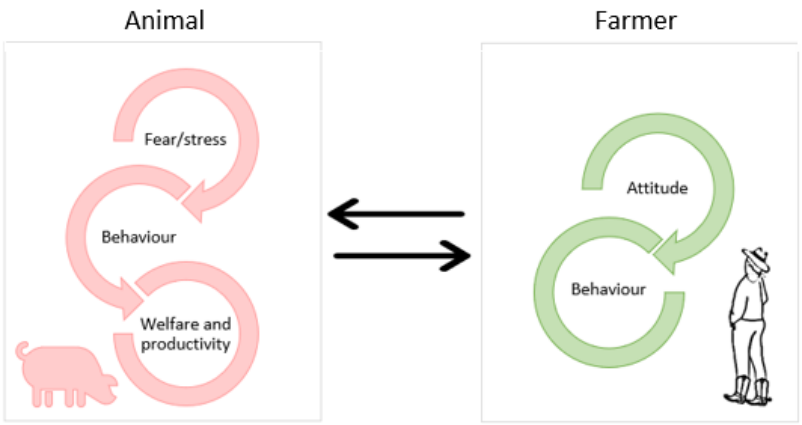

Figure 5: Model of the reciprocal relationships between farmers and their animals (adapted from Hemsworth and Coleman 2011)

The frequency and intimacy of human-animal interactions determine farmers' attachment to their animals (Bock et al. 2007), while the intensity of human-animal relationships varies based on the production stage and system (Wildraut 2019). However, with the industrialisation of farming systems, farmers report having little time to interact with their animals (Tallet and Brajon 2024), limiting the interactions to routine checks (Rault et al. 2020) and duties in the barn, such as cleaning and feeding (Zulkifli 2013). This lack of interactions can lead to serious welfare issues, primarily stemming from the farmers' inability to dedicate enough time and attention to address their animals' physiological, psychological, and behavioural needs (Tallet and Brajon 2024). Additionally, the relationships significantly influence animals' physiological

responses to fear, which affects their productivity (Hemsworth and Coleman 2011; Pol et al. 2021). Therefore, fostering positive human-animal relationships has become increasingly important (Tallet and Brajon 2024).

1.3.2 Human-Animal Interactions and Animal Welfare

Pigs use their cognitive and sensory abilities to interact and recognise individual pigs and humans, by identifying various cues, including auditory, olfactory, and visual signals such as body size and clothing (Tallet and Brajon 2024). Additionally, pigs learn to associate humans with either positive or negative experiences, which ultimately influences their behaviour in future interactions (Hemsworth and Coleman 2011). However, when encountering unfamiliar humans, they tend to generalise their reactions towards humans (Tallet and Brajon 2024).

On the one hand, positive human-animal interactions are characterised by low levels of fear or high confidence in people (Waiblinger et al. 2006). This is expressed by animals voluntarily approaching and maintaining spatial proximity to humans and exhibiting signs of anticipation, pleasure, relaxation, or other rewarding experiences (Rault et al. 2020). On the other hand, negative interactions, such as hitting, pushing and shouting, can increase the animals' fear of humans and therefore stress (Gonyou et al. 1986).

Hemsworth and Coleman (2011) emphasise that early experiences play a crucial role in shaping human-animal relationships, as young domesticated animals gradually become less fearful of humans through repeated exposure (Hemsworth and Coleman 2011). Therefore, aversive handling practices, such as heightened tones and threatening postures, lead to piglets avoiding handlers (Francisco Jr. 2023) and gentle handling may have carry-over effects, impacting feed intake during the growing period (Day et al. 2002). Remarkably, the emotional consequences of human-animal interactions extend beyond the immediate event and affect not only the affected animals but also the unaffected pen mates (Reimert et al. 2017).

Fear is generally considered an undesirable state for animals. This was already highlighted by the Brambell Committee in 1965, which recommended that intensively housed livestock should be free from fear (Brambell 1965). Animals' fear of humans is often assessed based on their behavioural and physiological responses (Hemsworth and Coleman 2011). For instance, avoidance behaviour or aggression toward humans indicates fear. In contrast, when fear decreases, animals begin to approach, explore and investigate humans. This approach behaviour inversely correlates with the level of fear (Hemsworth and Coleman 2011).

According to Waiblinger (2016), the distance at which animals allow an unfamiliar person to approach without moving away can be interpreted as an indicator of welfare. A high avoidance distance is often a sign of fear resulting from negative interactions with caregivers, reflecting poor human-animal relationships. Conversely, animals that have experienced positive interactions with caregivers exhibit lower avoidance distances. They allow strangers to approach them closely or even touch them, indicating they feel safer in the presence of humans. This behaviour suggests a strong and positive human-animal relationship, as consistent positive interactions build trust and reduce fear in animals (Waiblinger 2016).

Fear also triggers behavioural stress responses, which serve to successfully cope with danger, such as fleeing from a predator or defending oneself (fight-or-flight) (Waiblinger 2016). Fearful animals may also experience injuries while attempting to avoid humans during routine inspections and handling (Hemsworth and Coleman 2011). However, fear of the farmer not only influences behaviour but is also closely tied to physiological stress responses (Hemsworth and Coleman 2011).

These physiological stress responses prepare the body for the “fight-or-flight” response towards the stressor, such as the farmer (Waiblinger 2016). Hemsworth and Coleman (2011) highlight that the initial "fight or flight" responses are short-lived. However, if the stressor persists, a second series of events occurs: the acute stress response. Once the farmer is no longer present, this physiological state typically subsides, with minimal adverse effects on the animal except for the depletion of energy reserves. However, if the farmer stays and negative handling practices persist, stress reactions can occur even during periods without direct human contact. This prolonged stress is referred to as chronic stress. In various experiments, handling treatments that induced high fear levels were associated with sustained enlargement of the adrenal glands and elevations in stress hormone concentrations. Therefore, negative human-animal interactions can induce stress hormones, such as cortisol, which may disrupt protein metabolism and therefore reduce the growth rates of animals (Hemsworth and Coleman 2011).

Additionally, chronic stress increases susceptibility to infections, gastrointestinal ulcers and sudden cardiac death (Waiblinger 2016). Therefore, the chronic stress response significantly impacts both the growth (Hemsworth and Coleman 2011) and the reproductive performance of pigs (Pol et al. 2021). The significance of fear in pig productivity is highlighted by the study by Hemsworth et al. (1981) who found that fear variation accounted for 20 % of reproductive performance differences across farms (Hemsworth et al. 1981). Therefore, the economic dimension of human-animal relationships should not be underestimated, as performance losses and product quality depend significantly on the human-animal relationship (Waiblinger et al. 2006).

However, there are also physiological reactions associated with positive emotions that counteract stress effects (Waiblinger 2016). For instance, when humans gently stroke a pig’s abdomen, their EEG readings (showing the brainwaves) indicate reduced stress and increased relaxation (Rault et al. 2019). Waiblinger (2016) highlights that positive interactions promote animal growth and health, as well as having calming effects on Pigs (Waiblinger 2016). Therefore, the human-animal relationship has a significant impact on animal welfare (Hemsworth and Coleman 2011; Waiblinger 2016).

1.3.3 Husbandry Systems and Human-Animal Interactions

Housing systems play a central role in allowing animals to exhibit individual behaviour by enabling movement and interaction with others (Bock et al. 2007). Therefore, the housing systems also impact the frequency and quality of human-animal interactions (Bock et al. 2007).

Tallet et al. (2018) highlight that pig farming has changed from traditional family farms to more industrialised systems. These systems usually have larger herds and high stocking densities, leading to human-animal interactions being reduced to the visual observation of the animals' conditions (Hemsworth and Coleman 2011). Since recognising individual animals requires close physical proximity between farmers and their animals, farmers who manage large numbers of animals face challenges in forming an emotional attachment (Bock et al. 2007). Therefore, especially in intensively mechanised systems, technology provides daily care and reduces the direct contact between farmers and individual animals, which significantly influences human-animal relationships (Bock et al. 2007).

Intensive systems encourage the collective treatment of animals and therefore weaken the attachment between farmers and their individual animals (Prato-Previde et al. 2022; Bock et al. 2007). According to Bock et al. (2007), this approach involves caring for animals as a group rather than as individuals, which can reduce the quality of human-animal interactions. As a result, farmers have fewer opportunities to develop relationships with each animal (Bock et al. 2007). This leads to the de-individualisation of animals, meaning that animals are perceived as mere production units rather than sentient beings (Harfeld et al.

2016; Röcklinsberg et al. 2014). This ultimately affects the animals' welfare and the emotional attachment between farmers and their animals (Prato-Previde et al. 2022; Bock et al. 2007).

However, despite increasing mechanisation, farmers remain responsible for monitoring animal health and performing routine husbandry tasks (Hemsworth and Coleman 2011; TSchG). According to the Austrian Animal Welfare Act (TSchG) farmers must still ensure that their husbandry systems are appropriate to pigs' specific needs. To comply with this act, farmers are required to supervise both their animals and the mechanised systems that are essential for ensuring the welfare of their pigs (TSchG).

According to Wildraut and Mergenthaler (2020) smaller groups, low stocking densities and more accessible housing systems facilitate closer observation and interaction. Consequently, smaller herds likely receive more individual attention from farmers, whereas larger groups may limit close relationships. Increased attention allows farmers to identify health and behavioural issues early, leading to better care and stronger relationships (Wildraut and Mergenthaler 2020). Therefore, the husbandry systems chosen by farmers play a crucial role in shaping human-animal relationships (Waiblinger 2016).

1.3.4 Farmers' Attitudes and Human-Animal Relationships

Hemsworth and Coleman (2011) emphasise that farmers' attitudes play a crucial role in shaping the interactions with their animals, which affect the human-animal relationship. These attitudes are influenced by various factors, including the farmers' motivations, needs, work ethics, job satisfaction, and knowledge. These underlying attitudes are reflected by farmers' emotional response to pigs (liking or disliking) and influence their tendency to behave in a particular way. On the one hand, positive attitudes correlate with better handling practices, resulting in fewer negative behaviours toward animals. These correlations indicate that farmers who prioritise frequent petting and use minimal verbal and physical effort tend to display less negative tactile behaviour when handling their animals. As a result, they engage in more positive interactions with their animals (Hemsworth and Coleman 2011). On the other hand, a study by Rushen and Passillé (2015) shows that handlers' beliefs about pigs, such as perceiving them as greedy or aggressive, correlate with their use of electric prods during handling, meaning that they engage in more negative interactions with their animals (Rushen and Passillé 2015).

A study by Serpell (2004) dives further into how farmers' attitudes towards their animals are shaped by how farmers perceive the "utility" and "affect" of their animals. For the farmers, the "utility" of their animals is related to animals' instrumental value, emphasising their usefulness for the farmer in terms of production and economic benefit. The farmers' perceived "affect" of the animals, however, encompasses the farmers' emotional responses and attachment towards their animals (Serpell 2004).

Animals with high utility often lack positive affection due to their utility (Serpell 2004). This is highlighted by Bock et al. (2007), who state that the time animals spend on the farm significantly impacts farmers' perceptions and relationships with their animals. Animals which stay for extended time periods, such as breeding animals, foster stronger relationships than animals with shorter stays, such as fattening animals. Therefore, the intensity of the human-animal relationship is influenced by the time the animals spend on the farm. Farmers, working with animals of limited life spans, like fattening pigs, may deliberately maintain emotional distance and intentionally avoid attachment to protect themselves from negative feelings. In addition to the duration of stay, farmers feel more attached to animals they find likeable, as these animals are responsive to humans and require frequent, intimate contact. Therefore, not only the duration of interaction, but also the quality and nature of those interactions shape the variability in the attachment farmers feel towards different animals (Bock et al. 2007).

To further understand this variability in attachment, Wilkie (2005) introduced a framework exploring how farmers interact with their animals. Within this framework, attachment and detachment manifest in four different ways. Farmers practising “concerned detachment” care for animals but primarily view them as commodities for commercial production. This impersonal relationship is common among farmers who keep animals for slaughter or work with large numbers of animals. In contrast, “concerned attachment” reflects a more personal connection. Farmers appreciate animals beyond their utility, especially when they have direct contact with their animals. Other farmers interact with “attached attachment”, treating farm animals like outdoor pets and providing preferential treatment. However, this attitude is rare among commercial farmers. Finally, “detached detachment” characterises farmers who handle animals from a distance, viewing them purely as commodities. Therefore, an emotional-professional paradox influences human-animal relationships, where “detached detachment” lacks empathy and recognition of individuality (Wilkie 2005). Additionally, detached relationships may decrease empathy and concern for animal suffering (Bock et al. 2007; Schillings et al. 2021). According to Marie (2006), this issue is increased through the mechanisation of farming. In such mechanised systems, the focus on efficiency often comes at the expense of the human-animal relationship and attention to animal wellbeing (Marie 2006).

To understand how these attitudes influence the different perspectives, practices and welfare outcomes within the context of fattening pigs, Pol et al. (2021) identified three farmer profiles based on farmers' attitudes toward human-animal relationships.

The first profile consists of pig farmers who view human-animal relationships as a secondary aspect of their work. They show little interest in human-animal relationships and do not believe it significantly impacts animal health or behaviour. These farmers typically manage medium-sized farms (200-500 pigs). Additionally, these farmers refrain from engaging in activities such as petting their animals or implementing practices like gilt socialisation, which involves regular interaction with animals to cultivate a human-animal relationship and can mitigate stress levels during human-animal interactions. Furthermore, they often do not feel an emotional attachment to their livestock (Pol et al. 2021).

The second profile, by Pol et al. (2021) represents pig farmers who see human-animal relationships as useful for their work. They believe good technical skills are essential for farming and that negative human behaviour can stress animals. However, like in the first profile, they do not express attachment to the animals and predominantly use slatted floors for pig housing (Pol et al. 2021).

The third profile, by Pol et al. (2021) includes pig farmers who place human-animal relationships at the centre of their work and feel at least a little attached to their animals. They actively implement specific practices to improve human-animal relationships, such as gilt socialisation and daily contact with their pigs. These farmers enjoy all aspects of their work, believe in the cognitive abilities of pigs, and are convinced that human-animal relationships impact animal health. Typically operating smaller farms, they may also comply with welfare specifications. Notably, the study suggests that farmers focusing on human-animal relationships consider animals central to their profession, derive pleasure from working with them, express empathy, and tend to have more approachable pigs that achieve higher productivity (Pol et al. 2021).

1.4 Research Question

The literature review has shown that in recent years, the welfare of farm animals, particularly pigs, has become a significant concern for society, governments and farmers (European Commission 2023; Fraser 2008b; Vigors et al. 2023). To improve animal welfare, scientists have emphasised the importance of not only preventing negative experiences but also promoting positive welfare for farm animals (Fraser 2008b;

Mellor 2016). Since farmers directly oversee the well-being of their animals, fostering positive human-animal relationships is essential for improving overall animal welfare (Hemsworth and Coleman 2011; Rushen and Passillé 2015; Day et al. 2002; Rault et al. 2020). Therefore, understanding farmers' perspectives is crucial for enhancing animal welfare and the productivity of animals (Balzani and Hanlon 2020).

The literature research indicates that studies on human-animal relationships have primarily focused on animals that spend extended periods with humans, such as pets. This trend is also highlighted by authors such as Jardat and Lansade (2022). In contrast, there is considerably less information available regarding livestock animals, including pigs. This gap is particularly evident regarding studies on fattening pigs.

This thesis aims to gain a deeper understanding of the relationship between farmers utilising animal welfare-promoting systems and their fattening pigs. It will explore farmers' perspectives on animal welfare and human-animal relationships, as well as how the farmers engage in relationships with their fattening pigs.

To achieve this, it is essential to understand farmers' beliefs and attitudes toward animal welfare, as it forms the foundation for farmers' practices and interactions with their animals, ultimately shaping the human-animal relationship. Therefore, this thesis seeks to answer the following research question:

How do pig farmers with animal welfare-promoting systems perceive and engage in relationships with their fattening pigs?

To address this overarching question, the thesis aims to answer the following underlying research questions:

- Which factors do farmers with animal welfare-promoting systems consider important to ensure a 'good life' for fattening pigs?
- What do farmers perceive as opportunities and barriers in animal welfare-promoting husbandry systems affecting the interactions with their fattening pigs?
- Which Interaction Levels can be assigned to farmers with different animal welfare-promoting systems?
- Which Attachment Levels can be assigned to farmers with different animal welfare-promoting systems?
- How can farmers with animal welfare-promoting systems be classified based on their perception of the relationship dynamics between them and their fattening pigs?

These underlying questions will help explore various aspects of the human-animal relationship in the context of animal welfare-promoting systems. The first question aims to provide contextual information about the beliefs and values of farmers. The second question directly addresses their perception of how the animal welfare-promoting husbandry systems influence the interactions between them and their fattening pigs, aiming to explain why farmers might engage more or less with their animals. Additionally, the third and fourth questions aim to gain insight into the tangible interactions and the emotional level of the relationships between the farmers and their animals. Lastly, the fifth research question will allow insights into how the farmers perceive the importance of their relationship to their animals, as well as the awareness of the reciprocal nature of the relationship.

By emphasising the human dimension, this thesis contributes to a deeper understanding of farmers' perceptions and motivations, which are crucial for the effective implementation of new animal welfare standards. Semi-structured interviews and a semi-quantitative element were utilised to uncover these motivations. This study focuses on farmers participating in the IBeSt+ project. This thesis, therefore, does

not aim to be representative of all fattening pig farmers in Austria, but rather aims to gain insights into the perspectives of the selected interviewed participants.

2. Method

An interpretative approach was selected for this thesis to gain insights into farmers' perspectives on their relationships with their fattening pigs. Henn et al. (2009) highlight that interpretive research employs qualitative methods aiming to understand topics from the participants' perspectives, allowing insights into the participants' realities. This approach, therefore, focuses on exploring subjective meanings and experiences rather than quantifying variables (Henn et al. 2009).

To effectively capture the complexity of human-animal relationships, semi-structured interviews were chosen, since interviews provide comprehensive insights into the farmers' experiences that quantitative methods may overlook (Oranga and Matere 2023). Oranga and Matere (2023) highlight that qualitative research methods offer flexibility in the interactions between researchers and participants compared to quantitative approaches. This flexibility allows for more natural interviews, enabling participants to express their thoughts and experiences in depth. Such depth is essential for understanding the beliefs, attitudes, and motivations influencing farmers' relationships with their animals (Oranga and Matere 2023). Additionally, a semi-qualitative element was integrated into the interviews to enhance interactivity.

The following sections will outline the participant selection as well as the data collection and analysis, clarifying the implementation and the rationale behind the thesis's methodological choices.

2.1 Selection of Participants

The sole criterion for selecting participants for the interviews was their participation in the IBeSt+ project, since this master thesis took place within the IBeSt+ project.

2.1.1 The IBeSt+ Project

In the 2022 revised TSchG §44(30) mandates a dedicated study to assess pig-housing systems, focusing specifically on pen layout and floor design. In the 2025 amendment of the TSchG, the IBeSt+ project[1] was embedded in § 44(32). The full title of the IBeSt+ project is: "On-farm Evaluation of Austrian Finishing Pig Farms with Different Husbandry Systems Regarding Animal Welfare and Economy". The IBeSt+ project, which runs from November 2023 to October 2026, evaluates the housing systems of Austrian pig fattening farms participating in quality programs, focusing on animal welfare and economic aspects. Therefore, the project aims to provide a scientific basis for evaluating pig fattening farms.

These evaluations focus on key aspects such as the prohibition of routine tail docking and the requirements for a comfortable lying area and appropriate flooring. The IBeSt+ project[1] collects a comprehensive range of data in four work packages:

1. **Work Package Animal**: collects data on animal welfare, including behavioural, clinical and production data.
2. **Work Package Barn Climate**: conducts climate assessments on all farms, offering advice on improving ventilation and emissions to ensure optimal living conditions for the pigs.

[1] See project website: https://short.boku.ac.at/IBeStPlus

3. **Work Package Economics**: analyses labour and economic data from the farms, to assess the economic viability and efficiency of different housing systems.
4. **Work Package Human**: gathers qualitative data through an interview with farm managers. The interviews aim to capture the managers' perspectives on several key areas, including their motivations for participating in quality programs and the impact of participation on their farms. The interviews also explore the challenges and benefits experienced in the barn. Furthermore, the interviews investigate how farm managers perceive their relationship with the pigs, including daily interactions, emotional attachment, and the overall dynamics between humans and animals on the farm. Farm managers also provide insights into what they consider a "good life" for a fattening pig, including proper handling and living conditions.

In addition to the four work packages summarised above, the **Work Package Practice** was established to serve as the initial point of contact for farm managers and to ensure effective communication between participants and the project's scientific team (Klaffenböck 4/26/2024; BML and DaFNE N.d.; IBeStPlus N.d.).

The project partner "Schweinehaltung Österreich" (an association representing the interests of Austrian pig farmers) managed the recruitment of the 28 farms participating in the IBeSt+ Project. The selected farms had to comply with voluntary welfare schemes for at least one year.

Given the limited number of farms with animal welfare label systems, agricultural advisors assisted in reaching out to potentially interested farmers. Those interested were provided with further details about the project during a Zoom kick-off meeting on March 11, 2024, which outlined time commitments, the number of visits by researchers, and the data to be collected. Given the limited number of farmers with animal welfare-promoting systems and who were willing to participate in a research project, it was not possible to select farms based on variables such as size, federal state, the gender of the farm managers, or their age, and all farmers who expressed interest and met the participation criteria were invited to join the IBeSt+ project.

2.1.2 Overview of the Participating Farms

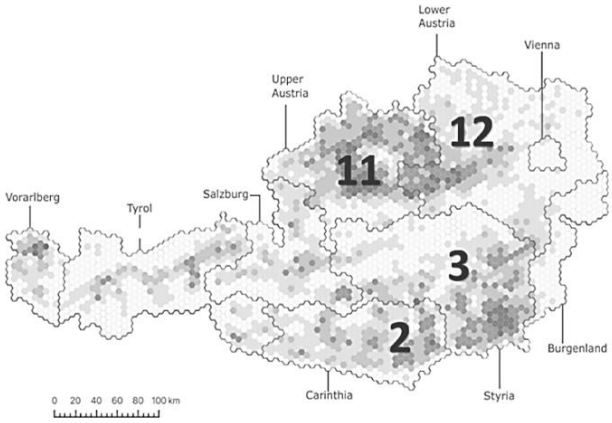

Figure 6: Distribution of the participating farms (Adapted from: Puspitarani et al. 2023)

The project started with 30 pig-fattening farms. However, during the interview period, two farms withdrew from the project. The remaining 28 farms were geographically distributed across Upper Austria (11 farms), Lower Austria (12 farms), Styria (3 farms), and Carinthia (2 farms) (see Figure 6).

To facilitate comparisons, this thesis not only incorporates the state-issued AMA labels "More Animal Welfare - Good" and "More Animal Welfare - Very Good", but also additional private labels, such as "Hütthalers Hofkultur", "Fair zum Tier", and "Gustino Tierwohl". This approach aims to increase the sample size for analysis (for equivalents and requirements, see Appendix A). As a result, the 28 farms were classified into two categories: "Tierwohl 100" (TW100) and "Tierwohl 60" (TW60) (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

The TW100 category indicates that animals receive at least 100 % more space than the Austrian minimum legal requirements, alongside additional measures, including the incorporation of functional zones. The

TW60 category means a minimum of 60 % more space than Austrian regulations, and includes improvements such as a bedded lying area. However, seven of the TW60 farms have outdoor access for their animals. Even though two farms were not certified by a private or state-issued animal welfare label, they met the outlined requirements and were classified accordingly. Therefore, from the 28 farms, thirteen were categorised as TW60 and fifteen were categorised as TW100. fourteen of the TW100 farms kept pigs with undocked tails; although not fulfilling the no-tail-docking criterion, one farm was categorised as TW100 since it met all of the other requirements. The pigs per farm varied between approximately 100 and 2000 pigs in TW100 and 300 and 1000 Pigs in TW60 farms, while the group sizes of pigs varied from 12 to 170 pigs per pen. Regarding farm infrastructure, 22 farms provided outdoor access for pigs, while six did not. Additionally, 27 farms produced their pig feed, and all of them also engaged in crop farming. The marketing strategies varied among the farms, with 20 farms marketing their products through slaughterhouses and eight engaged in direct marketing, selling between 1 % and 90 % of their pigs this way.

Figure 7: Specifications of the Animal Welfare Categories

Table 3 offers an overview of the pseudonyms, the number of participants during the interview and the assigned Animal Welfare Category.

Table 3: Characterisation of the 28 participating farms

Pseudonym(s)	**Number of participants per interview**	**Animal Welfare Category** (TW100/TW60)
Antonia; Wolfgang	2	TW100
Beni Maier Jr.; Beni Maier Sr.	2	TW100
Bichelbau	1	TW100
Die 700	1	TW100
Elias; Luisa	2	TW100
Fendt	1	TW100
Franz	1	TW100
Glücksschwein (Mrs., Mr., Jr.)	3	TW100
J.	1	TW100
Lori	1	TW100
Mrs. and Mr. Tierfreunde	2	TW100
Saubauer	1	TW100
Saubauer0815	1	TW100
Sauwohl	1	TW100
Strohschwein_TW100; Tierwohl	2	TW100
A.N. Jr.; A.N. Sr.	2	TW60
Big Daddy; Engelbert; Strauss	3	TW60
Borsti	1	TW60

Eduard; Erich; Emil	3	TW60
H.	1	TW60
Herbert and Anita Holzwohl	2	TW60
Luna; Bertl	2	TW60
Moser Michael	1	TW60
Mrs. and Mr. Schweineparadies	2	TW60
Nowi	1	TW60
Pauli	1	TW60
Schweinehotel	1	TW60
Strohschwein_TW60	1	TW60

While on 12 farms, the interviews were with only one person, on 16 farms, the partner, the successor of the farm manager, or a person working with the pigs also participated in the interview. However, all participants are referred to as “farmers” in the research questions. During most interviews, all participants were present for the entire interview, however, some participants could only be present for part of the interview (e.g. Bertl and Wolfgang).

Table 3: Characterisation of the 28 participating farms

Given the voluntary nature of participation in the IBeSt+ project, it is assumed that the participating farm managers are either pioneers in this field or possess an above-average interest in animal welfare and human-animal relationships. As a result, this semi-quantitative element offered a general overview of the participants' opinions on factors impacting animal welfare.

2.2 Data Collection

The data collection through semi-structured Interviews and semi-qualitative elements for this thesis was conducted by two master students, Annabel Wagner and Zoë Köhler, both writing their master's theses within the IBeSt+ project Work Package ‘Humans’. Wagner's thesis focuses on farmers' experiences transitioning to animal welfare-promoting systems. To minimise the number of farm visits and reduce transportation costs, the interviews included the interview questions for both thesis’. As a result, the 28 interviews were evenly divided between the two master students. It was agreed that necessary information would be shared through transcriptions and field notes, enabling each student to analyse the relevant sections of the 28 interviews for their thesis’.

The research methods for this thesis received approval from BOKU’s ethics committee. Participants were informed about the study's purpose and how their information would be used before signing a consent form that ensured confidentiality (see Appendix D). They were encouraged to answer questions freely and reassured that there were no right or wrong answers. It was also emphasised that participants had the right to withdraw from the study at any time. Participants were invited to choose pseudonyms to protect their identities.

The farm managers were initially contacted via email by the master student conducting the interview. The email included an information sheet, a farm data sheet, and a notification that they would be contacted by phone within the following days to schedule an appointment. The email and attachments can be found in Appendices B, C and D. The appointments for the personal interviews were made through a phone call and confirmed per email (Appendix E). Half of the interviews were conducted from 22.07.2024 to 04.08.2024 (Z. Köhler), and the second half from 25.07.2024 to 26.09.2024 (A. Wagner).

Interviews were conducted at locations chosen by the participants, typically either their farms or homes. This approach aimed to enhance comfort and convenience, as being in familiar surroundings can make participants feel more at ease (Taherdoost 2022). To show appreciation, the interviewers brought cookies and tea for the participants. This small gesture helped to create a relaxed and friendly atmosphere.

