



Schweizerische Eidgenossenschaft
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Work Analysis Methods Comparing Working Methods and the Total Agricultural System

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Objectives of this lecture

1.

Methods

- time studies and work analysis
- Influencing factors

2.

Modelling and Work budget

- modular structure

3.

Results & Conclusions

- customer's benefit
- vision, prospects



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Functions of time studies

- 1. Way to compare existing work procedures**
- 2. Assessment of new working methods before or during their development**
- 3. Comparison of working time and effort required in individual cases**
- 4. Organization of work planning**
- 5. Work budget**
- 6. Creation of appropriate basic pay.**



Tasks and approaches to labor and time planning

- 1. Work and time planning is done written form**
- 2. Measurable and achievable objectives are set and scheduled**
- 3. Priorities are set**
- 4. Working methods are constantly scrutinized**
- 5. Checklists can be created and used.**

Classification of labor (element orientet)