With the participants' permission, the interviews were recorded using two Bluetooth microphones, one for the interviewer and the other for the participant(s), ensuring high sound quality and facilitating the transcription process. The recordings were saved as MP3 files on the interviewer's phone, uploaded to BOKUdrive at the next available Wi-Fi connection and immediately purged from the phone to ensure data privacy. As the transcripts from the interviews conducted for this master's thesis will be provided to the IBeSt+ project for further analysis, access to both the audio recordings and transcriptions was limited to the master students involved and the IBeSt+ research team.

The interviews were structured in two sections. They began with the section on human-animal relationships, focusing on the interactions between the participants and their fattening pigs. The first section of the interview concluded with a semi-quantitative exercise where farmers ranked the importance of the provided animal welfare factors in order to understand the farmers' views on animal welfare. This allowed for a smooth transition to the second section of the interview, which focused on the farmers' experiences during the transition to animal welfare-promoting systems. It was necessary to read the entire interview to find all of the relevant points for the thesis, despite the segmentation of the interview, since the participants occasionally provided relevant insights later in the interview.

Each interview concluded by reminding the participants that the selected quotes will be sent to them for approval, before the publication of the master thesis. The interviews lasted between 47 and 210 minutes. The duration varied, as some farmers had more to say about human-animal relationships, while others elaborated more on the transition to animal welfare-promoting systems.

Face-to-face interviews allowed for the documentation of field notes that, together with the participants' responses, provided a deeper understanding of the interview context and helped make accurate interpretations and conclusions (Oranga and Matere 2023). During the interviews, notes were taken to highlight particularly interesting points, create follow-up questions, and mark topics that had already been discussed throughout the interview. After the interviews, additional notes were made off-site, capturing details about the setting, the participants, and the interview process itself. This especially included observations of unexpected events, such as interruptions during the interview or highlighting particularly interesting interview contents or interviews that were especially challenging, along with the reasons why.

2.2.1 Semi-Structured Interview

Semi-structured interviews provide valuable insights into the participants' individual experiences and beliefs by allowing flexibility without compromising the quality of the data collected. This methodology helped to show the perspective of farmers on the topics of animal welfare and human-animal relationships, by providing insights into their behaviours, beliefs, attitudes, and the nature of their relationships with their animals.

The interview guide, serving as the foundation for the data collection and ultimately answering the research questions, was developed based on a literature review and used open-ended questions. The interview guide aimed to create an environment where respondents could openly discuss what matters to them without feeling judged or evaluated (Hurst 2023). To facilitate this, questions progressed from general to specific, encouraging exploration of relevant topics (Albuquerque et al. 2014). The interviews began with straightforward questions focusing on experiences and behaviours to build rapport, as these

questions tend to be easier for respondents to answer (Hurst 2023). As trust was established, the questions shifted to opinion and value-based questions, which required more rapport (Hurst 2023).

While all participants are asked similar core questions, the interview guide allows the interviewer to ask additional clarifying questions (Hurst 2023). Therefore, in addition to the core questions, follow-up questions and probes encouraged participants to articulate their thoughts in their own words, resulting in rich and unexpected insights (Oranga and Matere 2023). These additional questions were especially designed to explore respondents' emotional experiences, as according to Hurst (2023), “feeling questions” prompt participants to reflect on their emotions, acknowledging that many people, often subconsciously, process their understanding of the world at an emotional level. This technique allows respondents to remember, imagine, or relive their emotional reactions to specific experiences, enriching the overall depth of the conversation (Hurst 2023).

The interview guide underwent several drafts and revisions. The final version included the following key questions for the interview section focusing on human-animal relationships (for the full interview guide and the original (German) questions, see Appendix F):

Experience and Behavioural Questions:

- What do you pay particular attention to when you walk through the barn?
- How do you communicate/interact with your pigs? How do you handle them?
- Do you occasionally observe pigs that are somehow special?
- Do pigs with long tails behave differently from pigs with docked tails?

Opinion and Values Questions:

- You often hear the saying, "If the animal is fine, the farmer is fine too." How do you see that?
- Imagine you are walking back to the house from the barn at the end of the day and think, "Today was a good day in the barn!" What would make you believe this?[2]
- In your opinion, what influence do animal welfare-promoting systems have on the well-being of the pigs?

2.2.2 Semi-Quantitative Element

To enhance the interactivity of the interviews, a semi-quantitative element was incorporated at the end of the first section, which focused on human-animal relationships (see Figure 8). During this activity, farmers were asked to evaluate factors under the title "In my opinion, the following factors are especially important for ensuring animal welfare..." (“Aus meiner Sicht sind folgende Faktoren besonders wichtig für das Tierwohl…”). The following seven factors were given, as well as a pentagon labelled ‘other’, allowing participants to raise a factor not listed. The selection of the provided factors was based on the animal welfare factors established by the ÖPUL (2024). These factors were further refined to incorporate the role of the farmer as a significant influencer of animal welfare. The original German translation of the factors can be found in Appendix F and Figure 8.

- Undocked Tails
- A farmer who has a strong affinity for animals

[2] Key Question adapted from: Sutherland 2021.

- Diverse, varied enrichment material
- Larger groups to allow social interactions between pigs
- A bedded lying area
- Increased space per animal
- Access to outdoor areas
- Others

Figure 8: Example of Semi-Qualitative Element, filled out by Luna and Bertl (Köhler, 2024)

For the semi-quantitative element, participants were asked to distribute chips on the worksheet in a manner that reflected the relative importance of each factor, assigning the most chips to the factor they considered the most important. This activity not only clarified the relative significance of factors affecting animal welfare but also encouraged participants to articulate and reflect on themes that are often overlooked. This led to a more profound discussion of participants' perspectives and the rationale behind their chip distributions. Ultimately, the goal was to provide a comprehensive overview of what factors matter most to the farmers, facilitating an understanding of their attitudes and beliefs. Additionally, this activity examined how these factors shape their practices and relationships with their pigs.

On the worksheet, the factors were arranged in a circle to present them as equally important. It was ensured that all pentagons were the same size to avoid any implicit valuation. Each participant received 24 chips. This chip system ensured that there were enough chips to allow for clear differentiation in the evaluation without having too many, which would prolong the distribution process without adding much information. While there were no strict requirements for the number of chips assigned to each factor, participants were asked to use all their chips to allow a better analysis.

After distributing the chips, the participants were asked to comment on their top two influencing factors, as well as on the factor "A farmer that has a strong affinity for animals" ("Ein Landwirt, eine Landwirtin, die ein gutes Gefühl für Tiere hat"). Specifically asking about this factor aimed at allowing participants to reflect on its relative importance compared to the other factors and uncover points not addressed during the semi-structured interview. After all the chips had been distributed, the worksheet was photographed to record the distribution for analysis. The distribution of chips was analysed using descriptive statistics,

and the results were graphically represented in Excel using box plots. This descriptive analysis aimed at highlighting potential differences in individual responses and general variations.

2.3 Data Analysis

2.3.1 Transcription

The interviews were transcribed by the interviewer who conducted them, as the respective interviewer was then able to include their knowledge and experience from the interviews to accurately transcribe the interviews. In order to provide contextual information, field notes were taken during and after the interviews and then included in the transcription file.

To balance accuracy with readability, naturalised transcription (or 'intelligent verbatim transcription') was selected, which adapts the oral to written norms regarding syntax, grammar, word choice, and punctuation (McMullin 2023). Additionally, nonverbal cues such as laughter, tone of voice (emphasis, sarcasm), verbal fillers (e.g., "um," "uh"), false starts, and prolonged pauses were omitted in the transcript. This approach was chosen to balance the need to stay as close to what the participant said while ensuring that the transcripts are easy to read. The aim was to provide a truthful representation of the participants' responses while eliminating non-essential elements that do not contribute to the content's meaning (McMullin 2023).

The audio recordings were transcribed using software that complies with the General Data Protection Regulation (GDPR). Initially, Amberscript[3] was selected for its AI-supported speech recognition technology, which allows converting spoken language into written text. However, Amberscript proved inadequate since the program struggled to accurately transcribe complex speech patterns, particularly when participants spoke quickly, had strong accents, or used colloquial language. Additionally, the AI influence was too dominant, leading to changes in sentence structure based on the AI's interpretation, which resulted in further inaccuracies. Consequently, significant manual review and correction were necessary, with one minute of interview content requiring about 14 minutes for revisions to have a final transcript.

Given these limitations, it was decided to transition to Transcriptor[4] for the remaining 14 transcriptions. Transcriptor presented several distinct advantages, including enhanced accuracy and easier software handling. As a result, the transcription time improved significantly, with 1 minute of interview content being transcribed in 8 minutes.

The initial transcriptions from Amberscript and Transcriptor were reviewed and manually edited for accuracy. This process involved listening to the audio recordings while comparing them to the transcriptions to correct errors and fill in gaps.

To protect participants' confidentiality, all transcriptions were anonymised using the pseudonyms chosen by the participants. Identifiable information, such as names and locations, was replaced with pseudonyms or omitted from the transcripts.

[3] https://www.amberscript.com/

[4] https://transkriptor.com/

The experience with two AI-supported transcription platforms highlighted the importance of testing multiple options before purchasing a subscription that may not meet the researchers' needs. When looking for an alternative platform, researching user reviews and testimonials provided valuable insights into the software's effectiveness in real-world applications. The probable platforms were then evaluated based on transcription accuracy and efficiency, particularly in handling diverse speech patterns, accents, and background noise. This was done by utilising free trials and uploading sample audio files. Overall, a thorough evaluation of the transcription software can avoid additional costs and long transcription times while ensuring high-quality transcripts.

2.3.2 Coding

A Structuring Qualitative Content Analysis after Kuckartz and Rädiker (2023) was conducted using the qualitative data analysis software Atlas.ti[5], which supports the assignment of codes to significant segments of text relevant to the research questions. Through the adaptation of the Structuring Qualitative Content Analysis, farmers' statements can be categorised to compare and analyse relationships between designated codes. The coding process followed an abductive approach, combining deductive and inductive coding methods (Kuckartz and Rädiker 2023). Kuckartz and Rädiker (2023) highlight that deductive coding involves using pre-existing codes, which in this case were derived from the theoretical framework, the interview guide, and the researcher's recollection of the interviews. In contrast, inductive coding allows new codes to emerge directly from the transcriptions, enriching the data with more details. The codes were organised into a category system, including thematic "main categories" corresponding to the sub-research questions. This system comprised broad "main categories" that were further divided into more detailed codes. The main categories and codes were continuously revised throughout the coding process by renaming, combining, and refining them to ensure clarity and coherence (Kuckartz and Rädiker 2023). A separate codebook was created for each underlying research question, including main categories, codes and definitions, making sure the interview information was coded consistently. The categories, codes, and corresponding definitions used to code the interviews can be found in Appendices G to J.

Although the interview was divided into two main foci (see Section 2.2), the entire transcripts were thoroughly reviewed during the coding process. This was necessary because the farmers provided relevant information throughout the interviews that addressed the research question. Additionally, particularly descriptive quotes were saved as "In Vivo" codes and organised into the corresponding categories during the coding process to simplify the later analysis. After completing each interview, it was ensured that all sub-research questions could be addressed with the assigned codes by verifying that there were codes for each main category. To guarantee the validity of the data for further analysis, after coding all of the interviews, each main category and code were reviewed to ensure that the coded text segments were correctly sorted.

2.3.3 Data Classification

The farmers' beliefs about the factors influencing animal welfare and the opportunities and barriers affecting their interactions with pigs could be addressed straightforwardly from the interview transcripts. However, answering the other underlying research questions proved to be more challenging. To improve

[5] https://atlasti.com/.

the analysis of the data and gain insights into farmers' interactions and attachments with their pigs, as well as to understand farmers' perspectives on their relationships with their animals, the information provided by the farmers was classified into distinct levels. The classification aimed at enhancing the understanding of their views and behaviours, thereby facilitating a more nuanced analysis of the findings. Due to the varying number of participants in interviews, the analysis focused on classifying the farms rather than the farmers. This enabled a detailed analysis and comparison of perspectives on relationships with fattening pigs.

Each level consists of individual codes, for example, to indicate how attached farmers are to their animals. The codes were assigned to each interview in the program Atlas.ti and then exported as a "Code Co-occurrence Table", which provided valuable insights into the main concerns and viewpoints of the farmers. Each farm was then assigned a specific level based on whether or not they addressed a particular code, instead of how many times the individual codes were mentioned.

In cases where conflicting statements were made, assigning a clear level to the farms was difficult. In these cases, both the frequency of each code and the specific language used in the original coded text segments were reviewed. This process allowed for the most appropriate assignment of the farms to their levels and ensured that each farm was accurately categorised and that no significant information was overlooked. In instances where differing opinions emerged during the interviews with multiple farmers, farmers were sometimes asked to select one opinion to represent their collective views. Alternatively, the farm was classified to align with the perspective of the farmer who was more dominant in the discussion and involved in the farm. Typically, this was the farmer who spoke more frequently or exhibited greater engagement. This approach helped to ensure that a single, representative viewpoint was coded for each farm based on the interviews conducted.

Once all the farms had been assigned to their appropriate levels, commonalities as well as differences between and within the animal welfare categories (TW100/TW60) were identified. Further information regarding the criteria employed to categorise farms into specific levels is provided in the following sections. Additionally, tables detailing the codes corresponding to each level can be found in Appendices H and I.

Interaction Level

Farmers' interactions with their pigs significantly influence the nature of their relationships (see Section 1.3). Therefore, the interaction levels are designed to provide insights into the tangible actions that shape the Human-Animal relationships between farmers and their fattening pigs. These levels help determine whether farmers engage in negative, basic, or enriched interactions with their animals.

As described by Hemsworth and Coleman (2011) relationships are influenced by visual, physical, auditory and olfactory interactions. However, since the farmers did not mention olfactory interactions, the interaction levels only include codes reflecting the physical, verbal, and visual interactions, as described by the farmers during the interviews. Each level is associated with corresponding codes, which specify the interaction levels (see Appendix H).

The basic interactions include codes such as routine handling and are regarded as the foundational level of interaction. This means that additional positive interactions, such as petting the pigs, lead to farmers being assigned to the Enriched Interaction level. Equally, negative interactions, such as rough handling or shouting at the animals, resulted in assigning them to the negative interaction level. However, it is important to note that not all codes in a level need to be assigned in an interview for a farm to be categorised into a specific interaction level.

Attachment Level

The attachment of farmers towards their pigs can be identified by looking at the farmers' beliefs and behaviours as well as the reactions of their pigs (see section 1.3.4). By creating a clear framework to explore the emotional connections between farmers and their pigs, the different attachment levels can be identified more effectively. Therefore, the attachment levels were assessed through six key factors based on Pol et al. (2021), Bock et al. (2007) and Wilkie (2005):

1. The **Emotional responses** consider farmers' feelings towards their pigs, from deep emotional attachment to neutral or detached attitudes.
2. **Animal recognition** examines whether farmers see their pigs as individuals or as a collective group.
3. **Utility** explores how farmers view their pigs, ranging from valued farm members to economic assets or production units.
4. The **motivation for interactions** explores why farmers engage with their pigs, ranging from emotional fulfilment to practical needs like productivity and efficiency.
5. The **interaction approach** describes the engagement between farmers and their fattening pigs, ranging from meaningful and frequent interactions to brief, functional exchanges.
6. **Animal reactions** to farmers range from trust and curiosity to cautious behaviour, depending on interaction style, thus reflecting the quality of their interactions.

Each factor related to farmers' attachment to their pigs has specific codes that indicate the three different levels of attachment: strong, moderate, and weak. The codes for each level can be found in Appendix I.

The weak attachment level signifies the lowest level of attachment, with interactions and behaviours being more functional and less emotionally engaged. The farmer prioritises economic outcomes over personal connections with the pigs. Additionally, the farmer prefers technological solutions in the barn, which leads to interactions that are driven by necessity rather than desire or pleasure. The fattening pig is stressed in the presence of the farmer and exhibits signs of fear.

The moderate attachment level indicates a medium level of attachment, where farmers recognise and respond to their animals' behaviours but do not form a strong emotional attachment. Therefore, while the farmer sees the pigs as commodities, the pigs are also seen as living beings and the farmer finds pleasure in their care. Interactions are, therefore, more frequent and motivated by both practical needs and emerging personal connections. In the presence of the farmer, the fattening pigs are cautious but may relax over time.

In contrast, the strong attachment level represents the highest degree of attachment, characterised by farmers deeply engaging with their animals, forming strong emotional attachment, and prioritising their individual needs. Farmers who are strongly attached to their animals, therefore, exhibit signs of interactions driven by their affection and compassion towards their animals. Therefore, the farmers' interactions are rooted in personal fulfilment and deep emotional attachment with their pigs. The fattening pigs react calmly and actively seek interaction with the farmer.

Initially, a farmer is assigned a level for each factor based on the coded interview segments. The codes for the highest attachment level mentioned by the farmer(s) determined their assigned level for that factor. For example, if a farmer shows both negative and strong attachment indicators, the strong indicators take precedence in defining their overall level for that factor.

However, discrepancies arose due to contradictions in the assigned codes, leading to misalignments in the assigned levels. To address this issue, it was established that a farmer must fulfil at least four out of six

underlying factors to be classified into a specific level. This threshold was set to ensure that the levels accurately reflected the farmers' attachment to their animals.

In cases where an initial attachment level assignment was not possible due to not reaching the threshold, a more detailed analysis was done. This was done by verifying the codes that appeared inconsistent with the farmers' attachment level through reviewing the original coded segments to identify any potential misinterpretations or overlooked details. If this initial review did not allow a satisfactory result, a thorough examination of all codes regarding the attachment levels was conducted. This systematic approach aimed to ensure that every aspect of a farmer's practices and beliefs was accurately represented in their assigned level.

Relationship Dynamics

To analyse the relationship dynamics between farmers and their fattening pigs, farmers' awareness of the reciprocal relationship with their pigs and the importance they place on this relationship was identified in the interviews. This was done through the categorisation of the coded segments. The categorisation was based on predefined criteria corresponding to three levels of importance (Important, Useful, and Unimportant) and three levels of awareness (Unaware, Partially Aware, and Fully Aware).

The analysis included the farmers' perspectives on their relationships with their pigs, which were categorised based on the level of importance they assigned to these relationships:

- **Important:** Farmers indicated that the relationship with their pigs is central to their management decisions. These farmers prioritise relationship-building, invest time in nurturing relationships, and recognise the impact of the relationship on animal welfare and productivity.
- **Useful:** Farmers acknowledged the relationship with their pigs as beneficial for the efficiency of farming practices. These farmers recognise the practical advantages of having a good relationship with their pigs but do not necessarily prioritise relationship-building to the same extent as those in the "Important" category.
- **Unimportant:** Farmers indicated that the relationship with their pigs does not play a significant role in their farming practices. These farmers do not allow their relationship to influence their management decisions and do not believe it effects animal welfare.

Additionally, farmers' awareness of the reciprocal relationship between their actions and the pigs' behaviour was assessed based on literature by Hemsworth and Coleman (2011):

- **Fully Aware**: Farmers consistently demonstrated a deep understanding of the reciprocal relationship and regularly adjusted their behaviour to enhance the pigs' well-being. The farmers' responses included detailed accounts of how they monitored and constantly adapted their interactions to the pigs' reactions to ensure their comfort and welfare.
- **Partially Aware:** Farmers exhibited some awareness of the mutual influence and occasionally adjusted their behaviour based on observations of the pigs' behaviour. The farmers' responses included singular events where they adapted their approach when noticing changes in the pigs' behaviour, but the awareness was not consistently demonstrated.
- **Unaware:** Farmers did not recognise or mention the mutual influence between their actions and the pigs' behaviour. Their responses typically focused on routine tasks such as feeding, cleaning, and health checks without acknowledging how these actions affect the pigs.

3. Results

3.1 Which factors do farmers with animal welfare-promoting systems consider important to ensure a “good life” for fattening pigs?

The boxplots in Figure 9 illustrate the rankings provided by farmers regarding the predefined factors assumed to influence animal welfare, as derived from the semi-quantitative element. Due to missing data, the interview with the “Strohschwein” (TW60) has been excluded from this analysis.

Regardless of the assigned animal welfare category, the farmers identified “a farmer with a strong affinity for animals” and “space per animal” as the most important factors affecting their animals' welfare. Furthermore, factors such as a “bedded lying area” and “tail docking” received a differing valuation between the farmers in the two animal welfare categories (TW100 and TW60). In addition to the provided factors in the semi-quantitative exercise, farmers added factors in the field of “other factors”, which, in their opinion, influence a “good animal welfare” for their animals. The box plot indicates that, particularly, TW60 farmers identified “other factors”. In contrast, only a few individual farmers from the TW100 group identified “other factors” essential for ensuring a “good animal welfare” for their animals.

Generally, there is greater variability in responses by farmers in the TW60 category than in the TW100 animal welfare category. In contrast, the TW100 farmers show less variability, reflecting a higher consistency in ranking the animal welfare factors. Additionally, TW100 farmers ranked factors such as bedding and undocked tails higher than the TW60 farmers.

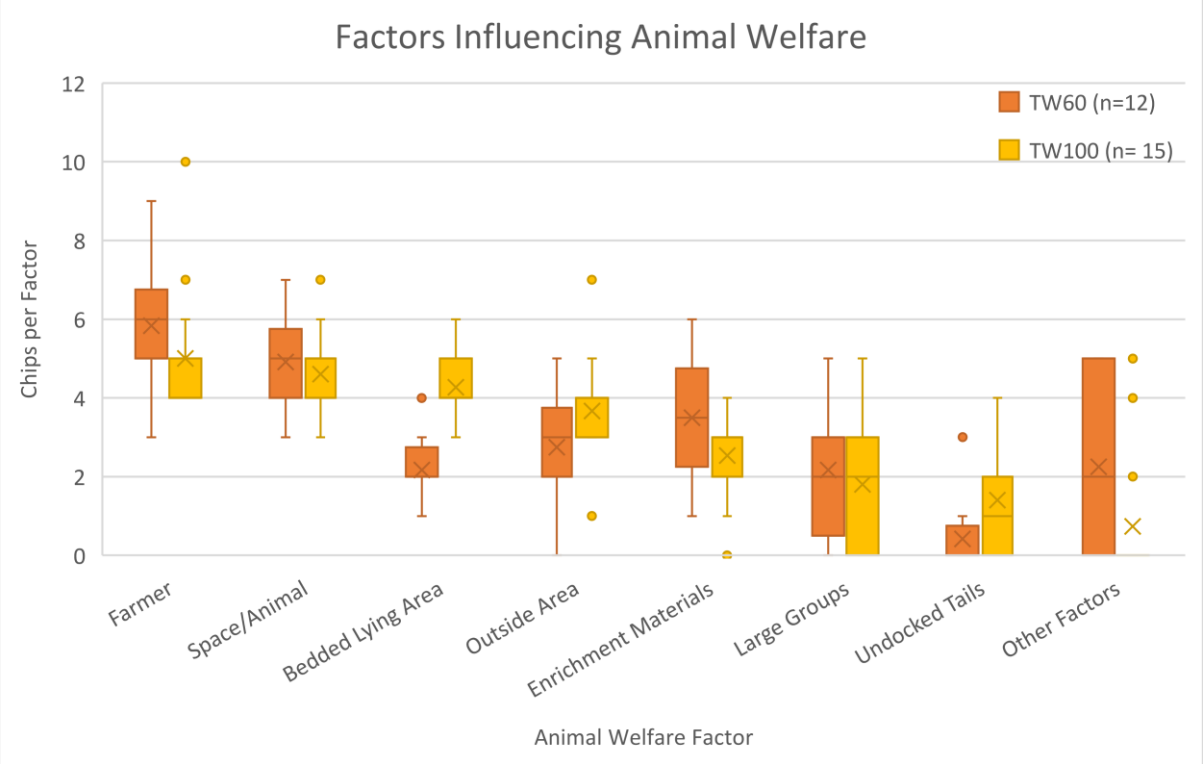

Figure 9: Ranking of Animal Welfare Factors according to Animal Welfare Categories (TW60; TW100)

In the underlying sections, a detailed description of the individual factors, supported by quotes, allows a thorough understanding of each factor within and between the animal welfare categories. Additionally, Appendix K offers detailed information on the importance of the factors per individual farm.

A Farmer with a Strong Affinity for Animals

Farmers highlighted that the care and management provided by the farmer are more significant than external conditions, such as housing systems. One farmer concisely explained that:

> *"Whether you have nice animals does not depend on the housing system, but on how you run the barn." („Ob du schöne Tiere hast, das hängt nicht vom Stallsystem ab, sondern wie du den Stall führst.") (Saubauer, 2024, 18:16).*

Even though the farmers view the housing systems as essential for the animal welfare of their animals, they are aware that the welfare outcomes are also shaped by the dedication and attention of the farmer.

This factor has the highest median of all the factors in both animal welfare categories (see Figure 9). However, TW60 farmers assigned a slightly higher median ranking (6 chips) to the farmer's affinity for animals than TW100 farmers. However, a wide range of 3–9 chips suggests that while some farmers strongly associate this trait with enhanced animal welfare, others deem it less crucial compared to other factors. In contrast, TW100 farmers ranked this factor slightly lower, with a median of 4 chips. Even though there are two outliers, with 7 and 10 chips, the narrower range of the TW100 farmers compared to the TW60 farmers' chips, however, shows a greater consensus in this category.

Increased Space per Animal

Many farmers emphasised that providing more space per animal is essential for promoting animal welfare, as it directly contributes to their pigs' well-being and proper care. Both TW60 and TW100 farmers recognised the significance of increased space per animal, with similar median rankings of 5 chips. The distribution of chips is also comparable (TW100: 3–6 chips; TW60: 3–7 chips). The variability in the quartiles and range indicates slightly differing opinions, with some farmers strongly prioritising this factor while others view alternative welfare measures as more critical.

Farmers who advocate for more space argue that current standards are inadequate for humane animal care. One farmer passionately stated:

> *"[...] 0.7 square meters, that's not animal husbandry, I think. [...] That's not animal husbandry, that's slavery." („[…] 0,7 Quadratmeter, das ist keine Tierhaltung, finde ich. […] Das ist keine Tierhaltung, das ist Sklavenhaltung.") (Borsti, 2024, 12:06).*

This underscores the belief that insufficient space is incompatible with proper animal welfare.

Bedded Lying Area

A bedded lying area is perceived differently in the two animal welfare categories, since the TW100 farmers ranked this animal welfare category higher than the TW60 farmers (TW100: 4 Chips; TW60: 2 Chips). Therefore, while the TW100 farmers viewed the bedded laying area as highly important for animal welfare, the TW60 farmers viewed an outside area and diverse and varied enrichment materials as more important.

During the interviews, farmers highlighted that the bedded area allows visible joy and natural behaviours in pigs. Farmers observed pigs exhibiting playful behaviours, comparing them with children playing with straw:

> *"It's actually like children, they are playing in the straw, and it already looks like they're enjoying it" („[D]as ist eigentlich wie Kinder, die spielen da im Stroh, und das sieht schon so aus, als hätten sie Freude an dem Ganzen") (Elias, 2024, 16:23).*

Straw also enables pigs to express natural behaviours like nest-building, as described by another farmer:

“I see that as a sign that they want to engage with it, and that's often quite funny. Then they take a mouthful and go for a walk with it. Like a mother sow when she builds a nest. You see that the instinct is actually there from the animals” (“Das sehe ich als Zeichen, dass sie sich mit dem beschäftigen wollen, und das ist oft auch ganz lustig. Dann nehmen sie einen Mund Voll und gehen spazieren damit. Wie eine Muttersau, wenn sie ein Nest baut. Du siehst das der Instinkt eigentlich da ist von den Tieren“) (Sauwohl, 2024, 19:29).

Straw is considered the most effective enrichment material in bedded systems. One farmer explained that:

“They engage with the straw, so that anything else hanging in there is not really accepted. [...] But the biggest thing that will always have an effect is simply when there's straw in there.” („Sie beschäftigen sich mit dem Stroh, so dass eigentlich alles, was anders drinhängt, nicht so richtig angenommen wird. […] Aber eigentlich das größte, was halt immer wirken wird, ist einfach, wenn ein Stroh drin ist.“) (Luisa, 2024, 16:34).

Farmers noted that straw provides continuous engagement, making it the preferred enrichment material in pens.

Farmers also ascribed additional health benefits to the bedded area. They highlighted its role in providing roughage and aiding in the recovery of sick pigs. One farmer explained:

“I could imagine [...] that they can choose for themselves if they need more crude fiber, that they can then also ingest it.” („Ich könnte es mir vorstellen, […] dass sie es sich dann selber auch aussuchen können, wenn sie mehr Rohfaser brauchen, dass sie das dann auch aufnehmen können.“) (J, 2024, 14:21).

Another farmer added that:

“[W]hen you put the sick pigs on straw, they just get better more easily than if you just have rubber mats [...].” („[W]enn du die kranken Schweine auf Stroh tust, werden sie einfach wieder leichter fit, als wenn du einfach Gummimatten hast […].“) (Elias, 2024, 22:00).

The comfort factor of straw was also emphasised. One farmer remarked:

“Well, I think I would also feel more comfortable lying on straw or playing with straw than if I had to lie or live or sleep in a slatted, normal barn.” („Also ich würde mich da auch wohl fühlen, glaube ich, wenn ich auf Stroh liege, oder mit Stroh spielen kann, als wenn ich in einem spalten, normalen Stall liegen oder wohnen müsste oder schlafen müsste.“) (Luisa, 2024, 19:30).

This is also recognised by a TW60 farmer, who acknowledged:

“[...] Straw is of course certainly a comfort factor.” (“[…] Stroh ist natürlich sicher ein Wohlfühlfaktor.“) (Eduard, 2024, 16:25).

However, especially TW60 farmers noted that not all pigs exclusively favour straw. One farmer pointed out that:

“But a pig lies on the slatted floor, even though it could lie in the straw. So pigs are just as individual as humans.” (“Aber es liegt genauso ein Schwein am Spaltenboden, obwohl es im Stroh liegen könnte. Also Schweine sind genauso individuell wie die Menschen.”) (Borsti, 2024, 33:22).

This highlights that while bedded straw is widely valued, individual preferences among pigs can influence its perceived importance.

Outside Area

The outdoor area was rated slightly higher by TW100 farmers, who had a median score of 4 chips (with a range of 3 to 5 chips), compared to TW60 farmers, who had a median score of 3 chips (with a range of 1 to 5 chips). The narrower range of scores among TW100 farmers indicates that they agree more on the importance of outdoor access than TW60 farmers. In contrast, the wider range of rankings for TW60 suggests a significant variability among individuals regarding the importance of having an outside area.

During the interview, both TW60 and TW100 farmers highlighted the fresh air and observed that pigs make consistent use of outdoor areas, regardless of weather:

> *"The outdoor area is always used [...]. You can do a lot technically to ensure that the air quality in there is good, but you will never be able to offer the same quality as in the outdoor area, and on the other hand, the natural outdoor climate stimuli. So, when I think back to last winter [...] they were outside, they had ringing red ears, the snout..., so completely, where you think that must hurt, but that was obviously a real experience for the pigs." ("Der Außenbereich wird immer genutzt […]. Man kann technisch sehr, sehr viel leisten, dass die Luftqualität da drin passt, aber man wird es nie in der Qualität anbieten können, wie es im Auslaufbereich ist, und zum anderen die natürlichen Außenklimareize. Also wenn ich zurückdenke an den vergangenen Winter […] die waren draußen, die haben klirr-rote Ohren gehabt, der Rüssel..., also komplett, wo man denkt, das muss ja weh tun, aber das war für die Schweine offensichtlich ein richtiges Erlebnis.") (H, 2024, 32:40).*

Additionally, the fresh air is highlighted as significantly better than indoor air regarding the ammonia levels:

> *"Of course there is far less ammonia outside[...]" („Vom Ammoniak her ist draußen natürlich weit weniger […]." (Fendt, 2024, 33:38).*

Additionally, the ability for pigs to choose whether to be indoors or outdoors is widely valued, as it allows them to experience fresh air and different weather conditions. One farmer remarked:

> *"So basically they are outside or inside as they wish, they can just choose, and I think that's really great" („Also im Grunde sind sie ja draußen oder drinnen, wie sie wollen, sie können es sich einfach aussuchen, und das finde ich halt schon mal echt super") (Mrs. Tierfreunde, 2024, 28:45).*

Diverse, Varied Enrichment Materials

The differing medians show that TW60 farmers (median: 4) regard diverse and varied enrichment materials as more important than TW100 farmers (median: 3). However, TW60 farmers presented a larger variability (Range: 1–6 chips) than TW100 farmers (Range: 1–4 chips), implying a broader spectrum of opinions among TW60 farmers regarding the necessity and effectiveness of varied enrichment materials.

Many farmers emphasised that enrichment plays a crucial role in preventing and addressing tail-biting issues. As one farmer noted:

> *"If anything is wrong, you need to take the time right away and either catch the biter out or take action or provide enrichment." ("Wenn irgendwas ist, musst du dir sofort die Zeit nehmen und entweder den Beißer rausfangen oder Maßnahmen oder Beschäftigung bieten.") (Antonia, 2024, 16:59).*

This reflects the value of prompt intervention using enrichment materials to stop tail biting.

Others highlighted the importance of offering a variety of enrichment materials to keep pigs mentally stimulated and engaged. One farmer explained:

> *"Well, I always try to make sure they have a really wide range of materials. On the one hand, there's straw bedding [...] pellet machines, then they have licking stones, then they have straw racks, then they have feed chains, so there really is a great variety, and it's all used." („Also, ich bin immer bemüht, dass die wirklich eine große Auswahl an Materialien haben. Zum einen gibt's Stroheinstreu […] Pelletautomaten, dann haben die Lecksteine, dann haben die Strohraufen, dann haben die Futterketten, also wirklich eine große Vielfalt, und das wird alles benutzt.") (H, 2024, 32:10).*

This variety allows pigs to explore and interact naturally with their environment. Enrichment also enables pigs to exhibit natural behaviours, such as rooting and playing. One farmer compared the pigs' need for enrichment to a human need for stimulation:

> *"I can confine someone to a room [...] that only has 2x2 meters. He would complain too. If I let him out into the wilderness, then he can move around and rummage around or do whatever he wants." ("Ich kann jetzt einen Menschen in ein Zimmer sperren, […] das hat nur 2x2 m. Der würde sich auch beschweren. Wenn ich den in die Wildnis raus lass, dann kann er sich bewegen und rumwühlen, oder was er tun will.") (Borsti, 2024, 18:06).*

This underscores the importance of enrichment in meeting pigs' natural behavioural needs.

Larger Groups to Allow Social Interactions Between Pigs

Social interaction through larger group housing was ranked similarly in both TW60 and TW100 animal welfare groups (median: 2 chips), but it was given less importance than other factors. However, this factor has a wide range of 1-5 chips in both animal welfare categories, indicating a diversity of opinions, from those recognising the benefits of larger groups to those viewing them as of limited importance.

A common view among farmers is that maintaining a minimum group size is necessary to meet pigs' social needs, but larger groups are not always deemed essential for welfare. As one farmer explained, smaller groups can still allow pigs to interact while offering practical advantages:

> *"I think there should be at least two so that they can communicate with each other, but it doesn't have to be 20. [...] [F]or animal welfare, I don't think that would be so relevant." ("ich glaube, es sollten mindestens zwei sein, dass sie dann auch miteinander kommunizieren können, aber es müssen auch nicht 20 sein. […] [F]ür das Tierwohl finde ich nicht, dass das so relevant wäre.") (Saubauer0815, 2024, 23:30).*

This suggests a belief that small groups can satisfy pigs' social needs without compromising welfare. Similarly, others argue that smaller groups support social behaviour while being easier to manage, as one farmer noted:

> *"[...] even if social interaction between the animals is advantageous, smaller groups are easier to handle." ("[…] auch wenn jetzt das soziale zwischen den einzelnen Schweinen von mir aus vorteilhaft ist. Eben kleinere Gruppen sind leichter zu händeln.") (Nowi, 2024, 01:02:17).*

Concerns about the challenges of larger groups are also prevalent, particularly regarding weaker pigs suffering harassment and reduced access to food. One farmer described how social hierarchies in larger groups can be disadvantageous for certain pigs:

> *"Just because if you have 50 together, for example, there are six others, where the others make sure they don't come to the feeder that often." ("Eben, weil wenn man 50 zum Beispiel zusammen hat, da sind sechs, da schauen die anderen, dass die jetzt nicht so oft zum Futterautomaten kommen.") (Saubauer, 2024, 07:04).*

However, some farmers also believe that pigs enjoy larger groups, which are perceived as preferable and more comfortable for the pigs. One farmer remarked:

> *„But purely from the feeling and from the visual point of view, they do like it when a larger group is together" („Aber rein vom Gefühl her und vom optischen her mögen sie das schon, wenn durchaus eine größere Gruppe beieinander ist.") (Moser Michael, 2024, 01:01:25).*

This perspective highlights the potential advantages of larger groups in terms of social dynamics and animal comfort.

These findings reveal the trade-offs between facilitating social interactions, ensuring ease of management, and addressing welfare concerns. While larger groups may offer perceived benefits in terms of comfort and group dynamics, smaller groups are often favoured for practicality and the well-being of individual pigs.

Undocked Tails

The factor of undocked tails received the lowest median ranking (1 chip) of the predefined animal welfare categories in both groups. Therefore, farmers regard tail docking as the least critical factor influencing animal welfare, compared to other factors.

However, the TW100 farmers showed more variability, with 1–4 chips in their answers compared to TW60, where the majority valued this factor with 0–1 chips (outlier: 3 Chips). This variability in the boxplot shows that farmers' opinions on tail docking are divided. The wide range of this factor emphasises the differing perspectives among TW100 farmers regarding the impact of tail docking, highlighting the ongoing debate surrounding its significance for animal welfare.

Some farmers argue that docking tails benefits animal welfare, as it prevents biting and subsequent injuries:

> *"[...], so I think it's crueller to animals if you oblige everyone not to dock and then it doesn't work. It's certainly not animal welfare then. It's better if the farms dock, in my opinion" ("[…], also ich glaube es ist mehr Tierquälerei, wenn man alle dazu verpflichtet, dass alle unkupiert sein müssen und das aber dann nicht funktioniert. Es ist sicher kein Tierwohl dann. Es ist dann besser, wenn die Betriebe kupieren, meiner Meinung nach.") (Antonia, 2024, 40:58).*

On the other hand, some farmers emphasise that the tail's condition is a reliable indicator of animal welfare and reflects the pigs' quality of life:

> *"[A]lone by the positioning of the tail, one can say, whether they are doing alright or not [...]." („[A]lleine an der Schwanzstellung, kann man sagen, ob es ihnen gut geht oder nicht […].") (Bertl, 2024, 20:57)*

Other Animal Welfare Factors

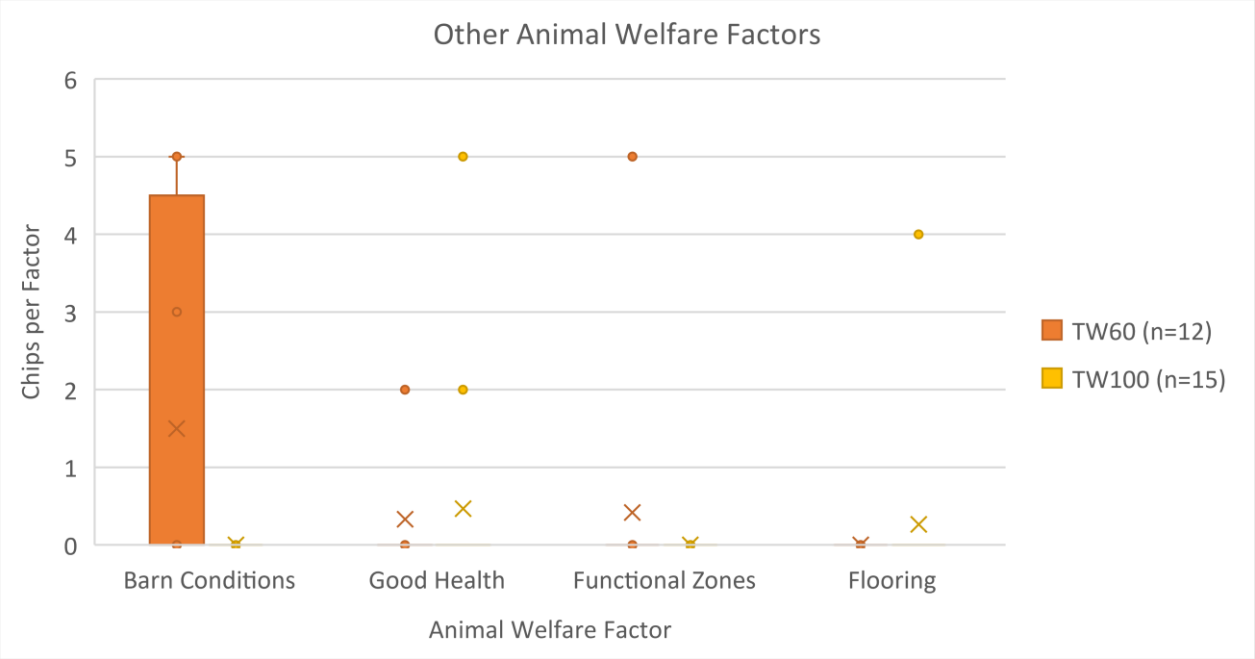

Figure 10: Other Animal Welfare Factors

Figure 10 shows the other animal welfare factors identified by farmers in the semi-qualitative analysis. This figure highlights that the most significant factor mentioned by the farmers is the influence of barn conditions such as air quality, temperature and light. While multiple farmers considered barn conditions important, individual farmers deemed the other additional animal welfare factors important.

Air quality was highlighted as critical, given that pigs breathe the air in the barn continuously. As one farmer stated:

> *"[...] they have to breathe in the air all day and if it's bad or has ammonia in it, then that's relatively significant, I think" („[…] die müssen die Luft den ganzen Tag einatmen und wenn die schlecht ist oder Ammoniak ist, dann ist das mal schon relativ hoch zu bewerten, denke ich.") (Schweinehotel, 2024, 43:20).*

Furthermore, it was noted that pigs housed in barns with variable temperatures tend to develop stronger immune systems than those kept in constantly heated environments, making the careful management of seasonal transitions, especially in autumn, a crucial aspect of maintaining welfare. Therefore, maintaining the right balance between fresh air and warmth was seen as vital, as one farmer explained:

> *"The pigs' need to strengthen their immune system more" ("Die Schweine müssen das Immunsystem stärker aufbauen […].") (Bichlbau, 2024, 35:32).*

Adequate lighting was also deemed essential, with farmers pointing out that sufficient light helps prevent stress and winter depression:

> *"Light is really important! [...]. I think winter depression is the same for pigs." ("Licht, ganz wichtig! […]. Winterdepression, gibt es bei den Schweinen finde ich genauso.") (Schweineparadies, 2024, 30:10)*

In addition to the barn conditions, one TW100 farmer highlighted that different **flooring** in the barn significantly influences animal welfare, by assigning 4 chips to this category. The farmer Antonia highlights that:

“It looks much nicer, [...] but the problem is in summer, they can't cool down anywhere and then they lie down on the slats, that's the way it is. In winter, I would never like to lie on the floor, but when it's too hot, the floor is often quite pleasant because it cools you down” („Es schaut zwar viel schöner aus, […] aber das Problem ist im Sommer, sie können sich nirgends abkühlen und sie legen sich dann auf den Spalten, das ist so. Im Winter, da würde ich mich nie gerne auf den Boden legen, aber wenn es zu heiß ist, dann ist der Boden oft ganz angenehm, weil es einfach kühlt“) (Antonia, 2024, 40:58)

During the interviews, farmers emphasised that structured pens with designated **functional zones** enable pigs to satisfy their natural needs. One farmer mentioned:

“With the structure in the pen, the pig has the opportunity to meet its natural requirements. They can recognise the clean area and the dirty area within it.” (“durch […] Struktur in der Bucht, kriegt [das Schwein] ja erst die Möglichkeit, dass es den natürlichen Bedürfnissen nachkommt. Dass sie quasi den sauberen Bereich und den schmutzigen Bereich darin erkennen und so.“) (Schweineparadies, 2024, 03:37).

This highlights that establishing distinct zones for resting, feeding, and elimination supports the pigs’ natural behaviours, while improving the hygiene in the barn. However, it is noteworthy that only one farmer from the TW60 group considered establishing functional zones significant enough to include in the semi-qualitative exercise.

In addition to the semi-qualitative exercise, most farmers emphasised that a **calm environment** is crucial for the overall well-being of pigs during the interviews. One farmer noted:

“Psychologically, I feel that they are comfortable, they eat properly, and there is a calmness among them. It’s important that there isn’t constant unrest, which could lead to them injuring themselves.” (“[…] psychisch hat man das Gefühl, dass ich sie wohlfühlen, dass sie fressen gehen und untereinander Ruhe sein darf, also dass nicht ständig Unruhe drinnen ist, wo sie sich dann erst recht wieder weh tun.“ (Antonia, 2024, 21:50).

While the primary focus in the interview was on ensuring a “good life” for the pigs, some farmers highlighted that a “**good death**” is also an essential part of a “good life.” One farmer expressed concerns that transport and slaughter methods can undermine the devoted care provided on the farm:

“It doesn’t make much sense to ensure the pigs are well-cared for, only to have them loaded up and transported over long distances, then slaughtered in a way that causes them stress. The process may technically work, but it defeats the whole purpose.” („Es bringt ja jetzt nicht so viel, wenn man schaut, dass es den Schweinen gut geht und dann wird es verladen und ewig weit weggeführt und wird dann mit Gas betäubt, was nicht funktioniert. Also das funktioniert, aber dann sind sie gestresst, also das finde ich, verdirbt das Ganze dann wieder (Antonia, 2024, 01:19:54).

In addition to the factors influencing animal welfare, two individuals from each animal welfare category emphasised the importance of “**good health”** during the semi-qualitative exercise, which is an outcome of good animal welfare. “Good health” was consistently recognised as the cornerstone of animal welfare throughout the interviews. Farmers highlighted that the absence of disease is essential, stating that pigs flourish when they exhibit no symptoms, such as respiratory problems or diarrhoea. One farmer noted:

"For me, the animals are doing fine when they don’t visibly show signs of illness. That is the most important thing [...]." („bei mir geht es den Tieren gut, wenn die erstens mal offensichtlich keine Krankheiten anzeigen. Das ist das Allerwichtigste […].“) (H, 2024, 43:23),

highlighting that health is the first thing they observe upon entering the barn. One farmer of each animal welfare category emphasised that feed quality significantly affects the animals' health:

> *"If the feed is not good, then other things won't be good either. You'll probably have a sick animal somewhere" ("wenn das Futter nicht passt, passen dann andere Sachen auch nicht. Dann hast du wahrscheinlich irgendwo ein krankes Viech") (Nowi, 2024, 1:12:20).*

This underscores the importance of health as the first aspect they observe upon entering the barn.

3.2 What do farmers perceive as opportunities and barriers in animal welfare-promoting husbandry systems affecting the interactions with their fattening pigs?

During the interviews, more barriers were mentioned by the farmers than opportunities. The farmers highlighted time pressure, caused by high workloads, and the short rearing period, as well as the number of animals, as barriers limiting the direct contact between farmers and their pigs, while mechanisation and automated systems were described as further reducing the time spent in the barn.

The results of the interviews, illustrated in Figure 11, show that more TW60 farmers identify barriers within their farming systems compared to TW100 farmers. Specifically, TW60 farmers perceive time pressure, the duration animals spend on the farms, dust, and the mechanisation present in the barn, such as observation, feeding, and cleaning mechanisms, as more significant barriers. In contrast, TW100 farmers are more concerned about the barriers created by the number of animals on their farms than TW60 farmers are.

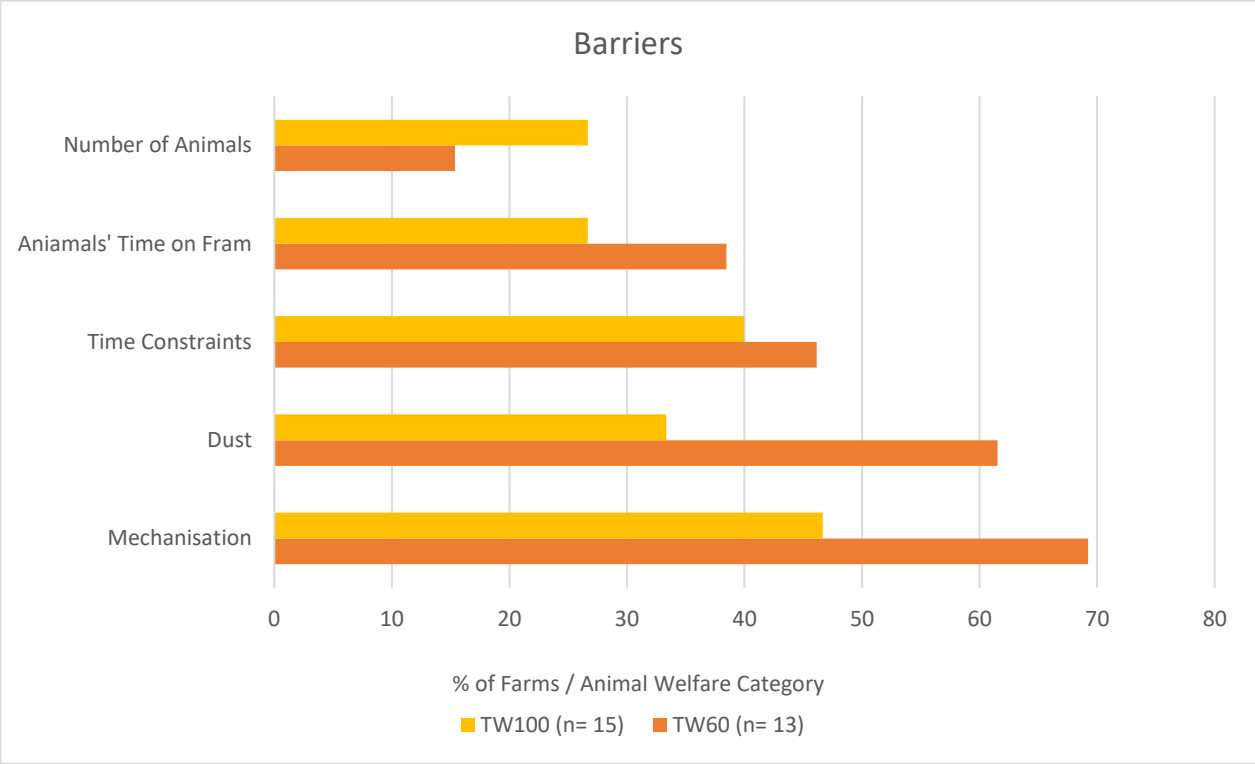

Figure 11: Barriers in Animal Welfare-Promoting Husbandry Systems affecting interactions between farmers and their fattening pigs, sorted by animal welfare category

The interviews revealed that animal welfare-promoting husbandry systems present various opportunities for interactions. Figure 12 indicates that TW100 and TW60 farmers share similar views on these

opportunities, with only minor differences in their mentions across the animal welfare categories. While all interviewed farmers mention the application of straw as the greatest opportunity for interaction, both groups also recognise that enrichment materials and an improved working environment can create opportunities for interactions with their animals.

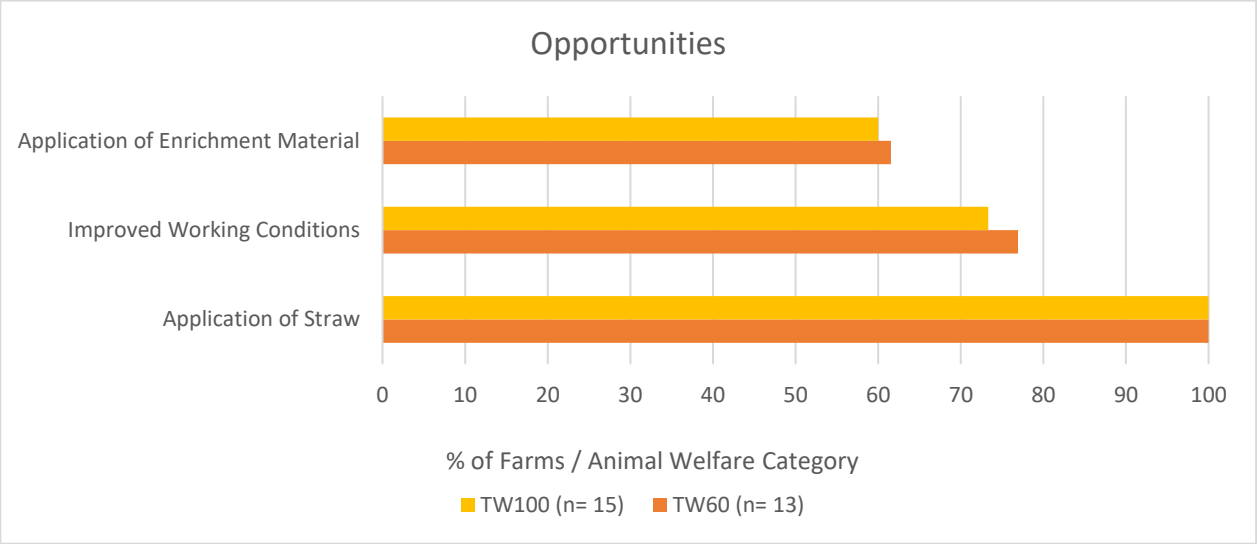

Figure 12: Opportunities in Animal Welfare-Promoting Husbandry Systems affecting interactions between farmers and their fattening pigs, sorted by animal welfare category

However, the barriers and opportunities cannot be as clearly separated as indicated in the figures above, since the farmers have differing opinions about the perceived barriers in their systems or have found solutions for them. Therefore, the following sections provide a detailed overview of the individual barriers and opportunities. Additionally, the results for each interview can be found in Appendix L.

Time Constraints

The time constraints due to the high workload are a significant barrier to direct interactions between farmers and their animals. Many farmers wish for more time to observe and interact with their pigs. However, daily responsibilities limit these opportunities. One farmer explained:

> *"[...] it would often be nice if you had more time to observe" („[…] oft wäre es schön, wenn man vielleicht auch mehr Zeit hätte, um zu beobachten") (Herbert Holzwohl, 2024, 02:48:50).*

Some farmers point out that the number of animals poses an additional barrier to individually interacting with their pigs, as they lack the time to do so. This sentiment is expressed not only by farmers with many animals, but also by those with fewer animals on the farm:

> *"[...] when you have 500 pigs, you don't remember [them] individually" ("[..] bei 500 Schweinen merkt man sich [die] nicht einzeln") (Pauli, 2024,03:29).*

Mechanisation

Mechanisation in animal welfare-promoting housing systems presents both barriers and opportunities for interactions between farmers and their pigs. On the one hand, advanced technologies, such as feeding computers, sensors, mechanical straw applicators, and video observation, reduce routine manual labour, which in turn means that farmers spend less time in the barn and, consequently, have fewer opportunities for direct interactions with their animals. On the one hand, these technologies are primarily employed to cope with high workloads. One farmer explained that mechanisation is an:

"[...] immense reduction in workload, [...] back then we still had to manually clean out the fattening pigs, nothing is cleaned out anymore, and feeding is also automatic. It's just a matter of putting in the bedding every day and checking the animals. The work is much easier to do on your own then [...]!" ("[…] immense Arbeitserleichterung,[…] damals haben wir bei den Mastschweinen auch noch händisch ausmisten [müssen], ausgemistet wird gar nichts mehr, und Füttern ist auch automatisch. Das ist einfach nur das Einstreu täglich reingeben und die Tierkontrolle. Die Arbeit ist viel leichter alleine dann zu stemmen[…]!") (Saubauer0815, 2024, 24:16).

While automation has significantly reduced routine labour, the necessity for the "human touch" remains critical for ensuring precision and optimal care. Even with many tasks now handled mechanically, direct manual observation is still essential for monitoring animal well-being. As one farmer noted:

"Yes, in the new barn with little work, animal observation is the most important thing." („Ja, bei dem neuen Stall mit wenig Arbeit, ist Tierbeobachtung das wichtigste.") (Beni Maier Jr., 2024, 00:39]).

The reduction in manual labour also creates opportunities by freeing up time for more specific observation. One farmer shared that:

"[F]or example with the feeder. They are fed five times a day and on the computer you can see straight away whether a box has been fed five times, then they are normally vital and healthy, if they have only been fed three times, it is immediately highlighted in yellow, no longer green. [...] [T]hen I have to take a closer look, because there's something going on if they're not eating enough." („[Z]um Beispiel mit der Fütterung. Die füttert fünfmal am Tag und am Computer sieht man das gleich, ob es jetzt eine Box eben fünf Mal gefüttert hat, dann sind die im Normalfall vital und gesund, wenn sie die nur dreimal gefüttert hat, ist das sofort gelb hinterlegt, nicht mehr grün. […] [D]ann muss ich mir das genau anschauen, weil da ist irgendwas los, wenn sie eben zu wenig fressen.") (Moser Michael, 2024, 00:37).

Therefore, with advanced monitoring systems, farmers can quickly identify and address issues in each pen, which is crucial for detecting health issues early and ensuring the pigs' well-being.

Despite these advantages, farmers stress that technology cannot fully replace humans:

"So I can do a lot with technology 80 % anyway, but it's nothing if the finishing touches are missing and only then can I be 100 % and only I can do that as a human being. No technology can do that, not even in the future with artificial intelligence. I think the human factor is very, very, very important and that will always be the case." („Also mit der Technik kann ich eh viel machen 80 %, aber das ist nichts, wenn der Feinschliff fehlt und erst dann kann ich 100 % sein und das kann nur ich als Mensch machen. Das kann man keine Technik auch nicht einmal in Zukunft mit der künstlichen Intelligenz. Da ist der Faktor Mensch, glaube ich, ganz ganz ganz wichtig und das wird immer so bleiben.") (Pauli, 2024, 37:20).

This observation highlights that, despite a reduction in barn time due to mechanisation, farmers must continue to engage directly with their animals to detect health issues and maintain high standards of care. Although some farmers take full advantage of the extra time available for closer observation, others may not fully utilise this opportunity.

Application of Straw

Straw management in animal welfare-promoting housing systems offers unique opportunities for direct interaction between farmers and pigs. In contrast to conventional fully slatted-floor systems, where

farmers usually enter the barn only briefly to perform checks, straw-based systems demand more frequent, hands-on involvement. One farmer highlighted this distinction, pointing out:

> *"And also with this cleaning out and spreading bedding. You're constantly in contact with the animal, which you don't have in a conventional barn with a fully slatted floor. People are simply strangers there, because they go in once a day, spend maybe two minutes in there and then they're gone again. Just to check that nothing is dead again." („Und auch so mit diesem Ausmisten und Einstreuen. Da bist du ständig in Kontakt mit dem Tier, das hast du in einem konventionellen Stall mit Vollspaltboden nicht. Da ist der Mensch einfach fremd, weil der geht da einmal am Tag hinein, ist vielleicht 2 Minuten da drinnen und dann ist er wieder weg. Einfach nur zum schauen, ob eh nichts tot ist.") (Schweineparadies, 2024, 55:08).*

This routine, whether it involves manually cleaning pens or applying fresh straw, ensures that farmers maintain close contact with their pigs. Although some cleaning tasks have been mechanised, farmers emphasise that not all processes can be fully automated. One respondent noted:

> *"Not everything can be solved mechanically or technically. You have to do a bit by hand again." („Es ist nicht alles mechanisch oder technisch lösbar. Du musst wieder, ein wenig mit der Hand machen.") (Sauwohl, 2024, 42:27).*

As a result of the need for manual labour, farmers experience increased animal contact. One farmer commented on the benefits of this manual work for fostering closer relationships:

> *"Of course you have a bit more animal contact, because there's more manual work involved, cleaning out manure and the like. It's clear that you somehow build up more animal contact than in a conventional barn." („Klar hast du ein bisschen mehr Tierkontakt, weil eben mehr manuelle Arbeit anfällt, eben mit Kot rausputzen oder dergleichen. Ist klar, dass du da irgendwie mehr Tierkontakt aufbaust, als in einem konventionellen Stall.") (A.N Jr., 2024, 38:31).*

Moreover, the process of straw application is highlighted as a key moment of interaction:

> *"But you actually communicate when you scatter straw, because we have to scatter straw every day - we do that by hand, with a pitchfork, so you have direct contact with the animals." („Aber du kommunizierst eigentlich wenn du Stroh einstreust, weil wir müssen jeden Tag Stroh nachstreuen das machen wir mit der Hand, mit der Gabel, da hast du den direkten Kontakt mit den Tieren.") (Big Daddy, 2024, 05:51).*

Therefore, while straw management requires significant labour, it simultaneously provides valuable opportunities for direct and repeated interactions between farmers and their pigs. This increased contact not only contributes to operational effectiveness but also to building a stronger human-animal relationship within animal welfare-promoting housing systems.

Application of Enrichment Materials

Applying enrichment materials offers another valuable opportunity for direct interactions between farmers and their pigs. While some farmers rely on fixed enrichment materials, which are permanently installed in the pens, a majority actively engage with the enrichment process, exploring different options to enhance the pigs' environment. Fixed enrichment ensures that pigs consistently have access to stimulating objects, yet it limits opportunities for active, daily engagement. One farmer described:

> *"[...] the 'Spieligel' [...] were designed so that you put them in the pen and then take them out again after two hours, and I'm not the 'Spieligel supervisor' who takes the 'Spieligel' out of the pens all day long. I just put them up." ("[…] die 'Spieligel' […] waren so angedacht, dass man die in die Box*

gibt und dann nach zwei Stunden wieder raus tut, und ich bin nicht der 'Spieligelbeauftragte', der den ganzen Tag die ‚Spieligel' aus den Boxen holt. Ich habe sie einfach aufgehängt.") (Saubauer, 2024, 37:10)

Therefore, in this system, the enrichment material is set up once and remains in place, which means that although the pigs can interact with the item, the farmer's role is largely passive once it is installed. This approach intends to find a balance between work efficiency and the animals' needs. In contrast, many farmers actively apply enrichment materials, which creates a dynamic opportunity for interaction. For instance, another farmer explained:

"[...] we have enrichment materials hanging inside, such as wood or we throw in pellets. You can see that they're already waiting for it and they know when we come with the shovel that something good is coming. So they like to eat the pellets. It keeps them busy and they get some crude fiber." ("[…] wir haben so Manipulationsgegenstände drinnen hängen, also Holz z.B. oder wir geben Pellets rein. Also du siehst das dann auch, die warten dann schon drauf, die wissen schon, wenn wir mit dem Schaufel kommen, da kommt was Gutes. Also die Pellets, die fressen sie dann gerne. Da sind sie beschäftigt, dann haben sie Rohfaser drinnen.") (Antonia, 2024, 08:23).

This active approach requires farmers to manually replace or modify the enrichment materials regularly. As a result, farmers are directly present during the enrichment process, providing an opportunity for interaction with the animals that helps farmers tailor the enrichment to the animals' changing needs.

Working Environment

Most farmers report that an improved working environment in animal welfare-promoting housing systems has made the barn a more inviting and pleasant workplace. They describe these barns as having better air quality, lighting, and overall atmosphere, also due to the improved animal welfare. One farmer shared that:

"[...] when the bedding is newly spread and you stand next to them and watch the pigs burrowing into the straw, making themselves a nest and jumping around, and you're really happy yourself. And then you stand there and watch, we didn't used to go into the barn during the day and watch the pigs." („[…] wenn frisch eingestreut ist und du stehst daneben und siehst, wie die Sauen, die wühlen sich ins Stroh rein, die machen sich ein Nest und hüpfen herum und du freust dich selber so richtig. Und dann stehst du dort und schaust zu, früher sind wir nicht in den Stall gegangen am Tag, und haben den Sauen zugeschaut.") (Mr. Glücksschwein, 2024, 07:45).

Nevertheless, while many farmers appreciate the improved environment, around half of the farmers also noted an increase in dust levels, primarily due to the use of straw, which can negatively affect both animal and human respiratory health. One farmer commented:

"[The] dust pollution is not necessarily healthy, neither for the animal nor for yourself. Fine dust, I don't know, I don't know what effect it will have on your lungs in 20 years' time" („[Die] Staubbelastung, ist nicht unbedingt gesund, weder fürs Tier noch für dich. Feinstaub, keine Ahnung, weiß ich nicht, wie sich das in 20 Jahren auf die Lunge auswirkt") (Nowi, 2024, 02:06:59).

Despite recognising this challenge, farmers remain confident that the overall improvements in the barn environment outweigh the dust-related issues, with several even investing in additional machinery to reduce dust.

3.3 Which Interaction Levels can be assigned to farmers with different animal welfare-promoting systems?

The analysis of the interactions between farmers and their fattening pigs in animal welfare housing systems revealed interaction levels ranging from enriched, basic and negative engagement. The **Basic interactions** are characterised by routine, systematic handling rather than showing affection, through enriched interactions. Farmers typically conduct daily checks by moving from pen to pen. As one respondent stated:

> *“Definitely, if you go in early in the morning, we always go into the pens, from pen to pen. That way I always have individual animal control.” (“Auf jeden Fall, wenn man in der Früh- gehen wir immer in die Buchten rein, von Bucht zu Bucht. Dadurch habe ich immer die Einzeltierkontrolle.”) (Lori, 2024, 02:46)*

Since there are no explicit physical interactions between the farmers and their animals in this category, the physical interactions are neutral. One farmer remarked:

> *„I only pet my children, but not my pigs, no.” ("Ich streichel nur meine Kinder, aber nicht die Schweine, nein.“) (Strohschwein, 2024, 07:34)*

while verbal cues tend to be utilitarian, using simple sounds. For example, one farmer describes that:

> *“So yes, whistling, or the classic noises you make when you want to shoo a pig away or ‘ksch kscht’, something like that, yes.” („Also ja, pfeifen, oder so halt klassische Geräusche die man macht, wenn man ein Schwein praktisch jetzt vertreiben will oder ja so 'ksch kscht' so in die Richtung, ja.“ (Schweinehotel, 2024, 08:53),*

or brief commands like:

> *“now go”, “do you have to stand there” or “move” ("jetzt geh", "muss das sein, dass du da stehst", "steh um" (H, 2024, 05:11).*

On the one hand, the farmers categorised in the **enriched interaction level** demonstrate active, affectionate interactions with their pigs, in addition to basic interactions. For example, one respondent noted:

> *“Yes, I do pet them. Because whenever I go to the barn, every pig that comes here gets stroked.” (“Ja! Ich streichle sie schon. Weil auch wenn ich in den Stall gehe, dann wird eigentlich jedes Schwein, das herkommt, das wird gestreichelt.“) (Saubauer0815, 2024, 04:29)*

which suggests that petting is integral to daily interaction. Additionally, conversation is a routine part of care. One interviewee explained:

> *“[...] Well, you do talk to them, you just talk like you normally do. If someone else were listening, they'd probably wonder ‘Who's he talking to in there - they're just animals?’ but you just talk to them normally - it's a habit.” („[…] also ja reden tut man schon mit denen, also du redest halt wie du normal redest. Wenn mal wer anders da zuhört, der wundert sich sicher auch "mit wem redet er da jetzt drinnen, das sind ja nur Tiere?" aber du redest halt normal mit denen das ist Gewohnheit.“) (Franz, 2024, 04:17)*

Another Farmer highlights that asking:

> *“How are you today?” or “all good?” ("Wie geht's euch heute?" oder "passt alles?) (Pauli, 2024, 02:29)*

is habitual.

On the other hand, in **the negative interaction level**, interaction is limited and may be rough compared to the basic interactions. For example, some farmers only enter the animal boxes on rare occasions, as illustrated by one who explained:

> *"That's not my daily routine. I'm only in the animal pens because there's a strange pig or when I have to catch one when I sell them, which can be twice until a pen is sold empty, or when I'm cleaning out or something, every two weeks. Otherwise, I'm not inside the animal pen." ("Das ist nicht meine tägliche Sache. In den Tierboxen bin ich nur, weil eben ein auffälliges Schwein ist oder wenn ich eben beim Verkaufen eins ausfangen muss, das geht auch zweimal, bis eine Box leer verkauft wird, oder beim Ausmisten oder so alle zwei Wochen. Ansonsten bin ich ja nicht in der Tierbox drinnen.") (Strohschwein, 2024, 04:43)*

In these settings, rough verbal cues and shouting are sometimes used, as described by a farmer:

> *"Oh yes, then they are scolded. But they don't really understand anyway [...]. So, if you scold them and get louder, then they look 'oops'." ("Oh ja, dann kriegen sie Schimpfe. Aber, ja, sie verstehen es eh nicht […]. Also, wenn du mal schimpfst und lauter wirst, dann schauen sie schon 'ups'." (Beni Maier Sr., 2024, 05:29)*

and another simply stated:

> *"I don't speak to my pigs, no." („Ich spreche nicht mit meinen Tieren, nein.") (Moser Michael, 2024, 09:29).*

In this interaction level, some farmers also resort to physically rough handling, with one noting:

> *"I'm out and about with a manure scraper, and you have to give them a little slap" ("Ich bin da dann mit so einem Schmutzschieber unterwegs, und da muss man denen einen kleinen Klapps geben") (J., 2024, 04:42)*

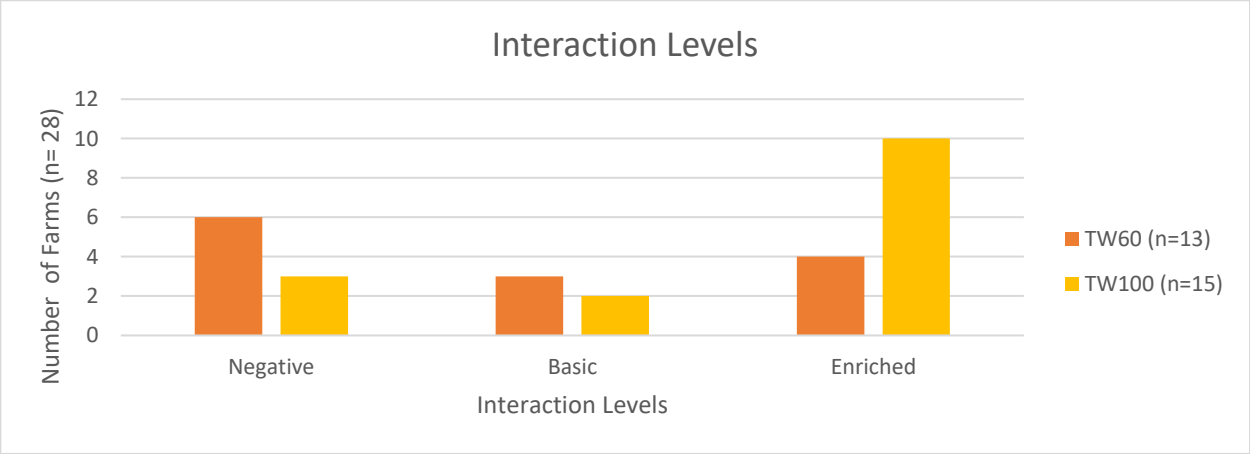

Figure 13: Interaction Levels

As shown in Figure 13, the majority of TW100 farmers practice enriched interactions, but some farms were allocated to the negative interaction level. Farmers of the TW60 category showed a less clear pattern, with almost half of the farmers engaging negatively with their animals. As all farm sizes are represented across the interaction levels, farm size does not appear to determine how farmers interact with their pigs. Additional information for each farm individually can be found in Appendix M.

3.4 Which Attachment Levels can be assigned to farmers with different animal welfare-promoting systems?

The results shown in the bar chart in Figure 14 indicate differences in attachment (weak, moderate, and strong) between farmers and their fattening pigs in TW60 and TW100 farms. At TW60, the majority of farmers were classified as having moderate attachment, while only a few farmers fell into the weak or strong attachment categories. In contrast, TW100 farmers exhibit moderate and strong attachment levels in equal proportions.

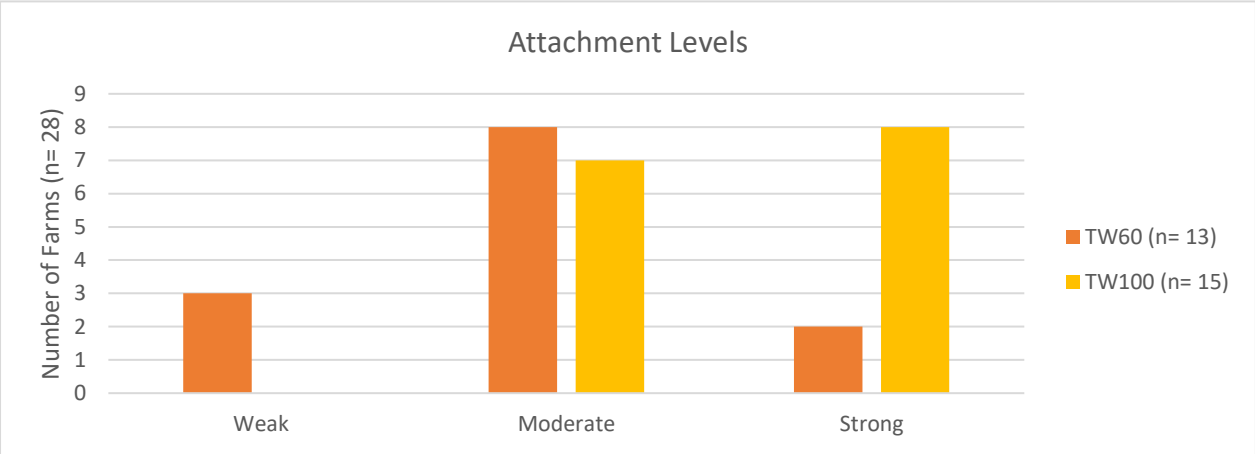

Figure 14: Attachment Levels

In general, most of the interviewed farmers could be categorised as having a moderate attachment to their animals. In this attachment level, practicality and emerging personal connections balanced each other. Farmers in this group recognised and responded to their pigs' behaviours while continuing to view them primarily as production units

Farmers in the TW60 category showed a wide distribution across all attachment levels. However, weak attachment could only be identified in the TW60 category. These farmers see their interactions as functional, have minimal emotional engagement and a limited focus on individual pigs' needs.

In contrast, farmers in the TW100 category were absent from the weak attachment level, indicating a higher baseline in the quality of farmer-pig relationships. This is emphasised as TW100 farmers were far more prevalent within the strong attachment level. These farmers displayed the strongest attachment, since they prioritised the individual needs of their pigs and engaged in affectionate, compassionate interactions, driven by personal fulfilment and care. Since fewer TW60 farmers could be categorised as having a strong attachment to their animals, this reflects a more reserved approach overall.

While the following paragraphs allow insights into the farmers' attachment levels through the presentation of direct quotes from the interviews, additional data for each farm and factor can be found in Appendix N.

The "**weak attachment**" level reflects the lowest degree of attachment between farmers and their fattening pigs and only includes a small group of the interviewed farmers. Farmers with weak attachment levels interact with their pigs primarily to address basic functional needs. These interactions are shaped by farmers prioritising efficiency, practicality, and productivity, with limited emotional involvement. The farmers' focus, therefore, lies on maintaining operational goals and meeting external expectations while keeping human-animal relationships at a professional and detached level.

Farmers with weak attachment levels are **motivated to interact** with their fattening pigs based on addressing basic, functional needs. It is driven by their prioritisation of easier handling, efficiency, farm image, and productivity. These interactions focus on practicality and maintaining operational goals. For instance, one farmer explains the focus on technical efficiency:

> *"The first point is the feeder, that it doesn't go over or that the quantity is always right. You have to check that every day. Water is important. In principle, that's it then." („Punkt eins ist der Futterautomat, dass der nicht übergeht oder dass immer die Menge passt. Das muss man jeden Tag schauen. Wasser ist wichtig. Im Prinzip war es das dann.") (Borsti, 2024, 00:06).*

Another highlights the connection between animal well-being and productivity:

> *"If your animals aren't doing well, you can only be miserable. First of all, it's expensive and you have a ton of work." („Geht es deinen Tieren nicht gut, kann es dir nur schlecht gehen. Erstens ist es teuer und du hast einen Haufen an Arbeit.") (Big Daddy, 2024, 12:12).*

A clean and presentable environment also plays a role, often tied to the farm's image. One farmer notes:

> *"if I already have [straw], I should see it and then we put it inside, because when I go into the stable I want to see it, or when I go in with someone..." („wenn ich schon [Stroh] mache, soll ich sehen und dann haben wir es in den Innenbereich verfrachtet, weil wenn ich in den Stall rein gehe will ich es sehen, oder wenn ich mit jemanden reingehe...") (Big Daddy, 2024, 17:21).*

Societal expectations further shape practices, as one farmer explains:

> *"And I have to be honest, I didn't build an animal welfare barn because I really wanted my pigs to be better off, but more out of pressure, out of social pressure, because people were saying 'Well, the way you're keeping them now is not species-appropriate. You have to change something!" („Und ich muss ehrlich sagen, ich habe jetzt nicht, weil ich unbedingt gewollt, dass es meinen Schweinen besser geht einen Tierwohlstall gebaut, sondern eher aus dem Druck her, aus dem gesellschaftlichen Druck heraus, dass es eben geheißen hat 'Naja, die Haltung, wie ihr das jetzt macht, die ist nicht artgerecht. Da müsst ihr mal was ändern!'.") (Moser Michael, 2024, 42:14).*

Farmers with a weak attachment to their animals perceive the **utility** of their pigs primarily as a means of generating profit. Hence, these farmers believe that ensuring their pigs' welfare is connected to enhanced productivity and profitability. One farmer underscores the relationship between animal welfare and economic outcomes:

> "*This is generally true in animal husbandry: you either want to do it or you don't want to do it. You should earn something. The animals should be well and the product should be accepted by the public" („Das gilt generell in der Tierhaltung: Entweder will man das machen oder man will es nicht machen. Man sollte dabei was verdienen. Den Viechern soll es gut gehen und das Produkt sollte halt angenommen werden von der Bevölkerung" (Borsti, 2024, 53:15).*

Another farmer stresses the importance of maintaining health to avoid additional costs and labour:

> *"Of course, you have to make sure that the animals are doing well, then the whole thing works economically. If the animals are not doing well, then the parameters you need, growth etc., health status, are not there." ("Man muss natürlich schauen, dass es den Tieren gut geht, dann läuft das Ganze auch wirtschaftlich. Wenn es eben den Tieren nicht gut geht, dann sind eben die Parameter, die man braucht, Zuwachs etc., Gesundheitsstatus nicht da." (Moser Michael, 2024, 22:53).*

Farmers in this category demonstrate neutrality and detachment in their **emotional responses** to their animals. Many avoid forming strong emotional attachments to prevent potential discomfort or complications. One farmer remarks:

> *"But, that [going to the bay] is such a major need - for me it's not. You see most of it anyway... so you're not going to start petting them, that's an exaggeration" („Aber, dass [in die Bucht gehen] so ein Megabedürfnis ist - für mich ist es nicht. Du siehst eh das meiste... also du fängst jetzt nicht zum Streicheln an, das ist übertrieben") (Big Daddy, 2024, 05:51)*

Even when faced with loss, they accept it as part of the process:

> *"[...] if someone dies due to a heart attack or something. Yes, these things aren't nice, but that's just part of it." ("[…] wenn irgendeine ausfällt durch irgendein Herzkasperl oder irgendwas. Ja das sind halt nicht so Sachen die dann nicht schön sind, aber das gehört einfach auch dazu.") (Borsti, 2024, 09:55)*

These responses demonstrate a deliberate distance in the farmer-animal relationships.

The **interaction approach** of these farmers is limited to basic, brief interactions and often relies on technological solutions to enhance efficiency. As one farmer explains:

> *"I'm not so interested in spending a lot of time in the barn. If I notice that they're healthy and I don't find anything unusual during my rounds, to be honest, I just quickly leave the barn again." („Ich habe so nicht so das große Interesse, dass ich extrem viel Zeit im Stall verbringe. Wenn ich merke, sie sind gesund, ich finde bei meinem Rundgang nichts, was auffällig ist, bin ich ehrlich gesagt schnell wieder weg, auch vom Stall.") (Moser Michael, 2024, 45:47)*

The farmer also highlights the role of technology in simplifying their work:

> *"I also like the fact that the technology works well in my barn. That's important, otherwise you have a ton of work." ("Mir gefällt auch, dass die Technik gut funktioniert bei mir. Das ist nämlich wichtig, sonst hat man viel Arbeit.") (Moser Michael, 2024, 37:21).*

These approaches underline the farmers' prioritisation of time and resource management.

The **recognition of individual animals** by these farmers is minimal and practical, framing pigs primarily as production units. One farmer remarks:

> *"They are fattened up and then sent away. They're only here for six months." ("Die werden fertig gemästet und kommen dann weg. Die sind ja dann nur ein halbes Jahr da.") (Borsti, 2024, 05:17)*

This statement underscores the functional dynamic between farmers and pigs.
The **reactions of the pigs** in this setting are described as reserved and cautious rather than fearful. While the pigs' basic needs are met, the nature of their interactions with farmers suggests an environment shaped by necessity rather than trust or comfort. This cautious behaviour reflects the overall reserved dynamic of these farmer-animal relationships.

Farmers with a "**moderate attachment**" to their pigs balance practical care with a growing sense of emotional connection. While their focus remains largely functional, many farmers express moments of joy and satisfaction derived from their interactions with the animals. As farmers highlight the importance of addressing the pigs' needs and ensuring their welfare, they acknowledge the value of caring for and the utility of their animals.

Farmers with a moderate attachment to their pigs find joy in their interactions and recognise the importance of their pigs' happiness. This **emotional** connection is significant, as farmers express

satisfaction in caring for their pigs. They take pleasure in ensuring the pigs are comfortable and healthy while also enjoying their behaviours. For example, one farmer shared the joy of watching their pigs engage in playful interactions:

> *"When we put straw in and they all run around with the straw and roll around in it, that's a lot of fun." ("wenn wir ihnen ein Stroh rein haut und die rennen alle umeinander mit dem Stroh und wälzen sich drinnen, das macht dann schon eine Freude." (Bertl, 2024, 46:50).*

These moments of connection illustrate the personal satisfaction derived from their care.

This emotional aspect also influences the **reasons why farmers interact** with their animals. Farmers in the moderate attachment category engage with their pigs to meet the animals' needs, such as providing a calm environment and opportunities to exhibit natural behaviours, while ensuring high animal welfare. These considerations reflect a balance between practical utility and care. One farmer describes the joy of observing natural pig behaviours:

> *"And the bedded lying areas, of course, it's nice when they run in, they plough, they dig, [...] simply because a pig likes to drive in and dig around." ("Und die eingestreuten Liegeflächen, natürlich ist es schön, wenn sie reinrennen, es pflügt, es wühlt, […] einfach, weil ein Schwein gerne hinein fährt und gerne herumwühlt." (Bichlbau, 2024, 35:24).*

Another farmer states that ensuring calmness during interactions is also valued:

> *"Yes, whistling when loading or moving. Just whistling, that calms [...] the animals. That they can simply be moved more calmly." ("Ja. Pfeifen beim Verladen oder beim Umsperren. Einfach pfeifen, das beruhigt […] die Tiere. Dass sie einfach ruhiger herumgetrieben werden können." (Fendt, 2024, 07:44).*

Farmers at this attachment level engage more frequently in daily interactions, adopting a hands-on **interaction approach** where they perform manual tasks and additional checks to ensure the well-being of their pigs. One farmer describes his routine:

> *"And you're automatically inside longer with the manual work, and because you simply have more to do. Others check whether the feed is working and whether the ventilation is working. Then you don't need to look much more in a normal barn. It's just different with this system. If you look in, you have to throw straw in, and then they come in, and you get into the pens. We simply spend more time with the animals" ("Und man ist auch einfach automatisch länger drinnen mit der Handarbeit, und weil man einfach mehr zu tun hat. Andere schauen, ob die Fütterung funktioniert und ob die Lüftung funktioniert. Dann braucht man nicht viel mehr zu schauen, in einem normalen. Das ist bei dem System halt anders. Wenn man reinschaut, muss man Stroh reinschmeißen und dann kommen die her und man steigt auch in die Boxen rein. Wir sind halt einfach mehr bei den Tieren") (Tierwohl, 2024, 42:50).*

Another farmer highlights that he enters the barn for additional checks to ensure the pigs' well-being in addition to his routine:

> *"So I usually check on the animals first and then I do random checks once or twice a day [...]" ("also meistens schau ich zuerst nach den Tieren und dann gehe ich halt stichprobenartig jeden Tag einmal, zweimal […]") (Franz, 2024, 00:04).*

Farmers in this group value their pigs as animals deserving care and welfare, but they also acknowledge their **utility** in terms of economic benefits. One farmer notes:

“Yeah, no. I don't just see it as a way of earning money. I really like working with animals. And that's why I do it. Of course, you have to look at both sides. Everything has to add up. But you still want to make the best of it.” (“Ja, nein. Ich sehe das jetzt nicht nur zum Geld verdienen. Ich mag es sehr gerne mit den Tieren. Und darum mache ich das ja auch. Natürlich muss man beide Seiten einmal sehen. Muss sich alles rechnen auch. Aber man will ja trotzdem das Bestmögliche draus machen.” (Bichlbau, 2024, 05:33).

Another farmer explains this perspective further, balancing welfare with utility:

“[...] my main concern is: do they feel comfortable, are the animals doing well? I look at it from the livestock perspective, if I may say so. Because that's the point: is the animal doing well, is everything okay, or is something missing?” („[…] mir geht es darum: fühlen sie sich wohl, geht es den Tieren gut? Ich sehe das ja aus einem Nutztierblickwinkel, wenn ich das jetzt so sagen tue. Weil, das ist ja: geht es dem Tier gut, passt alles, oder fehlt etwas eben?“) (Strohschwein_TW60, 2024, 03:19).

This perspective highlights a dual focus on profitability and the well-being of the pigs.

Even though pigs are still seen as production units, farmers in this category can **identify individual pigs** based on their appearance or behaviour. Nonetheless, there is little value placed on specific individuals. One farmer explains:

“I assume that they are individual animals. Of course, you sometimes draw conclusions about the whole group from individual animals. If there's a really nice one, then you think the whole group is really nice. And if there are aggressive ones in there, then you might automatically not want to go into the pen. That might also be the case” (“Ich gehe schon davon aus, dass es eher Einzeltiere sind. Man schließt natürlich dann manchmal von einzelnen Tieren auf die ganze Gruppe. Wenn da eine ganz liebe dabei ist, dann glaubt man da ist die ganze Gruppe eine ganz nette. Und wenn dann Aggressive drin sind, dann geht man vielleicht automatisch nicht so gerne in die Box rein. Das gibt es vielleicht auch“) (J., 2024, 08:25).

Another farmer explains the role of physical features in recognising certain pigs:

“Or if it has pigmentation. You automatically recognise it. But basically it's difficult, it's very difficult to have one that particularly catches your eye.” (“Oder wenn er Pigmentflecken hat. Den erkennst du automatisch. Aber grundsätzlich ist es schwierig, ist es sehr schwierig, eins zu haben was einem besonders ins Auge sticht.”) (Erich, 2024, 06:42)

Pigs’ reactions in this category are often cautious at first, but may relax and approach over time. One farmer explains:

“When someone comes in, they all startle. [...] And then they all come up to you and, yes, how can I put it, they almost tear off some of your clothes, so they're no longer frightened at all.” („wenn jemand reinkommt, schrecken sie alle auf. […] Und dann kommen alle zu dir und, ja, wie soll ich sagen, reißen dir fast teilweise das Gewand von Leib, also da sind sie dann überhaupt nicht mehr schreckhaft.“) (A.N Jr., 2024, 03:31).

Farmers with a “**strong attachment**” to their pigs develop emotional attachment, driven by personal fulfilment and dedication to their animals' welfare. These farmers often view their pigs as more than production units, emphasising their individuality and significance on the farm. The depth of this connection manifests in daily interactions that go beyond routine care, contributing to a strong relationship between farmers and their pigs.

Farmers are **motivated to interact** with their animals because of both personal fulfilment and the well-being of the pigs. A significant driver is the joy and fulfilment farmers derive from these interactions. As one farmer expressed:

> *“When others have already finished their workday, we go back to the barn and have to clean out the stables twice a week. And although you may think: That's exhausting, I always say to [my husband] ''This is the compensation'' every time the animals run out. There's nothing better. When the animals run out, you know what you've done it all for and it's just a delight [...]” („Wenn andere halt schon ihren Arbeitstag fertig haben, gehen halt wir dann noch einmal in den Stall und müssen dann halt zweimal die Woche noch ausmisten. Und auch wenn du dann denkst: das ist wieder alles anstrengend, aber wenn die Tiere rausrennen sage ich immer jedes Mal zu [meinem Mann] 'Das ist einfach die Entschädigung'. Es gibt nichts Schöneres. Wenn die Tiere rauslaufen, dann weißt du, für was hast du das gemacht hast und das ist einfach eine Freude [...]“) (Mrs. Tierfreunde, 2024, 04:34).*

This sense of reward underscores the emotional connection farmers have with their animals, highlighting the intrinsic pleasure they find in their daily responsibilities. Another key aspect of farmers’ motivation lies in the necessity of understanding pigs' behaviour, since developing this insight enables farmers to anticipate and address the animals' needs, fostering more effective caregiving. One farmer reflects on the possibilities offered in the previous slatted system and the animal welfare-promoting system now:

> *“You see it all a little differently than before. You can understand it all a bit, why the animals behave the way they do and so on. You couldn't really do that before!” (“Man sieht das alles ein bisschen anders, als wie vorher. Man kann, das alles ein bisschen nachvollziehen, warum sich die Tiere so verhalten und so weiter. Das hast du vorher eigentlich nicht können!“) (Sauwohl, 2024, 18:06).*

This understanding not only benefits the pigs but also deepens the farmer’s sense of purpose and expertise in their role.

For farmers with strong attachment levels, pigs are valued for more than their economic value, as they are regarded as important **members of the farm**, deserving of respect and care. This is highlighted by a farmer comparing their pigs to their pigs:

> *"I actually treat my animals the same way I treat my children. A little differently, but I think a certain appreciation [...] is really important” ([…] meine Viecher behandele ich eigentlich so, wie meine Kinder. Ein bisschen anders, aber ich finde eine gewisse Wertschätzung […] voll wichtig“) (Antonia, 2024, 05:44).*

While another farmer likens their pigs to pets, explaining:

> *“It's a bit like a pet, I would say.” („Es ist halt ein bisschen wie ein Haustier, würde ich sagen.“) (A.N. Jr., 2024, 17:19).*

This approach reflects a high level of emotional investment and appreciation for the pigs.

Emotional fulfilment is central to the strong attachment category. Farmers describe their work with pigs as a source of joy, pride, and connection. One farmer emphasises:

> *“[...] it's my life, it's my work. And if I can't do anything, then I don't feel so good. It's nice [...] to get away from work for a day, but your heart is always with the animals.” („[…] es ist ja mein Leben, es ist ja meine Arbeit. Und wenn ich jetzt da irgendwas nicht machen kann, dann fühle ich mich nicht so wohl. Es ist schon schön […], dass man mal einen Tag wegkommt von der Arbeit, aber trotzdem bist du immer mit dem Herz bei den Viechern.“) (Mrs. Tierfreunde, 2024, 24:57).*

However, strong emotional attachment can also lead to sadness, especially when the pigs are ready for slaughter. A farmer reflects:

> *"For me, it was very emotional, when I thought to myself 'Wow, now they're being picked up.' Of course you know what's going to happen. That's the last trip, but then I somehow have the feeling again, okay, we know that they were doing well during the time they were with us." („für mich, war es sehr emotional, wo ich mir gedacht habe "Boah, jetzt werden sie abgeholt." Natürlich weiß man, was dann los ist. Das ist die letzte Fahrt, aber dann habe ich wieder irgendwie so das Gefühl, okay, wir wissen, in dieser Zeit, wo sie bei uns waren, ist es ihnen gut gegangen.") (Anita Holzwohl, 2024, 10:32).*

These responses highlight the depth of attachment between farmers and their animals.

The **interaction approach** at this level goes beyond routine tasks, incorporating extra care and quality time with the animals. One farmer describes spending additional time observing and connecting with their pigs:

> *"[...] if time often allows, then you just stay in the barn with the animals for a bit and, yes, observe" („[…] wenn es oftmals die Zeit auch erlaubt, dann bleibt man einfach halt ein bisschen drinnen bei den Tieren im Stall und ja, beobachtet") (Herbert Holzwohl, 2024, 01:34:26).*

Farmers also adapt their routines to meet the pigs' needs, demonstrating flexibility and attention to animal welfare. For instance, one farmer explains changing transportation schedules to reduce disease risks:

> *"And the truck had already been to two, three or four farms before and then it came to us and the risk of it bringing diseases into the barn is enormous. And we changed that now. At the moment, the truck comes at night, yes, that's the disadvantage, in the middle of the night, but it's washed clean, so the risk from that aspect is lower." („Und der LKW war aber vorher schon bei zwei, drei, vier Betrieben und dann ist er zu uns gekommen und da ist das Risiko, dass er an sich Krankheiten in den Stall hineinbringt, enorm groß. Und das haben wir jetzt umgestellt. Derzeit kommt der Lkw also irgendwann, ja, das ist der Nachteil, mitten in der Nacht, er ist aber sauber gewaschen, dann ist das Risiko von der Seite her geringer.") (A.N Sr., 2024, 24:04).*

Strongly attached farmers often **recognise individual pigs** and their unique personalities. These farmers engage in special treatment for certain pigs, particularly those that require additional care. One farmer explains:

> *"They're usually the little ones, often, I think, the lower-ranking ones, who then feel disadvantaged in the group and maybe they see me as a surrogate mother or contact person or something like that, and then they come and they need a little more love or more cuddles or more affection, I think." („Das sind meistens die kleinen, oft, glaube ich, Rangniedrigere, die sich dann in der Gruppe benachteiligt fühlen und die sehen mich dann vielleicht als Mutterersatz, oder Ansprechpartner oder so ähnlich, und die kommen dann, und die brauchen dann ein wenig mehr Liebe oder mehr Streicheleinheiten oder mehr Zutraulichkeit, denke ich mal.") (Sauwohl, 2024, 04:43).*

This attention to individual animals reflects the personal connection these farmers feel.

The **pigs' responses** in this category mirror the quality of their interactions with farmers. Relaxed and curious, pigs actively seek interaction. One farmer describes:

> *"So they approach you, they don't run away. So as soon as you enter the pen, you are the centre of attention, as you might often wish for in life. [...] So they are really with us, with the person who is currently in the pen." ("Also sie kommen auf einen zu, sie laufen nicht weg. Also sobald man die Bucht betritt, steht man im Mittelpunkt, wie man es sich oft wünscht, vielleicht im Leben.*

[…] also sie sind wirklich bei uns, beim Menschen, der sich gerade in der Bucht aufhält.“) (Mrs. Tierfreunde, 2024, 05:27).

Additionally, pigs remain calm even when unfamiliar people are present, with one farmer noting:

> *“They are relatively calm in our stable. They are lying down, you can go in, even if strangers come along, you go in and it's just calm. They don't get scared.” („Bei uns sind sie relativ ruhig im Stall. Sie liegen, du kannst reingehen, auch wenn fremde Personen mitkommen, du gehst rein, und es ist einfach ruhig. Sie erschrecken sich nicht.”) (Saubauer0815, 2024, 02:13).*

This behaviour reflects the pigs’ adaptation to frequent and familiar interactions with the farmer.

3.5 How can farmers with welfare-promoting systems be classified based on their perception of the relationship dynamics between them and their fattening pigs?

3.5.1 Evaluation of relationships by farmers

The bar chart below (See Figure 15) shows the allocation of farmers according to their perspectives on reciprocal relationship dynamics: those who consider the relationship important, those who find it useful, and those who view it as unimportant. Farmers from different animal welfare categories (TW100 and TW60) express varying degrees of importance regarding their relationship with their animals.

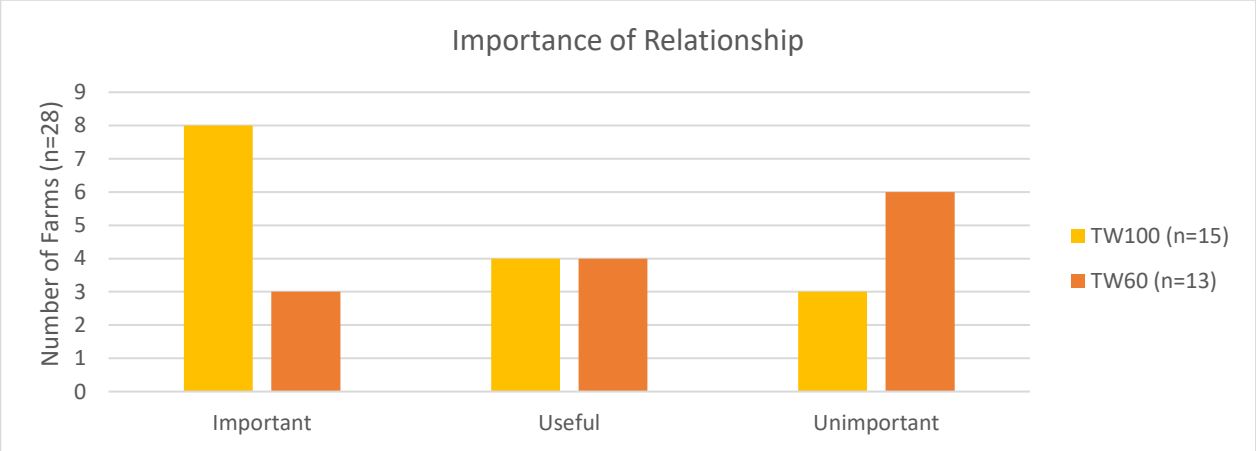

Figure 15: Farmer Evaluation of the Relationship Importance

More than half of the TW100 farmers emphasise the importance of human-animal relationships, linking them to improved animal welfare. Additionally, both TW100 and TW60 farmers acknowledge the practical benefits of their interactions, emphasising the importance of calm and cooperative behaviour among pigs.

Even though most of the interviewed TW60 view their relationships as important or useful. However, compared to the TW100 farmers, more TW60 farmers view their relationships as unimportant and view pigs as livestock with no need for emotional ties. The individual opinions on the importance of the human-animal relationships by the farms can be found in Appendix O.

Important

Particularly, farmers from the TW100 category highlighted the significance of building relationships with their fattening pigs. Their statements reflect deliberate efforts to enhance their relationships as well as the emotional connections they establish with their animals.

Farmers show the importance of these relationships through their specific actions to foster relationships. A TW100 farmer mentions dedicating time to engage with their pigs and even playing with them. While

acknowledging the challenges of managing a large herd, they emphasise their commitment to ensuring each pig receives care and attention. They also express pride in providing their pigs with a "good life", even as they prepare for their eventual slaughter:

> *"I think it's lovely, you also try to play with them a lot. It's not like they don't matter or something. You somehow try to spend the same amount of time with each pig. Of course, you can't spend the same amount of time with every single one, but you try anyway and if it goes to the slaughterhouse, I know that it has grown up well, had a good life and that you took care of it and even if it catches your eye, you have to be prepared that it will go to the slaughterhouse at some point." („Ich finde es lieb, du probierst mit denen halt eine Menge auch zum Spielen. Egal sind sie nicht oder so. Du probierst halt irgendwie, dass du bei jeder Sau irgendwie gleich viel Zeit aufwendest. Du kannst natürlich bei einer gewissen Menge nicht auf jede einzelne eingehen das geht nicht, aber du probierst das trotzdem und wenn es zum Schlachthof geht, weiß ich, dass die gut aufgewachsen ist, ein gutes Leben gehabt hast und du hast dich drum gekümmert und du musst damit rechnen auch wenn sie dir besonders auffällt, dass die irgendwann einmal zum Schachthof geht." (Franz, 2024, 06:29).*

Emotional attachment to their pigs is also a recurring theme in these farmers' perspectives. Some farmers describe the significance of expressing gratitude to their pigs, recognising the animals' contributions to their livelihoods. For instance, a farmer explains how they thank their pigs before they are sent to slaughter, reflecting on the care the pigs received and their emotional response to the farewell:

> *"Or at the end, when they're picked up, I thank them and tell them 'I hope you enjoyed it and thank you, because we live off you.'. That's how it is. It's an animal-human relationship. We make sure that everyone is happy and that they're doing well; we have them from an early age. But of course, you also have to say that we live off them and they are food. [...]. But for me, it was very emotional when I thought to myself: "Wow, now they're being picked up." Of course, you know what's going to happen. That's the last drive, but then I somehow have the feeling again, okay, we know they were doing well when they were with us." ("Oder am Schluss, wenn sie abgeholt werden, ich bedanke mich bei ihnen, und sage ihnen "Ich hoffe euch hat es gefallen und danke, denn wir leben von euch.". Das ist so. Das ist eine Tier-Mensch-Beziehung. Wir schauen, dass es jedem da passt und dass es ihnen gut geht und wir haben sie von klein auf. Aber man muss natürlich auch sagen, wir leben davon, und es sind Lebensmittel. […]. Aber für mich, war es sehr emotional, wo ich mir gedacht habe "Boah, jetzt werden sie abgeholt." Natürlich weiß man, was dann los ist. Das ist die letzte Fahrt, aber dann habe ich wieder irgendwie so das Gefühl, okay, wir wissen, in dieser Zeit, wo sie bei uns waren, ist es ihnen gut gegangen.") (Anita Holzwohl, 2024, 10:32).*

Beyond emotional connections, farmers also stressed the practical implications of fostering a positive relationship with their pigs. Ensuring calm and familiar interactions contributes to a peaceful barn environment. One farmer highlighted the importance of their pigs recognising them, which reduces stress and ensures smoother processes, such as loading the pigs for transport:

> *"Yes, it's just the contact you frequently seek with the animals. [...] The relationship that is calm throughout the barn, that the animals know me and, let's say, even when it comes to loading, they're not jumpy or anything [...] I think it's more pleasant that the animals can simply get used to me." ("Ja, das ist einfach der Kontakt, den man oft sucht zu den Tieren. […] Das Verhältnis, dass ruhig herunterrennt im ganzen Stall dass die Tiere trotzdem mich kennen und sage ich mal, auch dann, wenn es dann zum Verladen ist, sind sie nicht schreckhaft oder was so [...] glaube ich, es ist*

angenehmer das Ganze dann, dass sich die Tiere einfach an mich gewöhnen können.“) (Fendt, 2024, 23:46).

These perspectives underscore how farmers in the TW100 category, in particular, go beyond the utilitarian aspects of animal husbandry to cultivate meaningful relationships with their pigs. Their efforts reflect a combination of emotional investment and practical benefits, ensuring both the welfare of the animals and the smooth operation of their farms.

Useful

Some farmers from both the TW100 and TW60 categories highlighted the practical benefits of maintaining a relationship with their fattening pigs, focusing on farming efficiency rather than emotional attachment.

A recurring theme among these farmers is the role of trust-building through communication. By talking to their pigs, farmers create a sense of familiarity that facilitates easier handling during critical processes such as loading for transport. One farmer explains how their voice becomes a tool for reassurance, making it easier for pigs to cooperate:

> *“You just say ‘hello, Schnitzeli’ - yes, you do talk to them. You notice that, even on day X when you deliver the pigs to the slaughterhouse. When you go in and you use your voice, because they somehow get used to it, there's trust there, then they go up onto the trailer or the truck more easily.” („Da sagt mal halt mal "hallo, Schnitzeli" ja man redet schon mit denen. Das merkt man schon auch, selbst, wenn dann Tag X dann da ist, wo man die Schweine an den Schlachthof liefert. Wenn du rein gehst und du mit deiner Stimme, weil sie tun sich ja auch irgendwie daran gewöhnen, da ist ja dann auch Vertrauen da ist, dann gehen sie auch leichter auf den Anhänger oder auf den LKW hinauf.“ (Saubauer0815, 2024, 06:12)*

Another key aspect farmers mentioned is the importance of daily interactions in helping pigs become accustomed to human presence. This familiarity proves beneficial during activities such as veterinary checks, where pigs are noticeably calmer and more cooperative. A farmer describes how these interactions not only make their own work easier but are also noted by visiting veterinarians or inspectors:

> *“You're almost forced to interact with them more because you have to go into the pens every day. I personally don't notice it that much, but when someone else visits and goes into the pen, a vet or an inspector or something, they almost all say that you can tell that the animals are a bit different. Well, that they are used to it.” (“Man wird fast gezwungen dazu, dass man mehr mit ihnen interagiert, weil man ja in die Buchten rein muss, jeden Tag. Mir fällt das jetzt persönlich nicht so auf, aber wenn wer anders kommt und auch in die Box reingeht, ein Tierarzt oder ein Kontrolleur oder so, dann sagen die eigentlich fast alle, dass man das auch merkt, dass die Tiere ein bisschen anders sind. Also, dass die das, gewohnt sind.“ (J., 2024, 27:08)*

Routine handling, such as cleaning stalls, weighing pigs, and moving them within the barn, further reinforces this familiarity, ensuring calmness during stressful situations. A farmer highlighted how these consistent practices result in well-adapted pigs that handle processes like weighing and loading with ease, avoiding panic reactions:

> *“You have to know that, of course, we clean out the pens every day, they're moved so that we can take this manure out and put them in the lying area. Then they are weighed once a week. I go into almost every pen and weigh different pigs. Many pigs don't fit in terms of weight by a few kilos, but then they're still on the scales and go back into the box, which is really easy to handle because they're used to so much and already know everything. Even loading them onto the truck and so on... they go so nicely, so calmly, so easily, it fits, incredibly well, exactly what I wanted to say: no*

panic reaction, not at all." („Man muss wissen wir sind in der Box natürlich jeden Tag beim Ausmisten, da werden sie umgesperrt, also damit wir dann diesen Mist rausbringen werden sie dann in den Liegebereich gesperrt. Dann werden sie einmal die Woche gewogen. So gut wie jede Box, komme ich rein und wiege verschiedene Schweine. Viele Schweine passen dann vom Gewicht her nicht, um ein paar Kilo, dann waren sie trotzdem auf der Waage kommen auch wieder zurück in die Box, das ist ein total einfaches Handling mit denen, weil sie einfach so viel gewohnt sind und einfach schon alles kennen. Auch das Aufladen auf den Lkw und so… die laufen da so schön, so ruhig, so easy, das passt, wahnsinnig gut, genau also was ich sagen wollte: keine Panikreaktion, überhaupt nicht.") (Mr. Schweineparadies, 2024, 06:52).

Finally, farmers stressed the reduction of stress for pigs as a key advantage of frequent interactions. This not only benefits the animals during challenging moments like slaughter but also ensures smoother operations for those involved in the process. One farmer reflected on how acclimating pigs to human contact eases the transition:

> *"But for me, it's also important for slaughter that the animals are used to people and don't get unnecessarily upset, which simply makes it easier for the animals and for the people involved." ("Aber, was für mich auch wichtig ist dann für die Schlachtung, dass die Tiere an den Menschen gewöhnt sind und sich da nicht unnötig aufregen, was das für die Tiere einfach einfacher macht und für die Menschen, die da beteiligt sind dann auch.") (Saubauer, 2024, 08:54).*

These farmers demonstrate that while their focus is not on emotional attachment, this perspective highlights the value of good relationships in maintaining efficient and humane farming practices.

Unimportant

A greater proportion of TW60 farmers downplayed the importance of forming relationships with their fattening pigs, viewing them strictly as livestock with a predetermined purpose. Their statements reveal a focus on routine tasks and farming efficiency, with little recognition of the benefits or necessity of building relationships.

One prominent theme among TW60 farmers was their perception of pigs solely as utilitarian animals bred for a specific purpose. This viewpoint eliminates the perceived need for a personal relationship with the animals, as one farmer plainly states:

> *"For me, they are definitely livestock. The purpose is predetermined. Why should I build a, uh, personal relationship with them? Well, they are absolutely livestock for me, no." ("Für mich sind das absolute Nutztiere. Der Zweck ist vorbestimmt. Warum soll ich mit denen ein, ein äh, persönliches Verhältnis aufbauen? Also, es sind für mich absolut Nutztiere, nein.") (Schweineparadies, 2024, 10:43).*

This reflects a strictly pragmatic approach, where the focus remains on ensuring the pigs fulfil their role as livestock without the addition of emotional or relational effort.

Another reason why farmers avoid forming relationships with their pigs is the recognition of their eventual slaughter. By maintaining an emotional distance, they distinguish pigs from companion animals like pets, which they view differently. One TW60 farmer explained this distinction, noting the necessity of avoiding close relationships with pigs in light of their role as food animals:

> *"How can I put it? I don't build up a relationship with the pig like I do with a dog. Because it's still like this: I get the piglets at 30 kilos and then I give them away again at 110 kilos. And then I know they're going to the slaughterhouse. So I don't want to treat it badly, but I do see it like this: it's a*

farm animal for me. There is a difference. Like our cat, our dog, is a different animal to me than pigs. Because otherwise I don't think that's right if you build up a real relationship with the animals and then I give them to the slaughterhouse, you have to consider that a bit, I think." ("Wie soll ich sagen? Ich baue mir nicht die Beziehung auf, wie mit einem Hund mit dem Schwein. Weil es ist trotzdem so, ich kriege die Ferkel mit 30 Kilo. Und ich gebe sie dann auch wieder her mit 110 Kilo. Und da weiß ich, die werden zum Schlachthof geführt. Also ich will nicht schlecht umgehen damit, aber ich sehe es schon so, es ist ein Nutztier für mich. Das ist schon ein Unterschied. Wie unsere Katze, unser Hund, ist für mich ein anderes Tier als wie die Schweine. Weil sonst ist das glaube ich auch nicht, wenn du eine rechte Beziehung mit den Tieren aufbaust und ich gebe sie dann zum Schlachthof, da muss man ein bisschen abwägen, glaube ich.") (Bichlbau, 2024, 07:32).

This emphasis on efficiency and maintaining emotional distance aligns with the broader trend observed in TW60 farmers. Their focus on the pigs' utilitarian role and their rejection of emotional attachment highlights a purely functional approach to farming. These farmers prioritise routine tasks and productivity, framing their relationship with pigs as one of practical necessity rather than personal investment.

3.5.2 Awareness of Reciprocal Relationship

The bar graph in Figure 16 shows that both TW100 and TW60 show similar levels of awareness regarding their relationship with their animals. Therefore, most farmers, regardless of their welfare category, describe either awareness or partial awareness of the reciprocal relationship with their fattening pigs. Only a few individual farmers appear to be unaware of this connection. This suggests that there is a widespread understanding among both TW100 and TW60 farmers that their actions, moods, and behaviours affect their pigs, and that the pigs' behaviours can, in turn, influence the farmers.

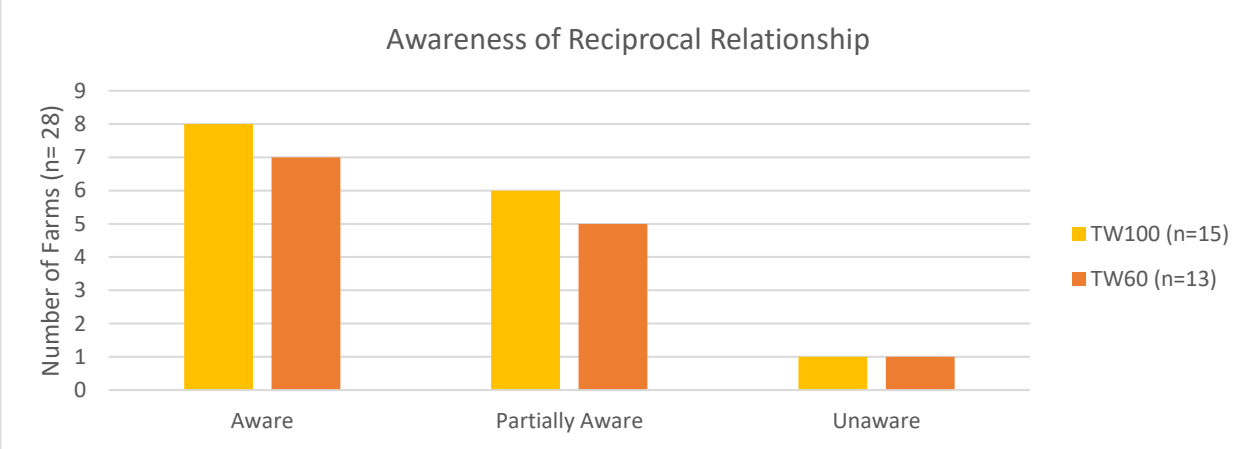

Figure 16: Awareness of Reciprocal Relationship

While the sections below display direct quotes representative of the farmers, the individual classification of the farms can be found in Appendix P.

Aware

Farmers classified as fully aware consistently demonstrated adaptive behaviours and a deep understanding of the interconnected well-being between themselves and their pigs. They prioritised calm, composed handling to foster positive dynamics, recognising the cyclical nature of well-being: when humans and animals experience stress, it amplifies in a feedback loop. A farmer encapsulated this idea, explaining:

"[...] if the people are doing well, the animal is doing well. And vice versa, if I feel bad because of them, the animal feels bad again. So the cycle comes full circle." ("[…] geht es den Menschen gut,

geht es dem Tier gut. Umgekehrt, wenn es mir schlecht geht aufgrund dessen, geht es dem Tier wieder schlecht. Also der Kreislauf schließt sich wieder.“) (Pauli, 2024, 29:56).

These farmers observe behavioural mirroring, noting that pigs often reflect their own emotional states. To reduce stress, they make deliberate efforts to manage their reactions and reset when needed:

> *“Well, they react the same way you do. If you go a bit crazy, they go crazy too. [...] I take a short break then.” (“Naja, sie reagieren auch so wie du. Wenn du ein wenig spinnst, spinnen sie auch. […] [D]a mache ich dann mal kurz eine Pause.“) (Franz, 2024, 26:21).*

Personal stress, such as time pressures, can also disrupt interactions. Farmers emphasise entering the barn calmly to ensure smooth processes. As one farmer remarks:

> *“[…] so with stress or pressure, you shouldn't go to the barn.” („[…] also mit Stress oder Druck, da sollte man nicht in den Stall gehen.“) (H, 2024, 13:12).*

They adjust routines to meet pigs' needs, highlighting patience and observation as vital for constructive interactions:

> *“I think you have to adapt to the animals and take them into account. So not just according to the motto: I'm the boss, you have to do what I want. [...]. The calmer we are at work, the easier it is. [...] And then it actually runs itself.” („Da muss man, glaube ich, die Tiere anpassen und auf sie zugehen. Also nicht nur nach dem Motto: ich bin der Chef, ihr müsst das tun was ich will. […]. Desto ruhiger wir sind, bei der Arbeit, desto leichter geht es. […] Und dann geht es eigentlich von alleine.“) (Sauwohl, 2024, 01:23:51)*

Particularly during stressful periods, such as harvest season, maintaining calmness becomes more challenging. Yet, these farmers adapt and prioritise self-regulation, acknowledging that animals sense agitation. One farmer shared:

> *“[...] I always say that if you take a short break and have a beer, that's not supposed to lead anyone to alcoholism... No, it's just that when you realize you're already really stressed out, you try to calm down somehow, because the animals notice that too... so they're not too nervous like you are.” („[…] ich sage immer, wenn du kurz Pause machst und ein Bier trinkst, das soll jetzt keinen zum Alkoholismus verleiten... Nein das ist halt dass du einfach auch wenn du merkst du bist eh schon so gestresst dass du halt irgendwie probierst dass du runterkommst, weil die Viecher das auch merken… so dass die nicht allzu nervös sind wie du bist.“) (Franz, 2024, 27:54).*

Therefore, a central theme in the approach of fully aware farmers is the importance of calm handling.

Partially aware

Partially aware farmers acknowledge that their emotional and psychological states can influence their pigs, particularly during moments of heightened stress. However, this awareness does not translate into consistent, deliberate actions to manage the relationship effectively. As one farmer reflected:

> *“It really depends on your own mood. Your own psychological or mental state that you go into the barn with. I think a lot depends on that. And the pigs also notice how you're feeling. If you're under a lot of stress, nothing works anyway.” (“Es hängt auch viel von der eigenen Verfassung ab. Eigenen psycholog- oder psychischen Verfassung mit der du in den Stall reingehst. Das hängt glaube ich sogar ganz viel ab davon. Und das kriegen die Schweine auch mit, wie du drauf bist. Hast du voll Stress, dann funktioniert sowieso nichts.“) (Lori, 2024, 07:45).*

While these farmers may take a break to calm themselves down during challenging situations, these adjustments tend to be situational rather than ongoing. Their focus often lies on how their stress impacts the pigs, without fully considering the reciprocal nature of the relationship, for instance, how the pigs' behaviour might influence their own state.

Unaware

Farmers who are unaware of the reciprocal relationship between themselves and their fattening pigs focus solely on routine tasks and do not consider the impact of their emotions or actions on the animals. Their statements reflect a lack of observation or understanding of the pigs' behavioural responses.

For example, one farmer explicitly denied that their emotional state has any influence on the pigs:

> *"Well, I think whether I feel better or worse, I don't think that influences the animals." ("Also, ich glaube, ob es mir besser oder schlechter geht, ich glaube nicht, dass das einen Einfluss auf die Tiere hat.") (J, 2024, 19:57).*

These farmers focus on completing their daily activities without considering or recognising how their behaviours and moods may indirectly affect the animals' welfare. As a result, their practices remain functional and task-oriented rather than relational or adaptive.

4. Discussion

Exploring farmers' perspectives on their human-animal interactions, as well as how they engage with their fattening pigs, allows for a deeper understanding of the relationship between farmers and their pigs. This relationship is fundamentally influenced by farmers' beliefs and attitudes toward animal welfare, which shape their practices and interactions with their animals. Therefore, the results not only provided insights into the relationships between farmers and their fattening pigs, but also into the underlying beliefs and values of the interviewed farmers.

The minimum requirements for inclusion in both the TW60 and the TW100 categories aim to enhance the welfare of fattening pigs. The results from the semi-qualitative element on what a “good life” for fattening pigs entails showed that farmers operating TW60 or TW100 husbandry systems differed in the evaluation of the factors they considered important for ensuring a "**good life**" for their animals. The TW100 farmers primarily prioritised factors outlined by their animal welfare category, including more space per animal, bedded areas, and outdoor access. Compared to the TW100 systems, the TW60 systems include less stringent animal welfare regulations. Due to the differing systems, the TW60 farmers might have exhibited a larger variance in the factors perceived as essential for providing a “good life” for their fattening pigs. While TW100 farmers showed more unanimity in the factors they believed most significant to enable a “good life” for their fattening pigs.

“A farmer who has an affinity for animals” was consistently ranked as the factor with the strongest effect on the “good life” of their fattening pigs. This highlights that the farmers were aware of the importance of their role in ensuring the welfare of their animals. Both TW100 and TW60 farmers recognised that no matter how well-designed the barn or how varied the enrichment materials, the ultimate welfare outcome depends on the quality of interactions between the farmer and their animals. This perspective aligns with welfare concepts, such as the five domains model by Mellor et al. (2020), who stress that the mental state and behavioural expressions of animals are heavily influenced by their interactions with humans. Therefore, the farmer’s involvement is key to creating an environment where pigs not only avoid negative states, like stress or disease, but also actively promote positive experiences for their fattening pigs, such as play and exploration (Mellor et al. 2020). However, while Mellor et al. (2020) emphasise the role of human-animal interaction in promoting positive mental states, the interviewed pig farmers with different animal welfare-promoting systems differed in the extent to which human-animal relationships are formed and maintained. Nonetheless, the high ranking of “a farmer who has an affinity for animals” reinforces the idea that welfare is a holistic concept, where infrastructure and enrichment are necessary supports, but a “good life” for fattening pigs is ultimately determined by the quality of care they receive.

Additionally, TW60 and TW100 farmers agreed on the importance of space. Therefore, the majority of farmers believed that providing sufficient space is essential for physical comfort and to enable pigs to move, interact socially, and display natural behaviours. Therefore, the additional space was seen as an important part of the farmers’ overall strategy to ensure a “good life” for their fattening pigs.

Furthermore, both TW60 and TW100 farmers believed that a “good life” hinges on allowing their animals to express their natural behaviours, like rooting, playing, and nest-building and ensuring that their pigs remain mentally stimulated. However, the results of the semi-qualitative element reflected the farmers’ systems and realities, since the farmers with straw saw its benefits, while the farmers with systems without straw believed that enrichment materials are sufficient for their pigs’ mental stimulation. Hence, mainly the TW100 farmers believed that the bedded area is most important to achieve this, while TW60 farmers believed in the application of enrichment materials, in which they usually include straw. Additionally,

according to the TW60 farmers, the enrichment materials serve as a practical measure to prevent and address behavioural issues such as tail biting.

Nevertheless, while the TW100 farmers included the outside area as essential for the pigs' "good life", the TW60 farmers were undecided on the influence of the outside area and rated the barn conditions, specifically good air quality (with low ammonia levels), optimal temperature variations that help build a stronger immune system, and proper lighting to prevent stress as vital to ensure a "good life" for their fattening pigs. However, the wide range of answers might be due to the variation in farming systems, since some of the TW60 farmers have outside areas and have recognised its benefits for a "good life" for their fattening pigs.

Even though the TW100 and TW60 farmers valued similar ideas of what a "good life" for fattening pigs entails, the farmers of the two animal welfare categories (TW100 and TW60) follow different farming approaches to reach their definition of a "good life", as reflected in the farming systems implemented. Even though the largest differences between the two animal welfare categories were observed for the factors *bedded lying area*, *tails*, and *other factors*, these differences appear to be shaped less by fundamentally different values and more by farm-specific conditions and operational realities.

When comparing these insights to the farmers' understanding of animal welfare addressed in Section 1.2.3, it becomes evident that the interviewed farmers were aware that farming systems influence the welfare of their fattening pigs. The farmers emphasised the importance of enabling pigs to exhibit natural behaviours and have positive experiences. This aligns with the findings of van Huik and Bock (2007), suggesting that the adoption of welfare measures is influenced by the farmers' perceptions of good farming practices (van Huik and Bock 2007).

In summary, although the interviewed farmers had varying opinions on what constitutes a "good life" for their animals, the shared emphasis on the farmer's role highlights that animal welfare goes beyond physical or environmental aspects, but is closely tied to the quality of care provided. The farmers' holistic approaches reflect key animal welfare theories, demonstrating that both implementable elements, such as more space as well as "a farmer with an affinity for animals", are crucial for a "good life" for their fattening pigs (see Section 1.2.1).

While the farmers understood the influence of their husbandry systems on animal welfare, they also identified the systems' **opportunities and barriers** for interactions with their fattening pigs. This understanding provides valuable insights into how the applied husbandry systems affect the interactions between farmers and their fattening pigs.

Generally, the identified interaction opportunities were addressed similarly across the animal welfare categories. The most important opportunity identified by farmers was the improved working environment through their animal welfare-promoting systems, by encouraging more interactions between themselves and their fattening pigs. Compared to the commonly used husbandry systems, enhanced working environments for farmers included better barn conditions and a perceived improvement in animal welfare.

This perceived opportunity reflects that a farmer's working environment and workload significantly affect their interactions with pigs. According to Bock et al. (2007) as well as Hemsworth and Coleman (2011), when farmers witness the tangible results of their care, such as healthier and more interactive animals, they often experience increased job satisfaction. This positive experience can lead to incorporating further practices that promote animal welfare. Therefore, a positive working environment can enhance the mental and physical well-being of both farmers and fattening pigs.

Additionally, farmers identified the application of enrichment materials and straw as opportunities for positive interactions between pigs and farmers. According to Bolhuis et al. (2006), providing straw and enrichment materials reduces stress and encourages calm behaviour in pigs, such as rooting and exploring (Bolhuis et al. 2006). Through these routine interactions and enrichment materials, pigs become more relaxed around their caregivers, allowing for easier handling (Chamberlain et al. 2000; Bock et al. 2007).

TW60 farmers perceived the identified barriers as more severe than TW100 farmers. TW60 farmers specifically highlighted issues such as limited time for interactions and the mechanisation of their systems, which can create monotonous and impersonal routines. Additionally, TW60 farmers were particularly concerned about dust pollution from straw application and the short time animals spend on the farm, discouraging them from entering the barn more and engaging with their animals. In contrast, TW100 farmers perceived the total number of animals as a more significant barrier to individual interactions with their pigs than TW60 farmers. Additionally, the time constraints trigger an increased reliance on technology and schedule-driven tasks, further separating farmers from meaningful human-animal interactions (Tallet and Brajon 2024).

Although farmers from both animal welfare categories perceived similar opportunities through the implemented standards, TW100 farmers seemed to have found ways to mitigate or work around the identified barriers, positively influencing the interactions between them and their fattening pigs. In contrast, TW60 farmers could potentially not find solutions within their husbandry systems and therefore perceive the barriers as more severe, ultimately affecting human-animal interactions. Therefore, the differing practical constraints of the systems help to reveal how the system designs enable or limit the development of enriched relationships.

The perceptions of TW60 farmers regarding barriers to interaction with their animals can be closely associated with the implemented animal welfare-promoting systems and the identified **interaction levels**, highlighting the tangible interactions between farmers and their fattening pigs.

Generally, TW60 farmers described less enriched interactions than TW100 farmers. As a result, more TW60 farmers engaged in negative interactions, including practices such as rough handling or shouting at their animals, and avoiding direct contact through distant observations. In contrast, TW100 farmers described more enriched interactions, characterised by behaviours such as petting or soothing their animals through calm verbal communication. Although previous research by Bock et al. (2007) indicated that farmers' interaction approaches vary based on group or farm size, the interview results reveal that differences in interactions are related to the farming systems, rather than the size of the farm or the group.

The variations in human-animal interactions significantly affect animal welfare (see Section 1.3.2). For example, research by Waiblinger (2016) indicates that positive interactions can enhance growth and wound healing and have calming effects on animals. In contrast, negative interactions may increase stress responses, adversely affecting productivity. Additionally, Hemsworth and Coleman (2011) emphasise that positive and negative interactions create a reciprocal feedback loop influencing farmers' attitudes toward their pigs (see Section 1.3.1). Moreover, they suggest that these attitudes reflect farmers' perceptions of their animals. Their research demonstrates that enriched handling practices are associated with a positive attitude toward the animals (Hemsworth and Coleman 2011). In contrast, Rushen and Passillé (2015) point out that poor handling practices are linked to a negative attitude and perception of the animals.

The interaction levels and related attitudes of farmers can be directly linked to the identified **attachment levels,** indicating the emotional aspects of relationships between farmers and their fattening pigs. Similar to the interaction levels, distinct differences in attachment could be identified between TW60 and TW100 farmers. While TW60 farmers displayed a wide range of attachment levels (including weak attachment),

TW100 farmers consistently showed strong, compassionate relationships with their pigs. However, most farmers maintained a moderate attachment to their pigs. In the moderate attachment level, farmers are attentive to their animals' behaviours without forming deep emotional bonds. They view the pigs primarily as commodities, yet also recognise them as sentient beings and take pleasure in their care. As a result, interactions are frequent and driven by both practical needs and emerging personal connections. Although the fattening pigs are initially cautious around the farmer entering the pen, they tend to relax over time. This suggests that the majority of interviewed farmers aim to balance the utility of their animals and their emotional attachment to them.

TW60 farmers displayed a broader range of attachment levels, including weak attachments to their animals. TW60 farmers with weak attachments tended to view interactions with their pigs as strictly functional, with minimal emotional engagement. Their focus remained on the efficient handling of animals, with little attention paid to individual needs, which shows a prioritisation of productivity before human-animal relationships. In contrast to the TW60 farmers, the TW100 farmers demonstrated a higher baseline of emotional attachment, since there were no farmers with weak attachment, and the majority of TW100 farmers described strong attachment to their animals. TW100 farmers, therefore, engaged in relationships influenced by emotional attachment.

These differences in attachment show that farmers with higher animal welfare-promoting husbandry systems tended to form stronger attachments with their animals than farmers who fulfil somewhat lower standards. Similarly to Pol et al. (2021) the interviews showed that the husbandry systems can be related to the attachment of farmers to their animals, since fewer TW60 farmers showed signs of strong attachment to their animals. This highlights that the farmers' commitment to their animals' welfare and the relationships with their animals can be linked to their husbandry systems. In contrast to the findings by Pol et al. (2021), the results showed no correlation between the number of pigs on the farm and the attachment level by the farmers, since, regardless of the number of pigs, the farmers described strong, weak, and moderate attachments to their animals.

Additionally, the results of this thesis challenge earlier assumptions (e.g., Serpell 2004; Bock et al. 2007) that high utility and short animal lifespans, such as in fattening systems, prevent strong emotional relationships. Unlike previous research focusing primarily on dairy or breeding animals, the results show that emotionally rich relationships can also emerge in fattening systems with a high utility and short periods on the farms, particularly when higher welfare standards are in place. Some farmers even perceived their animals as farm members. Therefore, the interviews have shown that emotional attachment can, and does, emerge in intensive settings when the farming systems allow it and the farmers value it.

This research also challenges the classification by Wilkie (2005) regarding the detachment and attachment of farmers, demonstrating that, contrary to Wilkies (2005) findings, the majority of interviewed farmers can be categorised as practising "concerned attachment", since the majority of the interviewed farmers exhibit a personal connection to animals, valuing them beyond mere utility. The prevalence of attached farmers contradicts the assertion by Wilkie (2005) that attached attachments are rare in commercial farming. The present study reinforces the notion that even in short-term animal relationships, emotional attachments can be formed.

However, the presence of detachment and negative interactions reported by some TW60 farmers likely does not arise from a lack of care, but from systemic barriers, including time constraints and mechanisation. Nonetheless, the findings align with the model by Hemsworth and Coleman (2011), which suggests that attitudes and interactions are mutually reinforcing, where poor attitudes result in

inadequate handling, leading to diminished animal responsiveness and the continuation of a negative cycle. Conversely, strong attachments are associated with more attentive management, reduced stress levels, and improved welfare outcomes, both psychologically and physically (Waiblinger 2016).

The interviews revealed that the attachment is not solely an emotional construct but also has practical implications. Specifically, the levels of attachment influence not only the behaviours of farmers and pigs but also the overall effectiveness of farming systems. This includes benefits such as more efficient and simpler handling processes.

Farmers' views on the importance of human-animal relationships, along with their awareness of the **relationship dynamics,** offered insights into how they perceive and engage with their animals. Both TW100 and TW60 farmers demonstrated a shared awareness that their behaviour influences the pigs' well-being.

The interviews revealed that most farmers, regardless of their farming system, realised that their emotional state and behaviour directly affect the pigs' behaviour. Therefore, most farmers understood the reciprocal nature of their relationship with their fattening pigs. According to Hemsworth and Coleman (2011) the reciprocal nature of relationships strongly influences animal well-being and impacts the production, farmer satisfaction, and farming practices. This common baseline showed the farmers' understanding of the reciprocal dynamic in their interactions with their animals. However, this awareness alone does not capture the full picture, as the valuation of relationship dynamics varies considerably between TW100 and TW60 farmers.

TW100 farmers placed a high value on their relationships with the pigs. They considered the relationships essential for both animal welfare and efficient farm management. They described intentionally building emotional bonds with their pigs by handling them calmly, spending quality time such as engaging in playful interactions, and expressing gratitude before slaughter. This approach fosters a positive feedback loop: a composed farmer has relaxed pigs, which then respond cooperatively during loading, veterinary checks, and routine handling. Furthermore, these farmers consistently adopt self-regulating strategies, such as checking their emotional state before going into the barn, to maintain low stress levels for both themselves and the animals. TW100 farmers, therefore, integrate emotional care within their farming practices. This shows the farmers' commitment to nurturing human-animal relationships and creating trust between them and their animals. By making the human–animal relationship a cornerstone of their animal welfare-promoting system, farmers reinforce a beneficial cycle that improves both animal welfare and the overall farm performance.

In contrast, although TW60 farmers are aware of the influence their behaviour has on pig welfare, some TW60 farmers ascribed less importance to human-animal relationships. For these farmers, familiarity in interacting with their pigs is primarily instrumental in supporting efficient management and routine operations without a deeper emotional commitment. Nonetheless, some TW60 farmers described making temporary adjustments during especially stressful situations. However, these adaptations are sporadic and primarily focused on operational efficiency rather than building relationships. Therefore, TW60 farmers tended to regard pigs as production assets where the reciprocal relationship was acknowledged but not fundamentally integrated into their farming practices.

These diverse perspectives suggest that the way farmers relate to their pigs is not uniform but is shaped by deeper emotional and systemic barriers. On the one hand, TW100 farmers, who integrate emotional care with practical management strategies, explained that a reciprocal, emotionally engaged relationship can lead to improvements in animal welfare and operational efficiency. On the other hand, the more utilitarian perspective of TW60 farmers highlights the ongoing debate on balancing compassionate care

with production imperatives. Therefore, while both TW100 and TW60 farmers were aware that their behaviour affects pig welfare, their approaches diverged in how they value and act upon this insight.

While the results offer valuable insights into how pig farmers operating within animal welfare-promoting systems perceive and engage in relationships with their fattening pigs, several **limitations** must be acknowledged.

The reliance on semi-structured interviews introduces a potential risk of social desirability bias, whereby farmers may have portrayed their practices or emotional connections more favourably, particularly when addressing sensitive topics such as attachment or handling behaviours. In the absence of direct observational data, these self-assessments could not be independently validated. However, this potential bias may have influenced both animal welfare categories considered in this study, potentially obscuring true differences or inflating perceived effects. While this potential bias likely affected both welfare categories examined, reducing the risk of favouring one over the other, it still limits the accuracy of the results and the comparability with studies using direct observation. Therefore, in order to enhance the robustness of future research, interview data should be complemented with ethological observations, enabling a more accurate assessment of the impact of human–animal interactions on pig welfare.

Because participation was voluntary and targeted farmers involved in the IBeSt+ project, the sample includes individuals who were already interested in and committed to animal welfare. Therefore, the sample may not be fully representative. Even though the focus on the TW60 and TW100 welfare categories allowed comparability, this may exclude alternative systems, which could have provided a more comprehensive understanding of human-animal relationships across different farming systems. As a result, the findings have limited generalisability to the broader context of pig farmers. Therefore, to enable a broader context, further research should consider comparing these results with more prevalent production systems, such as slatted systems.

Furthermore, the selection of interview participants by the farms led to different numbers of participants in each interview. This variation in interview sizes could have affected the results, especially when there were conflicting opinions among participants. However, despite this concern, the interviews with multiple participants tended to provide deeper and more detailed information, due to discussions between the participants. Additionally, one participant often took the lead in the interview, helping steer the conversation toward a consistent narrative. However, since the interpretative analysis and classification of the interview content relied on qualitative data, differences in perspectives among family members or staff during multi-participant interviews may lead to varying interpretations during the analysis. This increased the risk of researcher bias, meaning that different researchers may arrive at different conclusions based on the same data.

Finally, while this thesis identified trends in farmer attitudes and behaviours, it does not reveal causal relationships between system design and emotional engagement. Therefore, additional research, incorporating larger-scale mixed-methods approaches, is necessary to more clearly define how husbandry systems and farmers' values interact to shape human-animal relationships.

5. Conclusion

This thesis examines how pig farmers, who adopt animal welfare-promoting husbandry systems, perceive and engage with their fattening pigs. It is based on five underlying research questions addressing the perceived opportunities and barriers to interaction, levels of interaction and attachment, dynamics of human-animal relationships and a "good life" for fattening pigs. To explore these questions, semi-structured interviews as well as a semi-quantitative valuation of factors essential for a "good life" for fattening pigs were conducted with 28 farmers across two welfare categories (TW60 and TW100) as part of the IBeSt+ project.

Due to the lack of research on the relationships between farmers and their fattening pigs in the context of animal welfare-promoting systems, this thesis fills a research gap by providing insights into farmers' perceptions of the importance of human-animal relationships. The results have shown that depending on the category of animal welfare-promoting husbandry system implemented, farmers perceive and engage with their fattening pigs in different and often also diverse ways. These perceptions and interactions appear to be influenced by the structural conditions and the farmers' values.

The interviews highlighted the participating farmers' awareness of their role in enhancing animal welfare and the benefits of animal welfare-promoting systems to facilitate positive interactions with their fattening pigs. By establishing interactive systems, farmers therefore have the opportunity to engage in relationships with their animals. However, the interviews also indicated that simply making structural changes is a short-sighted solution, since the farmers' beliefs and attitudes play a crucial role in shaping their relationships with fattening pigs. Therefore, future policies and guidelines for husbandry systems should consider farmers' perspectives on the importance of human-animal relationships and how different husbandry systems influence the interactions between farmers and their fattening pigs. Nonetheless, the results challenge the common belief that farmers view their animals, especially those with shorter lifespans like fattening pigs, merely as production units. Instead, they reveal that farmers with animal welfare-promoting systems develop strong relationships with their animals.

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Declaration of the use of generative AI tools

In writing this thesis, Grammarly was used to enhance the linguistic quality of own text passages, including grammar, spelling, and phrasing. To support the structuring and organisation of self-written sections, ChatGPT was used. Additionally, DeepL was employed to translate the initial version of the German abstract based on the English version I had written, as well as to initially translate the first drafts of the English quotations from the interviews and the German interview material. All content generated with the help of these AI tools was critically reviewed and revised.

Figures

Tables

Appendix A: TW100 and TW60 Equivalent Labels and Requirements

Label	Requirements	Equivalent
Hütthalers Hofkultur[1]	• Min. 100 % more space • Outside area • Castration under anaesthesia • Straw bedding • Structured barn (functional zones) • No tail docking • No stunner • Enrichment materials • GMO-free feed • Short transportation • Born in Austria (max. 19 km distance)	TW100
Berger Tierwohlinitiative[2]	• 100 % produced in Austria • 100 % more space • Outside area • Castration with anaesthesia • Straw bedding • Structured barn (functional zones) • No tail docking • Regional GMO-free feed	TW100
Fair zum Tier[3]	• 100 % more space • Outside area • Castration under anaesthesia • Straw bedding • Structured barn (functional zones) • No tail docking • Enrichment materials • European GMO-free protein feed	TW100
GUSTINO Tierwohl[4]	• Family farms • 60 % more space • 80 % farm-produced feed • Straw bedding	TW60

[1] Schwein - Hütthaler

[2] Tierwohl - Berger Schinken

[3] Fair zum Tier | REWE Group in Austria

[4] Über GUSTINO - das regionale Tierwohl-Schweinefleisch

Appendix B: E-Mail to Participants

Betreff: Interview im Rahmen des Projekts IBeSt+

Sehr geehrte*r XY,

Mein Name ist, Zoë Köhler, und derzeit schreibe ich meine Masterarbeit an der Universität für Bodenkultur, im Rahmen des Projekts IBeSt+. Wie im InfoBlatt zum Projekt (anbei) und während dem Zoom-Projekt Kick-off am 11. März angekündigt, würde ich gerne im Rahmen des Arbeitspakets ‚Mensch' ein Interview mit Ihnen führen. Dabei möchte ich mit Ihnen über Ihre Sichtweise zu verschiedenen Aspekten in Ihrer Arbeit mit Schweinen reden, insbesondere zu der Mensch-Tier Beziehung und der Umstellung auf einen Tierwohlstall. Ich werde Sie auch noch um ein paar Eckpunkte zu Ihrem Betrieb bitten (zur Information, siehe Betriebsdatenblatt anbei).

Im Anhang finden Sie nähere Informationen zum Ablauf des Interviews, eine Übersicht der Fragen sowie die Datenschutzmitteilung. Ich wäre Ihnen dankbar, wenn Sie das Informationsblatt und die Datenschutzmitteilung vor dem Interview lesen könnten. Zu Beginn des Interviews werde ich Sie bitten, ein Pseudonym zu wählen, damit kein Rückschluss auf Ihre Person möglich ist.

Morgen (*Datum*) werde ich versuchen Sie telefonisch zu kontaktieren, um einen Termin für das Interview zu vereinbaren. Das Interview wird ca. 1.5 Stunden dauern. Gerne können Sie mir schon per jetzt per E-Mail mitteilen ob bzw. wann Sie am ehesten im Zeitraum von *29.07 – 01.08* Zeit hätten, und direkt auf diese Mail antworten. Wir können das aber auch gerne telefonisch besprechen.

Vorab ein herzliches Dankeschön, dass sie sich für das Interview Zeit nehmen! Ich freue mich auf unser Gespräch.

Freundliche Grüße,
Zoë Köhler

Appendix C: E-Mail Attachment 1 - Farm Data Sheet

Betriebsdatenblatt

Name: _____

ACKERBAU:

Ackerland: _____ ha

Ich produziere (einen Teil) des Futters für die Schweine:

- ☐ Ja – Was (welches Getreide/Eiweiß):
- ☐ Nein

TIERBESATZ: ANZAHL STELLPLÄTZE

Mastschweine:		Zuchtsauen:	
Aufzuchtferkel:		Eber:	

Stellplätze Mastschweine	Gütesiegel für die Haltungsform(en)
	AMA zertifiziert TW100
	AMA zertifiziert TW60
	Andere Labels/Gütesiegel (wenn ja: welche?)
	Ohne Zertifizierung/Label/Gütesiegel

VERMARKTUNGSWEGE FÜR MEINE MASTSCHWEINE

Anteil (%)	Vermarktungsweg
	Schlachthof
	Direktvermarktung (bitte um nähere Angaben):
	Andere (welche?):

Appendix D: E-mail Attachment 2 - Interview Information and Consent Form

Information zum Interview

&

Datenschutzmitteilung

Ziel des Interviews. Im Projekt IBeSt+ wird das Tierwohl von Wissenschafterinnen anhand unterschiedlicher Kriterien erhoben (u.a. Liegeverhalten, Erkundungsverhalten, Hautveränderungen, Verletzungen, Lahmheiten). Ich möchte die Sichtweise der Betriebsleiter*innen, die Beobachtungen, die Sie anhand der täglichen Arbeit mit den Tieren machen, erfassen. Dazu möchte ich mit den Leiter*innen aller Praxisbetriebe, die am IBeSt+ Projekt teilnehmen, ein Interview führen. Im Rahmen dieses Interviews möchte ich mit Ihnen über Ihre Beziehung mit ihren Tieren sowie über ihre Erfahrungen mit der Umstellung auf einen Tierwohlstall reden.

Die Fragen, die ich Ihnen stellen möchte, umfassen folgende Themen:

- Worauf achten sie, wenn Sie durch den Stall gehen?
- Wie gehen Sie mit den Tieren um?
- Beobachten Sie ab und zu Schweine, die besonders sind, bzw. einen eigenen Charakter haben?
- Verhalten sich Schweine mit Langschwanz anders als jene mit kupierten Schwänzen?
- Wie sehen Sie den Ausspruch: ‚Geht's dem Tier gut, geht's auch dem Menschen gut'?
- Was verstehen Sie unter einem guten Tag im Stall?
- Welchen Einfluss hat der Tierwohlstall auf das Wohlbefinden ihrer Schweine?
- Wie ist es dazu gekommen, dass Sie einen Tierwohlstall gebaut haben?
- Was sind Ihre Erfahrungen am Anfang gewesen? Was für Herausforderungen haben Sie jetzt?
- Was sind Ihre Erfahrungen mit der Vermarktung?
- Wo sehen Sie die Herausforderungen den Anteil an Tierwohlställen in Österreich zu erhöhen?

Freiwilligkeit. Ihre Teilnahme an diesem Interview erfolgt freiwillig. Sie können das Interview verweigern. Sie können jederzeit ohne Angabe von Gründen einzelne Fragen nicht beantworten oder das Interview beenden. Dadurch entstehen Ihnen keinerlei Nachteile.

Zeitablauf. Ich möchte das Interview in den kommenden Wochen führen. Das Interview wird ca. 1,5 Stunden dauern. Für das Interview komme ich gerne zu Ihnen auf den Hof. Um die Datenanalyse zu ermöglichen, bitte ich Sie um Erlaubnis, das Interview aufzuzeichnen. Nach dem Interview, werde ich diese Audiodatei transkribieren. Anhand der Interviews werden zwei Masterarbeiten entstehen, welche unterschiedliche Aspekte des Interviews analysieren werden. Die eine Masterarbeit fokussiert sich dabei auf die Mensch-Tier Beziehung und die andere auf die Umstellung auf einen Tierwohlstall. Das Ziel ist die Masterarbeiten Ende 2024 bzw. Anfang 2025 fertigzustellen. Ich werde Sie informieren, wann ich meine Masterarbeit abgeschlossen habe. Sie wird dann auf der Website des Projekts zur öffentlich zur zugänglich sein (https://short.boku.ac.at/IBeStPlus).

Anonymität Ihrer Aussagen. Für meine Masterarbeit oder anderen Veröffentlichungen durch Wissenschafter*innen im IBeSt+ Projekt können einige Auszüge aus dem Interview verwendet werden. Diese Auszüge werden pseudonymisiert, d.h. Ihr Name wird durch ein Pseudonym ersetzt, das Sie selbst wählen und das nur mir und meiner Betreuerin bekannt ist. Damit ist kein Rückschluss auf Sie mehr möglich. Auch werden alle Informationen, die eine Identifizierung ermöglichen könnten (z.B. Namen von Personen oder Orten, die Sie erwähnen), aus den Zitaten entfernt.

Allerdings ist nicht ganz auszuschließen, dass insb. Personen, die Sie kennen und wissen, dass Sie am IBeSt+ Projekt teilnehmen, mutmaßen können, welche Aussagen von Ihnen stammen könnten. Um sicherzustellen, dass ich in meiner Masterarbeit keine Zitate einfüge, die Ihnen unangenehm sein könnten, werde ich Ihnen die Auszüge aus dem Interview, die ich gerne wörtlich in der Masterarbeit zitieren möchte, vorab zusenden. Sie können dann entscheiden, ob ich diese in dieser Form zitieren kann oder ob Sie sie ganz oder teilweise aus der Masterarbeit gelöscht haben wollen.

Personenbezogene Daten. Ich verwende Ihren Namen, Telefonnummer, E-Mail und Adresse ausschließlich um den Termin für das Interview mit Ihnen zu vereinbaren; zu Ihnen auf den Hof zu kommen, um das Interview zu führen; Sie über die Interviewauszüge zu informieren, die ich gerne in meiner Masterarbeit zitieren möchte; sowie um Sie über den Abschluss meiner Masterarbeit zu informieren. Ich bin zur Verschwiegenheit verpflichtet, d.h. mir ist bewusst, dass ich keinerlei personenbezogene Daten oder persönliche Informationen über die im Rahmen meiner Masterarbeit interviewten Personen, ganz oder teilweise an Dritte weitergeben darf.

Datenschutz und Datenaufbewahrung. Alle Dateien, ob in Papierform oder digital, die personenbezogene Daten enthalten (also insb. Ihren Namen, Adresse, Telefonnummer und E-Mail) werden sicher gespeichert, damit Ihre Anonymität gewahrt bleibt. Die Papierkopie der Einverständniserklärung wird in einem verschlossenen Aktenschrank aufbewahrt, der nur für meine Betreuerin zugänglich ist. Alle digitalen Dateien, die personenbezogene Daten enthalten, werden nur auf einem zentralen Server der Universität für Bodenkultur Wien (BOKUdrive) gespeichert. Die Audiodatei des Interviews werde ich bis zur Transkription auf meinem verschlüsselten Computer speichern, anschließend wird sie nur auf BOKUdrive gespeichert sein. Sie wird nach Abschluss der Datenanalyse (spätestens im Dezember 2024) gelöscht. Die Datei, die Ihren Namen mit dem Pseudonym verbindet wird spätestens im Dezember 2026 gelöscht. Nur die anonymisierten Transkripte werden gemäß der guten wissenschaftlichen Praxis für mindestens 10 Jahre aufbewahrt.

Kontaktpersonen.
Bei weiteren Fragen zum IBeSt+ Projekt wenden Sie sich gerne an Natalia Nöllenburg (natalia.noellenburg@boku.ac.at) oder Ika Darnhofer (ika.darnhofer@boku.ac.at).
Bei Fragen zur Datenverarbeitung im Rahmen des IBeSt+ Projekts oder bei Beschwerden zu diesem Interview wenden Sie sich bitte an meine Betreuerin: Ika Darnhofer (ika.darnhofer@boku.ac.at).
Bei grundlegenden rechtlichen Fragen im Zusammenhang mit der Datenschutzverordnung (DSGVO) wenden Sie sich bitte an den Datenschutzbeauftragten der Universität für Bodenkultur, Wien, Mag. Jürgen Gruber (datenschutz@boku.ac.at). Sie haben auch das Recht, sich an die österreichische Datenschutzbehörde zu wenden (z.B. über dsb@dsb.gv.at).

Wir danken Ihnen für Ihre Unterstützung,

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PS: Auf der folgenden Seite finden Sie die ‚**Einverständniserklärung**'. Zum Interview werde ich eine ausgedruckte Version mitbringen und Sie bitten diese zu unterschreiben. Damit bestätigen Sie, dass Sie dieses Informationsblatt gelesen haben, geben mir Ihre Einwilligung das Interview aufzunehmen und die Daten in anonymisierter Form zu verarbeiten.

Einverständniserklärung

Hiermit geben sie Ihr Einverständnis die Daten aus dem Interview zur Mensch-Tier Beziehung und zur Umstellung auf einen Tierwohlstall in anonymisierter Form für beide Masterarbeiten sowie für weitere wissenschaftliche Publikationen durch Wissenschafter*innen im IBeSt+ Projekt zu verwenden.

Ich bestätige, dass ich die ‚Information zum Interview & Datenschutzmitteilung' gelesen und verstanden habe. Ich hatte die Gelegenheit Fragen zu stellen und alle Fragen sind zu meiner Zufriedenheit beantwortet worden.

☐ Ja ☐ Nein

Mir ist bewusst, dass die Teilnahme an diesem Interview freiwillig erfolgt. Ich kann jederzeit ohne Angabe von Gründen einzelne Fragen nicht beantworten oder das Interview beenden. Dadurch entstehen mir keinerlei Nachteile.

☐ Ja ☐ Nein

Ich wähle folgenden Pseudonym, unter dem Auszüge aus meinem Interview zitiert werden:

Pseudonym: …….

Ich stimme der Verwendung der anonymisierten Interviewdaten im Rahmen der Masterarbeit und weiterer wissenschaftlichen Publikationen zu.

☐ Ja ☐ Nein

Name: _____

Ort und Datum: _____

X _____

Unterschrift

Appendix E: Appointment Confirmation

Betreff: Interview im Rahmen des Projekts IBeSt+

Sehr geehrte*r XY,

Vielen Dank für das Telefonat. Hier nochmal der Termin für das Interview:

Mo. DD.MM um 00:00

Wie vereinbart treffen wir uns an der folgenden Adresse:

Adresse

Ich freue mich auf unser Gespräch!

MFG,

Zoë Köhler

Appendix F: Interview Guide

Original Questions	Translated Questions
Wenn Sie durch den Stall gehen, worauf achten Sie besonders? - Worauf achten Sie bei den Schweinen besonders? - Gibt es bestimmte Anzeichen bei Ihren Tieren, auf die Sie besonders achten? - Gibt es bestimmte Verhaltensweisen, auf die Sie besonders schauen? Was tun ihre Tiere da? Was bedeutet dieses Verhalten für Sie? Wofür ist es ein Anzeichen? - Wie nehmen Sie die Reaktion der Schweine wahr, wenn Sie im Stall sind? o Haben Sie das Gefühl die Schweine freuen sich, wenn sie Sie sehen? Haben sie Angst? o Suchen die Schweine Ihre Nähe, wenn Sie im Stall sind? o Warum?	**What do you pay particular attention to when you walk through the barn?** - What do you pay particular attention to with the pigs? - Are there certain signs in your animals that you pay particular attention to? - Are there certain behaviours that you look for in particular? What are your animals doing then? What does this behaviour mean to you? What is it a sign of? - How do you perceive the pigs' reaction when you are in the barn? o Do you feel like the pigs are happy when they see you? Are they afraid? o Do the pigs want to be close to you when you are in the barn? o Why?
Wie Kommunizieren / Interagieren Sie mit den Schweinen? Wie gehen sie mit ihnen um? - Sprechen Sie mit Ihnen? o Was sagen Sie Ihnen Typischerweise? - Nutzen Sie (auch) Töne? - Suchen Sie die Nähe Ihrer Schweine, wenn Sie im Stall sind? Berühren sie die Schweine? - Wann Kommunizieren Sie (verbal, körperlich) mit Ihnen? - Wie reagieren die Schweine? - Warum Kommunizieren Sie mit Ihnen? Was wollen Sie damit erreichen? o Welche Gefühle oder Emotionen begleiten Ihre Kommunikation? o Bereitet Ihnen diese Kommunikation/Interaktion Freude? - Woran erkennen Sie, dass sie verstanden haben, was die Schweine von Ihnen wollen?	**How do you communicate/interact with your pigs? How do you handle them?** - Do you talk to them? o What do you usually say? - Do you (also) use sounds? - Do you seek the proximity of your pigs when you are in the barn? Do you touch the pigs? - When do you communicate (verbally, physically) with them? - How do the pigs react? - Why do you communicate with them? What do you want to achieve? o What feelings or emotions accompany your communication? o Do you enjoy this communication/interaction? - How can you tell that you have understood what the pigs want from you?
Beobachten Sie ab und zu Schweine die irgendwie besonders sind? - Können Sie ein Konkretes Beispiel nennen? - Gibt es ab und zu ein Schwein, das Sie besonders mögen? oder besondere Verbindung haben/Interaktionen erleben? - Gibt es Schweine, die besondere ‚Charaktere' sind? - Welche Rolle spielen diese besonderen Charaktere für Sie? o Welche Gefühle oder Empfindungen lösen diese besonderen Charaktere bei Ihnen aus? o Gehen Sie irgendwie darauf ein? - Gibt es Unterschiede zwischen Partien (z.B. in der Gruppendynamik)?	**Do you occasionally observe pigs that are somehow special?** - Can you give a specific example? - Is there sometimes a pig that you particularly like or have special connections/interactions with? - Are there any pigs that are special 'characters'? - What role do these special characters play for you? o What feelings or sensations do these special characters trigger in you? o Do you respond to them in any way? - Are there differences between Groups (e.g. in the group dynamics)?

Verhalten sich Schweine mit Langschwanz anders, als Schweine mit kupierten Schwänzen? - Wenn ja: wo ist der Unterschied? - Wie beeinflusst das Ihre Beziehung zu den Schweinen? - Haben Sie den Eindruck, es beeinflusst das Wohlbefinden der Schweine? Ihre Interaktion mit anderen in der Gruppe?	**Do pigs with long tails behave differently from pigs with docked tails?** - If so, what is the difference? - How does this affect your relationship with the pigs? - Do you feel it affects the well-being of the pigs? Their interaction with others in the group?

Man hört immer wieder den Spruch „Geht es dem Tier gut, geht es auch dem Menschen gut“ Wie sehen Sie das?
- Würden Sie dieser Aussage zustimmen?
  o Warum/Warum nicht?
- Kennen Sie ein Beispiel aus ihrem eigenen Leben, das den Spruch „Geht es dem Tier gut, geht es auch dem Menschen gut“ bestätigt oder widerlegt?
- Was bedeutet es für Sie, dass es den Schweinen „gut“ geht?
  o Woran erkennen Sie das?
  o Ist es eher das Verhalten, die Zunahmen, das physische Wohlergehen? Keine Kratzer/Bissspuren am Körper oder an den Ohren?
- Was bedeutet es für Sie persönlich, dass es Ihnen „gut“ geht?
  o Woran erkennen Sie das?
- Gibt es eine Verbindung zwischen Ihrem Wohlbefinden und dem Wohlergehen Ihrer Tiere?
  o Wie erleben Sie persönlich die Verbindung zwischen Ihrem eigenen Wohlbefinden und dem Wohlbefinden Ihrer Schweine?
  o Haben Sie schonmal festgestellt, dass sich Ihr Wohlbefinden verbessert, wenn Sie sich um das Wohlergehen Ihrer Tiere kümmern?
- Wie hat sich Ihre Einstellung zur Verbindung zwischen Ihrem eigenen Wohlbefinden und dem Wohlbefinden Ihrer Schweine im Laufe der Zeit verändert?
	You often hear the saying, "If the animal is fine, the farmer is fine too." How do you see that?
	- Would you agree with this statement?
	  o Why/why not?
	- Do you know an example from your own life that confirms or refutes the saying “If the animal is doing fine, the human is doing fine”?
	- What does it mean to you that the pigs are doing “fine”?
	  o How do you recognise this?
	  o Is it more the behaviour, the weight gain, or the physical well-being? No scratches/bite marks on the body or ears?
	- What does it mean to you personally that you are “fine”?
	  o How do you recognise this?
	- Is there a connection between your well-being and the well-being of your animals?
	  o How do you personally experience the connection between your own well-being and the well-being of your pigs?
	  o Have you ever noticed that your well-being improves when you take care of the well-being of your animals?
	- How has your attitude towards the link between your own welfare and the welfare of your pigs changed over time?

Stellen Sie sich vor, Sie gehen am Ende eines Tages vom Stall zurück ins Haus und denken: “Heute war ein guter Tag im Stall!” Was genau bringt Sie zu dieser Aussage? - Welche Faktoren sind für Sie entscheidend, damit Sie einen Tag im Stall als „gut“ empfinden? - Warum sind diese Faktoren für Sie wichtig? - Wofür stehen sie? Welche Bedeutung haben sie für Sie?	**Imagine you are walking back to the house from the barn at the end of the day and think, "Today was a good day in the barn!" What would make you believe this?** - What factors are important for you to perceive a day in the barn as “good”? - Why are these factors important to you? - What do they stand for? What significance do they have for you? - Which aspects of your work with the pigs do you particularly enjoy?

- Welche Aspekte Ihrer Arbeit mit den Schweinen bereitet Ihnen besonders Freude?	

Welchen Einfluss hat Ihrer Meinung nach, der Tierwohlstall auf das Wohlbefinden der Schweine?
- Gibt es Unterschiede in Bezug auf das Verhalten der Tiere?
  o Wenn Sie an diese Unterschiede denken, wie geht es Ihnen dabei?
- Merken sie durch den Tierwohlstall eine Veränderung in Bezug auf Ihre eigene Motivation oder Arbeitszufriedenheit?
- Bietet Ihnen der Stall eine andere oder mehr Möglichkeiten mit den Tieren zu interagieren (Beobachten, Sprechen, Berühren)?
  o Bemerken Sie Unterschiede, wie Sie mit den Tieren umgehen?
 	
Arbeitsblatt: „Aus meiner Sicht sind folgende Faktoren besonders wichtig für das Tierwohl…“
 	
Nachdem wir bereits über einige Aspekte des Tierwohlstalls gesprochen haben möchte ich Sie bitten mit den 24 Jetons den Einfluss der folgenden Faktoren auf das Tierwohl zu bewerten:
 	
1. Vielfältiges, abwechslungsreiches Beschäftigungsmaterial
2. Ein Landwirt, eine Landwirtin, die ein gutes Gefühl für Tiere hat
3. Eine eingestreute Liegefläche
4. Größere Gruppen, um eine soziale Interaktion mit anderen Schweinen zu ermöglichen
5. Unkupierte Schwänze
6. Erhöhtes Platzangebot pro Tier
7. Zugang zu Freiland- bzw. Außenbereichen
8. Andere
Dabei bewerten Sie die Faktoren die Sie als am wichtigsten empfinden mit den Meisten Jetons und die Faktoren die Sie als weniger wichtig empfinden mit weniger oder keinen Jetons.
 	
Leitfragen zur Verteilung der Jetons:
 	
- Warum haben Sie den Faktor XY als besonders wichtig bewertet?
  o Was macht diesen Faktor für Sie so bedeutsam?
  o Wie setzen Sie diesen Aspekt in Ihrem Betrieb/Stall um?
- Warum haben Sie den Faktor XY keine Jetons platziert?
  o Ist Ihnen dieser Faktor nicht wichtig?
  o Gibt es Gründe, warum Sie ihn nicht berücksichtigt haben?
- Warum haben Sie den Faktor XY als am wenigsten wichtig bewertet?
	In your opinion, what influence does the animal welfare system have on the well-being of the pigs?
	
	- Are there differences in the behavior of the animals?
	  o When you think about these differences, how do you feel?
	- Do you notice a change in your own motivation or job satisfaction as a result of the animal welfare barn?
	- Does the barn offer you different or more opportunities to interact with the animals (observing, talking, touching)?
	  o Do you notice any differences in the way you interact with the animals?
	
	Worksheet: „In my opinion, the following factors are especially important for ensuring animal welfare..."
	
	Now that we have already discussed some aspects of animal welfare, I would like to ask you to use the 24 chips to evaluate the influence of the following factors on animal welfare:
	
	1. Diverse, varied enrichment materials
	2. A farmer who has a strong affinity for animals
	3. A bedded lying area
	4. Undocked Tails
	5. Larger groups to allow social interactions between pigs
	6. Increased space per animal
	7. Access to outdoor areas
	8. Others
	
	You rate the factors that you consider to be most important with the most chips and the factors that you consider to be less important with fewer or no chips.
	
	Key questions on the distribution of tokens:
	
	- Why did you rate factor XY as particularly important?
	  o What makes this factor so important to you?
	  o How do you implement this aspect in your business/stable?
	- Why did you not place any chips for factor XY?
	  o Is this factor not important to you?
	  o Are there reasons why you have not taken it into account?
	- Why did you rate factor XY as least important?
	  o What makes you consider this factor less relevant?

○ Was führt dazu, dass Sie diesen Faktor als weniger relevant empfinden? - Was für Beschäftigungsmaterial ist wichtig? Wie soll es sein? - Sie hatten zuvor XY erwähnt, aber hier nicht als wichtig bewertet. Warum? ○ Gibt es spezifische Gründe, warum XY in dieser Bewertung anders behandelt wird? - Warum haben Sie den Faktor, dass man 'ein gutes Gefühl für Tiere' haben sollte, als wichtig/unwichtig bewertet? ○ Wie sehen Sie den Zusammenhang zwischen der Persönlichkeit des Landwirts oder der Landwirtin und dem Tierwohl? ○ Welche Eigenschaften oder Verhaltensweisen eines Landwirts oder einer Landwirtin wirken sich Ihrer Meinung nach besonders auf das Tierwohl aus? ○ Gibt es bestimmte Charakterzüge, die sich positiv auswirken? ○ Welche Rolle spielt die Empathie und das Verständnis für die Bedürfnisse der Tiere? - Gibt es noch weitere Faktoren, die Ihrer Meinung nach erwähnenswert sind? - Gibt es Aspekte, die nicht aufgeführt wurden, aber Ihrer Erfahrung nach relevant für das Tierwohl sind?	- What kind of employment material is important? What should it be like? - You had previously mentioned XY, but did not rate it as important here. Why? ○ Are there specific reasons why XY is treated differently in this assessment? - Why did you rate the factor that one should have 'a good affinity for animals' as important/unimportant? ○ How do you see the connection between the farmer's personality and animal welfare? ○ In your opinion, which characteristics or behaviours of a farmer have a particular impact on animal welfare? ○ Are there certain character traits that have a positive effect? ○ What role does empathy and understanding of the animals' needs play? - Are there any other factors that you think are worth mentioning? ○ Are there any aspects that have not been listed, but in your experience are relevant to animal welfare?
Teil 2 des Interviews (A. Wagner)	**Part 2 of the Interview (A. Wagner)**
Gibt es noch etwas, das Sie hervorheben möchten, das in unserem Gespräch bisher nicht zur Sprache gekommen ist?	Is there anything else you would like to emphasise that has not come up in our conversation so far?

Appendix G: Codebook for Opportunities and Barriers

Main Category	Code	Definition
Barrier	Mechanisation	An increased workload leads to an increase in mechanisation, causing a barrier to interaction
	Dust	Dust is mentioned as a problem and barrier to staying in the barn longer than necessary
	Number of animals	Decreases the interaction time per animal
	Time	Other farm duties decrease the interaction time with animals
	Time spent on the farm	The time animals spend on the farm decreases the interaction time and hinders attachment between farmers and their animals (farmers avoid attachment)
Opportunities	Improved working environment	Improved working environment (air quality…) makes farmers go into the barn more
	Application of straw	The application of straw and the cleaning increase the interaction frequency
	Application of enrichment materials	The application of enrichment materials increases the interaction frequency

Appendix H: Codes and Categories for Interaction Levels

Category	Sub Category	Definition
Auditory Interactions	Noises/sounds	A farmer uses noises and sounds to communicate (such as whistling)
	No talking	The farmer expresses that there is no communication with the animals
	Command	A farmer uses commands for animals
	Shouting/Rough language	The farmer uses loud/rough language to command animals
	Talking to pigs	The farmer talks to animals
Tactile	Petting	Farmer pets the pigs
	No petting	The farmer does not pet the pigs
	Routine handling (feeding, maintenance)	Routine handling is done, including tactile interaction
	Rough handling	Pushing or hitting animals
Visual	Distant observations	Visual observation is done from a distance (from outside the pen)
	Observation from the Pen	Visual observation is done from inside the pen

Categories associated with the interaction levels

Level	Category
Enriched Interaction:	Physical: Petting
	Verbal: Talking to Pigs
	Observation from the pen
Functional Interaction:	Physical: Routine handling (feeding, maintenance, etc.)
	Physical: No petting
	Verbal: Command
	Verbal: Sounds/noises
	Observation from the pen
Negative Interaction:	distant observation
	Verbal: No talking
	Verbal: Shouting/rough language
	Physical: rough handling

Appendix I: Codes and Categories for Attachment Levels

Main Category	Code	Definition
Interaction approaches	Basic necessities: automation	The farmer uses automation for the basic necessities of the pigs, keeping personal interactions minimal
	Avoidance behaviour	The farmer avoids interaction with the pigs
	Basic necessities: manual	Manual labour for daily necessities allows for personal interactions
	Time adaptations	The farmer adapts the schedule according to the animals' needs
	Quality time spent	The farmer spends "quality time" with his pigs, directly interacting by petting/playing with them
Reasons for Interaction	Farmers' need: easier handling	A relationship is formed because the farmer sees it as useful
	Farmer: understanding animals' needs	Farmer interacts with the animals to understand their needs
	Farmer: pleasure in Interactions	The farmer interacts with the pigs for the farmer's pleasure
	Farmers' need: animal welfare	The farmer believes the interactions are important for animal welfare
	Farmers' need: productivity	The farmer believes the interactions improve the growth rates
	Farmers' need: Efficiency	The farmer believes the interactions improve work efficiency
	Farmers' need: image	The farmer believes that the interactions with his pigs are good for his image
	Pigs need: Clean environment	The farmer interacts with the pigs when cleaning
	Pigs' need: Calm	The farmer interacts with the pigs to calm them
	Pigs' need: Food	The farmer interacts with the pigs while feeding
	Pigs' need: Health	The farmer interacts with the pigs to check their health
	Pigs' need: Unharmed	The farmer interacts with the pigs to make sure they are unharmed
	Pigs' need: Natural behaviour	The farmer interacts with the pigs to ensure they can exhibit natural behaviours, such as providing enrichment materials or straw
	Pigs' Joy	The farmer interacts with the pigs because they believe it brings them joy
Recognition of Animals	Production Units	The farmer does not recognise individual animals but merely sees them as production units (numbers or undefined mass)
	Individuals: Appearance	Farmers can identify individuals who look special
	Individuals: Personality	Farmers can identify specific animals with a special personality
	Individual sick animals	Farmers can identify specific sick animals (That are or were sick)
	Special pigs: special treatment	Special pigs get special treatment from farmers
Utility of Animals	**Economic value**	**Animals are mainly seen as a way to earn money**
	Pig happiness important	Farmers express that the pigs' happiness is important to them
	Emotional effect on the farmer	Farmers express that the pigs have an emotional effect on the farmer
	Care commitment	Farmers acknowledge care and commitment towards their animals

	No emotional effect	Farmers express that the pigs have no emotional effect on the farmer
	More than Commodities: Welfare is important	Animals are seen as a way to earn money, but welfare is important to the farmer
	Farm member	Animals are described as farm or even family members
Emotional Attachment	Avoiding attachment	Deliberately avoid forming emotional attachments to prevent emotional discomfort.
	Irritated/annoyed	Irritated/annoyed when pigs disrupt operations or require additional resources.
	Fulfilment	fulfilment from working with pigs
	Joy	Joy in caring for his pigs
	neutrality	The farmer expresses not having a special emotional attachment to animals
	Sad at death	The farmer feels sad when animal(s) are killed/die
Animal Behaviour	Fear	Pigs exhibit fear (avoidance, stress signs)
	Cautious	Pigs are cautious and may relax over time
	Approaching	Pigs actively seek interaction
	Relaxed	Pigs are relaxed when the farmer comes into the pen

Categories associated with the attachment levels:

Level	**Main Category**	**Code**
Weak Attachment	Interaction Approaches	Basic necessities: automation
		Avoiding behaviour
	Reasons for Interaction	Pigs' needs: Clean environment
		Pigs' needs: Food
		Pigs' needs: Health
		Pigs' needs: Unharmed
		Farmers need: Image
		Farmers need: Work efficiency
		Farmers need: Easier handling
		farmers need: Productivity
	Recognition of Animals	Sick animals
		Undefined mass
	Utility of Animals	Economic value
		Care commitment
		No emotional effect
	Emotionality	avoiding attachment
		neutrality
		Irritated/annoyed
	Animal Behaviour	Fear
Moderate Attachment	Interaction Approaches	Basic necessities: manual
		Extra check
	Reasons for Interaction	Pigs' needs: Calming
		Pigs need: Animal welfare
		Pigs need: Natural behaviour

	Recognition of Animals	Individuals: Behaviour/Character
		Individuals: Special Appearance
	Utility of Animals	Emotional effect on the farmer
		More than Commodities: Welfare is important
	Emotionality	Joy in caring for pigs
	Animal Behaviour	Cautious
Strong Attachment	Interaction Approaches	quality time spent
		Time adaptations
	Reasons for Interaction	Farmer: Pleasure in Interactions
		Farmer: understanding animals' needs
		Pigs joy
	Recognition of Animals	Individuals: Personality
		Individuals: Appearance
		Special Pigs
	Utility of Animals	Farm Member
		Pig happiness important
	Emotionality	Fulfilment
		Sad at death
	Animal Behaviour	Approaching
		Relaxed

Appendix J: Codebook for Reciprocal Relationships

Category	Code	Indicators
Reciprocal Relationship Awareness	Unaware	Statements that only describe routine activities and lack any reference to observing changes in pigs' behaviour or adjusting actions accordingly.
	Partially Aware	Singular events where farmers adapted their approach when noticing changes in the pigs' behaviour, but these adjustments were situational rather than consistent.
	Fully Aware	Detailed and consistent descriptions of adaptive behaviours, regular monitoring of pigs' responses, and specific examples of actions taken to improve pigs' well-being.
Importance of Relationship	Unimportant	Statements that downplay the importance of the relationship with pigs, focusing on routine tasks and efficiency without mentioning any benefits or efforts to build a relationship.
	Useful	Farmers emphasise the practical benefits of a good relationship with pigs for farming efficiency without a strong focus on emotional attachment.
	Important	Statements showing the significance of building relationships with pigs, mentioning specific efforts to enhance their relationship and emotional attachment with their animals.

Appendix K: Individual Farm Ranking - “Good Life”

Pseudonyms	TW	A farmer who has a strong affinity for animals	Increased space per animal	Bedded lying area	Outside Area	Diverse, varied enrichment materials	Larger groups to allow social interactions between pigs	Undocked Tails	Others	Other - High Health status	Other - Functional Zones	Other - Flooring	Other - Barn climate	Other - Food
Antonia Wolfgang	**100**	5	4	3	1	3	4	0	4	0	0	4	0	0
Beni Maier	**100**	4	5	5	4	2	0	2	2	0	0	0	0	2
Bichlbau	**100**	5	4	4	3	3	3	2	0	0	0	0	0	0
Die 700	**100**	4	3	6	3	3	2	3	0	0	0	0	0	0
Elias + Luisa	**100**	4	6	6	5	1	0	2	0	0	0	0	0	0
Fendt	**100**	4	5	4	7	3	0	1	0	0	0	0	0	0
Franz	**100**	4	4	3	4	3	3	3	0	0	0	0	0	0
Glücksschwein	**100**	4	5	4	3	3	5	0	0	0	0	0	0	0
J	**100**	4	5	3	1	3	2	1	5	5	0	0	0	0
Lori	**100**	10	3	4	4	3	0	0	0	0	0	0	0	0
Saubauer	**100**	6	4	4	3	2	4	1	0	0	0	0	0	0
Saubauer0815	**100**	5	4	4	4	3	0	4	0	0	0	0	0	0
Sauwohl	**100**	5	5	4	4	2	2	2	0	0	0	0	0	0
Tierfreunde	**100**	4	5	5	4	4	2	0	0	0	0	0	0	0
Tierwohl Strohschwein (TW100)	**100**	7	7	5	5	0	0	0	0	0	0	0	0	0
A.N	**60**	5	5	2	1	4	2	0	5	0	0	0	5	0
Big Daddy + Engelbert + Strauss	**60**	4	7	2	5	1	3	0	2	2	0	0	0	0
Borsti	**60**	3	6	3	3	3	3	3	0	0	0	0	0	0
Eduard + Erich + Emil	**60**	7	5	2	0	5	2	0	3	0	0	0	3	0
H	**60**	6	5	1	4	5	3	0	0	0	0	0	0	0
Herbert und Anita Holzwohl	**60**	6	5	4	3	6	0	0	0	0	0	0	0	0
Luna + Bertl	**60**	8	3	2	4	2	0	0	5	0	5	0	0	0
Moser Michael	**60**	5	5	2	3	4	5	0	0	0	0	0	0	0

Nowi	**60**	6	4	2	3	4	2	1	2	0	0	0	0	2
Pauli	**60**	9	4	2	2	3	4	0	0	0	0	0	0	0
Schweinehotel	**60**	6	6	1	2	2	2	0	5	0	0	0	5	0
Schweineparadies	**60**	5	4	3	3	3	0	1	5	0	0	0	5	0

Appendix L: Individual Farm Data - Opportunities and Barriers for Interactions

Pseudonym	TW	Application of straw	Improved working environment	Application of Enrichment Material	Mechanisation	Dust	Time	Time spent on Fram	Number of Animals
Antonia Wolfgang	**100**	1	1	1	1	1	0	1	1
Beni Maier	**100**	1	1	1	1	0	1	1	0
Die 700	**100**	1	0	0	1	0	0	0	0
Elias + Luisa	**100**	1	1	0	1	0	1	0	0
Fendt	**100**	1	1	1	0	0	0	1	0
Franz	**100**	1	1	1	0	0	1	0	1
Glücksschwein	**100**	1	1	0	0	1	0	0	0
Bichlbau	**100**	1	1	1	0	1	0	0	0
J	**100**	1	0	0	1	0	0	0	0
Saubauer	**100**	1	1	1	0	0	0	0	0
Saubauer0815	**100**	1	1	0	0	0	1	0	1
Sauwohl	**100**	1	0	0	0	0	1	0	0
Tierfreunde	**100**	1	0	1	0	1	0	0	0
Tierwohl Strohschwein (TW100)	**100**	1	1	1	1	0	1	0	1
Lori	**100**	1	1	1	1	1	0	1	0
A.N	**60**	1	1	0	1	1	0	0	0
Big Daddy + Engelbert + Strauss	**60**	1	1	1	1	0	0	0	0
Borsti	**60**	1	1	0	0	0	1	1	0
Eduard + Erich + Emil	**60**	1	1	0	1	1	0	0	0
H	**60**	1	1	0	1	0	0	1	0
Herbert und Anita Holzwohl	**60**	1	1	1	0	1	1	0	0
Luna + Bertl	**60**	1	1	1	1	1	1	1	1
Moser Michael	**60**	1	1	1	1	0	1	1	0
Schweinehotel	**60**	1	1	1	1	1	0	0	0
Schweineparadies	**60**	1	1	1	1	1	1	0	0
Strohschwein (TW60)	**60**	1	0	1	0	0	0	0	0
Nowi	**60**	1	0	0	0	1	0	0	0
Pauli	**60**	1	0	1	1	1	1	1	1

Appendix M: Individual Farm Data - Interaction Levels

Pseudonym	TW	Level	Petting	Talking to Pigs	Routine handling	No petting	Command	Noises/ Sounds	Observation from the pen	Distant observation	No talking	Rough language	Rough handling
Antonia Wolfgang	**100**	**3**	1	2	1	0	0	0	1	0	0	0	0
Beni Maier	**100**	**3**	1	4	6	0	0	3	0	1	0	1	0
Bichlbau	**100**	**2**	0	0	1	0	0	1	2	0	0	0	0
Die 700	**100**	**3**	1	0	1	0	1	1	0	1	0	0	0
Elias + Luisa	**100**	**1**	0	0	1	0	1	0	0	1	0	0	0
Fendt	**100**	**3**	2	1	2	0	0	3	0	1	0	0	0
Franz	**100**	**3**	2	1	1	0	1	0	2	1	0	0	0
Glücksschwein	**100**	**3**	2	1	2	0	1	0	2	0	0	0	0
J	**100**	**1**	0	1	1	0	0	1	2	0	0	0	1
Lori	**100**	**1**	0	1	2	0	1	2	1	1	0	0	1
Saubauer	**100**	**3**	2	1	1	0	0	1	1	0	0	0	0
Saubauer0815	**100**	**3**	2	1	0	0	0	0	2	0	0	0	0
Sauwohl	**100**	**3**	2	0	0	0	1	1	1	0	0	0	0
Tierfreunde	**100**	**3**	3	2	0	0	3	1	5	0	0	0	0
Tierwohl Strohschwein (TW100)	**100**	**2**	0	0	1	0	0	0	1	0	0	0	0
A.N	**60**	**2**	4	3	1	0	0	1	3	0	0	1	1
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	1	0	2	1	0	1	1	0	0
Borsti	**60**	**1**	0	0	1	0	1	0	1	1	1	1	1
Eduard + Erich + Emil	**60**	**1**	0	0	3	0	1	1	1	1	1	0	0
H	**60**	**3**	1	2	0	0	1	0	2	0	0	1	0
Herbert und Anita Holzwohl	**60**	**2**	5	6	0	0	2	1	2	0	0	1	1
Luna + Bertl	**60**	**1**	0	0	1	0	0	4	1	1	1	0	0
Moser Michael	**60**	**1**	0	0	4	0	0	2	0	1	2	0	0
Nowi	**60**	**3**	0	2	0	0	1	1	2	1	0	0	0
Pauli	**60**	**3**	2	1	1	0	0	0	0	1	0	0	0
Schweinehotel	**60**	**3**	1	0	6	0	1	1	3	0	1	0	0
Schweineparadies	**60**	**2**	0	0	1	0	0	1	0	0	0	0	0
Strohschwein (TW60)	**60**	**1**	0	0	8	1	0	2	0	1	1	0	0

Appendix N: Individual Farm Data - Attachment Levels

Pseudonym	TW	Attachment Level	Interaction Approach Level	Reasons for Interactions Level	Recognition of Animals Level	Utility Level	Emotionality Level	Animal Behaviour Level
Antonia Wolfgang	**100**	**3**	3	3	2	3	3	2
Beni Maier	**100**	**3**	3	3	3	2	3	2
Bichlbau	**100**	**2**	3	3	2	2	2	2
Die 700	**100**	**2**	1	2	2	2	2	2
Elias + Luisa	**100**	**2**	2	2	1	2	2	2
Fendt	**100**	**2**	2	3	2	2	2	3
Franz	**100**	**3**	2	3	2	3	3	3
Glücksschwein	**100**	**3**	3	3	2	3	3	3
J	**100**	**2**	2	3	2	2	3	2
Lori	**100**	**2**	2	3	2	3	2	2
Saubauer	**100**	**3**	3	3	2	3	3	3
Saubauer0815	**100**	**3**	2	3	2	3	3	3
Sauwohl	**100**	**3**	2	3	3	3	2	3
Tierfreunde	**100**	**3**	3	3	3	3	3	3
Tierwohl Strohschwein (TW100)	**100**	**2**	2	3	2	2	2	3
A.N	**60**	**3**	3	3	3	3	2	2
Big Daddy + Engelbert + Strauss	**60**	**1**	1	1	2	1	1	2
Borsti	**60**	**1**	1	1	1	2	1	2
Eduard + Erich + Emil	**60**	**1**	1	2	2	2	1	2
H	**60**	**2**	2	3	3	2	2	2
Herbert und Anita Holzwohl	**60**	**3**	3	3	3	3	3	2
Luna + Bertl	**60**	**2**	2	3	2	2	3	2
Moser Michael	**60**	**1**	1	1	1	2	1	2
Nowi	**60**	**2**	1	2	2	2	2	2
Pauli	**60**	**2**	2	2	2	2	2	3
Schweinehotel	**60**	**2**	2	3	2	2	2	3
Schweineparadies	**60**	**2**	2	3	2	2	2	2
Strohschwein (TW60)	**60**	**2**	1	2	1	2	2	2

Interaction Approach Level

Pseudonyms	TW	Level	Quality time spent	Time adaptations	Basic necessities: manual	Extra check	Avoidance Behaviour	Basic necessities: Automation
Antonia Wolfgang	**100**	**3**	2	0	0	3	0	1
Beni Maier	**100**	**3**	3	0	0	0	2	6
Bichlbau	**100**	**3**	1	0	0	0	0	2
Die 700	**100**	**1**	0	0	0	0	0	2
Elias + Luisa	**100**	**2**	0	0	0	2	0	2
Fendt	**100**	**2**	0	0	1	1	0	0
Franz	**100**	**2**	0	0	0	1	0	4
Glücksschwein	**100**	**3**	1	0	1	1	0	0
J	**100**	**2**	0	0	1	0	0	1
Lori	**100**	**2**	0	0	2	0	0	1
Saubauer	**100**	**3**	1	0	1	1	0	2
Saubauer0815	**100**	**2**	0	0	0	2	0	1
Sauwohl	**100**	**2**	0	0	0	1	0	1
Tierfreunde	**100**	**3**	1	0	0	5	0	2
Tierwohl Strohschwein (TW100)	**100**	**2**	0	0	2	0	0	0
A.N	**60**	**3**	0	1	1	0	0	0
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	0	0	0	2
Borsti	**60**	**1**	0	0	0	0	0	4
Eduard + Erich + Emil	**60**	**1**	0	0	0	0	0	4
H	**60**	**2**	0	0	2	0	0	2
Herbert und Anita Holzwohl	**60**	**3**	3	0	0	2	0	3
Luna + Bertl	**60**	**2**	0	0	0	2	0	4
Moser Michael	**60**	**1**	0	0	0	0	1	3
Nowi	**60**	**1**	0	0	0	0	0	2
Pauli	**60**	**2**	0	0	1	1	0	1
Schweinehotel	**60**	**2**	0	0	0	1	0	2
Schweineparadies	**60**	**2**	0	0	3	0	0	0
Strohschwein (TW60)	**60**	**1**	0	0	0	0	1	1

Reasons for Interactions Level

Pseudonym	TW	Level	Pigs Joy	Farmer: understanding animals' needs	Farmers' pleasure in interactions	Animal Welfare	Calming	Natural Behaviour	Clean Environment	Food	Health	Unharmed	Easier Handling	Efficiency	Farmers Image	Productivity
Antonia+Wolfgang	**100**	**3**	1	0	0	0	0	1	0	0	5	0	0	1	0	2
Beni Maier	**100**	**3**	3	0	2	0	1	1	1	0	1	5	0	1	0	1
Bichlbau	**100**	**3**	4	0	1	1	0	2	0	0	7	3	0	1	0	2
Die 700	**100**	**2**	0	0	0	0	0	2	0	0	1	1	1	0	0	2
Elias + Luisa	**100**	**2**	0	0	1	1	0	2	0	0	5	0	1	1	0	1
Fendt	**100**	**3**	1	0	1	1	4	1	2	0	2	4	0	1	0	1
Franz	**100**	**3**	1	0	0	0	0	4	0	1	4	1	0	3	0	0
Glücksschwein	**100**	**3**	7	0	1	1	0	0	2	0	0	1	0	0	2	2
J	**100**	**3**	3	0	0	0	0	1	3	1	1	1	0	1	0	1
Lori	**100**	**3**	2	0	2	1	0	1	1	0	0	1	0	0	1	2
Saubauer	**100**	**3**	2	0	0	1	4	0	2	0	2	3	3	2	0	1
Saubauer0815	**100**	**3**	2	0	1	6	1	1	0	1	8	6	1	3	0	0
Sauwohl	**100**	**3**	3	3	1	0	2	3	0	0	1	1	1	3	0	2
Tierfreunde	**100**	**3**	7	2	5	6	0	0	2	0	5	2	0	0	0	0
Tierwohl Strohschwein (TW100)	**100**	**3**	0	0	1	2	0	0	2	0	1	1	0	1	0	1
A.N	**60**	**3**	2	0	0	0	0	0	2	0	6	2	0	0	0	2
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	0	0	0	0	1	2	9	0	0	9	5	7
Borsti	**60**	**1**	0	0	0	0	0	0	0	2	2	4	0	2	2	1
Eduard + Erich + Emil	**60**	**1**	0	0	0	0	0	0	0	0	4	0	0	1	0	4
H	**60**	**3**	2	0	2	1	0	4	3	0	5	0	0	1	0	3
Herbert und Anita Holzwohl	**60**	**3**	9	0	3	1	2	0	10	0	2	1	3	0	0	1
Luna + Bertl	**60**	**3**	1	0	0	7	5	4	1	11	17	0	0	5	0	5
Moser Michael	**60**	**1**	0	0	0	0	0	0	1	0	6	4	0	2	1	3
Nowi	**60**	**2**	0	0	0	0	1	1	4	0	3	3	2	5	4	1

Pauli	**60**	**2**	0	0	0	0	0	2	0	0	1	1	0	0	0	2
Schweinehotel	**60**	**3**	5	0	1	0	0	0	2	0	1	1	0	0	0	0
Schweineparadies	**60**	**3**	3	1	3	1	2	1	0	0	2	3	1	2	1	1
Strohschwein (TW60)	**60**	**2**	0	0	0	2	0	0	0	0	4	2	0	2	0	1

Recognition of Animals Level

Pseudonym	TW	Level	Special Pigs: special treatment	Individuals: Behaviour/Character	Individuals: Special Appearance	sick animals	undefined mass
Antonia + Wolfgang	**100**	**2**	0	1	1	0	0
Beni Maier	**100**	**3**	1	0	0	1	1
Bichlbau	**100**	**2**	1	2	0	0	0
Die 700	**100**	**2**	0	0	1	0	0
Elias + Luisa	**100**	**1**	0	0	0	4	1
Fendt	**100**	**2**	0	1	0	0	1
Franz	**100**	**2**	0	3	0	0	0
Glücksschwein	**100**	**2**	0	2	1	1	0
J	**100**	**2**	0	3	0	0	0
Lori	**100**	**2**	0	2	1	0	0
Saubauer	**100**	**2**	0	1	0	0	0
Saubauer0815	**100**	**2**	0	1	2	0	0
Sauwohl	**100**	**3**	2	1	0	0	0
Tierfreunde	**100**	**3**	2	2	1	1	0
Tierwohl + Strohschwein (TW100)	**100**	**2**	0	1	0	0	1
Herbert und Anita Holzwohl	**60**	**3**	1	2	2	2	2
Schweinehotel	**60**	**2**	0	1	1	0	3
Luna + Bertl	**60**	**2**	0	5	4	1	1
H	**60**	**3**	1	2	0	0	1
Big Daddy + Engelbert + Strauss	**60**	**2**	0	0	2	0	1
Borsti	**60**	**1**	0	0	0	0	2
Eduard + Erich + Emil	**60**	**2**	0	1	1	0	2

Pauli	**60**	**2**	0	4	4	0	1
Nowi	**60**	**2**	0	2	1	0	4
Moser Michael	**60**	**1**	0	0	0	0	1
A.N	**60**	**3**	2	1	1	0	0
Strohschwein (TW60)	**60**	**1**	0	0	0	1	3
Schweineparadies	**60**	**2**	0	1	0	1	1

Perceived Utility Level

Pseudonyms	TW	Level	Farm member	Pig happiness important	Emotional effect on farmer	more than commodity: welfare is important	Economic value	Care commitment	No emotional effect
Antonia Wolfgang	**100**	**3**	0	3	8	0	4	0	0
Beni Maier	**100**	**2**	0	0	8	0	9	1	0
Bichlbau	**100**	**2**	0	0	3	4	5	0	0
Die 700	**100**	**2**	0	0	1	0	1	1	0
Elias + Luisa	**100**	**2**	0	0	6	0	0	0	0
Fendt	**100**	**2**	0	0	1	1	1	0	1
Franz	**100**	**3**	0	1	1	0	0	0	0
Glücksschwein	**100**	**3**	0	1	1	2	1	1	2
J	**100**	**2**	0	0	3	0	1	0	0
Lori	**100**	**3**	0	1	3	1	2	2	0
Saubauer	**100**	**3**	0	2	0	0	1	0	0
Saubauer0815	**100**	**3**	0	1	1	1	4	1	0
Sauwohl	**100**	**3**	0	1	1	0	0	1	0
Tierfreunde	**100**	**3**	1	1	9	0	1	2	0
Tierwohl Strohschwein_TW100	**100**	**2**	0	0	0	1	1	0	0
A.N	**60**	**3**	1	0	5	0	3	1	0
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	0	0	11	1	6
Borsti	**60**	**2**	0	0	0	2	9	1	6

Eduard + Erich + Emil	**60**	**2**	0	0	0	1	7	1	1
H	**60**	**2**	0	0	4	1	4	1	0
Herbert und Anita Holzwohl	**60**	**3**	0	1	6	0	5	0	1
Luna + Bertl	**60**	**2**	0	0	5	2	9	4	1
Moser Michael	**60**	**2**	0	0	3	0	5	4	3
Nowi	**60**	**2**	0	0	1	0	8	3	4
Pauli	**60**	**2**	0	0	4	0	6	2	0
Schweinehotel	**60**	**2**	0	0	8	0	4	1	1
Schweineparadies	**60**	**2**	0	0	4	0	3	2	6
Strohschwein (TW60)	**60**	**2**	0	0	3	0	4	2	1

Emotional Attachment Level

Pseudonyms	TW	Level	Fulfilment	Sad at death	Joy	Irritated/Annoyed	Neutrality	Avoiding bond
Saubauer0815	**100**	**3**	1	1	0	0	0	0
Franz	**100**	**3**	1	0	3	2	0	0
J	**100**	**3**	0	1	4	2	0	0
Glücksschwein	**100**	**3**	1	0	6	2	0	0
Fendt	**100**	**2**	0	0	1	0	0	1
Die 700	**100**	**2**	0	0	3	0	0	0
Bichlbau	**100**	**2**	0	0	8	1	0	1
Antonia Wolfgang	**100**	**3**	2	2	0	0	0	0
Elias + Luisa	**100**	**2**	0	1	3	1	0	0
Saubauer	**100**	**3**	1	0	2	0	0	0
Sauwohl	**100**	**2**	0	0	4	2	0	0
Tierwohl Strohschwein (TW100)	**100**	**2**	0	0	3	0	0	0
Lori	**100**	**2**	0	0	3	3	0	0
Tierfreunde	**100**	**3**	10	0	9	1	0	0
Beni Maier	**100**	**3**	1	0	1	0	0	1
Herbert und Anita Holzwohl	**60**	**3**	3	2	7	4	0	0
H	**60**	**2**	0	0	2	1	0	0

Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	0	1	1	0
Pauli	**60**	**2**	0	0	1	0	0	0
Nowi	**60**	**2**	0	0	1	5	0	0
Borsti	**60**	**1**	0	0	0	2	2	0
Eduard + Erich + Emil	**60**	**1**	0	0	0	1	0	0
Schweinehotel	**60**	**2**	0	0	2	2	0	0
Moser Michael	**60**	**1**	0	0	0	1	0	1
A.N	**60**	**2**	0	0	5	1	0	0
Luna + Bertl	**60**	**3**	0	1	5	5	1	2
Strohschwein (TW60)	**60**	**2**	0	0	2	1	0	1
Schweineparadies	**60**	**2**	0	0	7	0	0	2

Animal Behaviour Level

Pseudonym	**TW**	**Level**	**Fear**	**Cautious**	**Approaching**	**Relaxed**
Antonia Wolfgang	**100**	**2**	0	2	3	1
Beni Maier	**100**	**2**	0	4	1	0
Bichlbau	**100**	**2**	0	1	0	0
Die 700	**100**	**2**	0	2	0	0
Elias + Luisa	**100**	**2**	0	1	0	0
Fendt	**100**	**3**	0	0	2	3
Franz	**100**	**3**	0	0	1	1
Glücksschwein	**100**	**3**	0	0	3	1
J	**100**	**2**	0	3	0	0
Lori	**100**	**2**	0	1	4	0
Saubauer	**100**	**3**	0	0	2	3
Saubauer0815	**100**	**3**	0	0	3	3
Sauwohl	**100**	**3**	0	0	3	1
Tierfreunde	**100**	**3**	0	0	3	2
Tierwohl Strohschwein (TW100)	**100**	**3**	0	0	4	4
A.N	**60**	**2**	0	2	4	1

Big Daddy + Engelbert + Strauss	**60**	**2**	0	3	2	1
Borsti	**60**	**2**	0	1	0	0
Eduard + Erich + Emil	**60**	**2**	0	2	0	0
H	**60**	**2**	0	1	3	0
Herbert und Anita Holzwohl	**60**	**2**	0	2	4	3
Luna + Bertl	**60**	**2**	0	6	5	5
Moser Michael	**60**	**2**	0	2	0	2
Nowi	**60**	**2**	2	2	2	1
Pauli	**60**	**3**	0	0	1	0
Schweinehotel	**60**	**3**	0	0	1	0
Schweineparadies	**60**	**2**	0	1	2	0
Strohschwein (TW60)	**60**	**2**	0	1	2	0

Appendix O: Individual Farm Data - Relationship Importance

Pseudonym	TW	Level	Important	Useful	No Relationship
Antonia Wolfgang	**100**	**3**	2	0	0
Beni Maier	**100**	**3**	1	0	0
Bichlbau	**100**	**1**	0	0	1
Die 700	**100**	**2**	0	1	0
Elias + Luisa	**100**	**2**	0	2	0
Fendt	**100**	**3**	1	0	0
Franz	**100**	**3**	1	1	0
Glücksschwein	**100**	**3**	1	1	0
J	**100**	**2**	0	1	0
Lori	**100**	**1**	0	0	1
Saubauer	**100**	**2**	0	3	0
Saubauer0815	**100**	**3**	1	1	0
Sauwohl	**100**	**3**	2	2	0
Tierfreunde	**100**	**3**	1	2	0
Tierwohl Strohschwein (TW100)	**100**	**1**	0	0	1
A.N	**60**	**3**	1	1	0
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	1
Borsti	**60**	**1**	0	0	1
Eduard + Erich + Emil	**60**	**1**	0	0	1
H	**60**	**3**	1	1	0
Herbert und Anita Holzwohl	**60**	**3**	2	4	0
Luna + Bertl	**60**	**1**	0	0	2
Moser Michael	**60**	**1**	0	0	2
Nowi	**60**	**2**	0	1	0
Pauli	**60**	**2**	0	1	0
Schweinehotel	**60**	**2**	0	1	0
Schweineparadies	**60**	**2**	0	2	1
Strohschwein (TW60)	**60**	**1**	0	0	1

Appendix P: Individual Farm Data - Awareness Reciprocal Relationship

Pseudonym	TW	Level	Fully Aware	Partially aware	Unaware
Antonia + Wolfgang	**100**	**3**	3	0	0
Beni Maier	**100**	**3**	2	0	0
Bichlbau	**100**	**2**	0	1	0
Die 700	**100**	**3**	3	0	0
Elias + Luisa	**100**	**2**	0	2	0
Fendt	**100**	**2**	0	2	0
Franz	**100**	**3**	2	3	0
Glücksschwein	**100**	**3**	1	1	0
J	**100**	**1**	0	0	2
Lori	**100**	**2**	0	3	0
Saubauer	**100**	**2**	0	1	0
Saubauer0815	**100**	**3**	3	0	0
Sauwohl	**100**	**3**	3	2	0
Tierfreunde	**100**	**3**	3	0	0
Tierwohl Strohschwein (TW100)	**100**	**2**	0	1	0
A.N	**60**	**3**	2	0	0
Big Daddy + Engelbert + Strauss	**60**	**1**	0	0	1
Borsti	**60**	**2**	0	2	0
Eduard + Erich + Emil	**60**	**2**	0	1	0
H	**60**	**3**	2	0	0
Herbert und Anita Holzwohl	**60**	**3**	4	0	0
Luna + Bertl	**60**	**2**	0	2	0
Moser Michael	**60**	**2**	0	1	0
Nowi	**60**	**3**	1	0	0
Pauli	**60**	**3**	2	1	0
Schweinehotel	**60**	**3**	1	0	0
Schweineparadies	**60**	**3**	4	0	0
Strohschwein (TW60)	**60**	**2**	0	1	0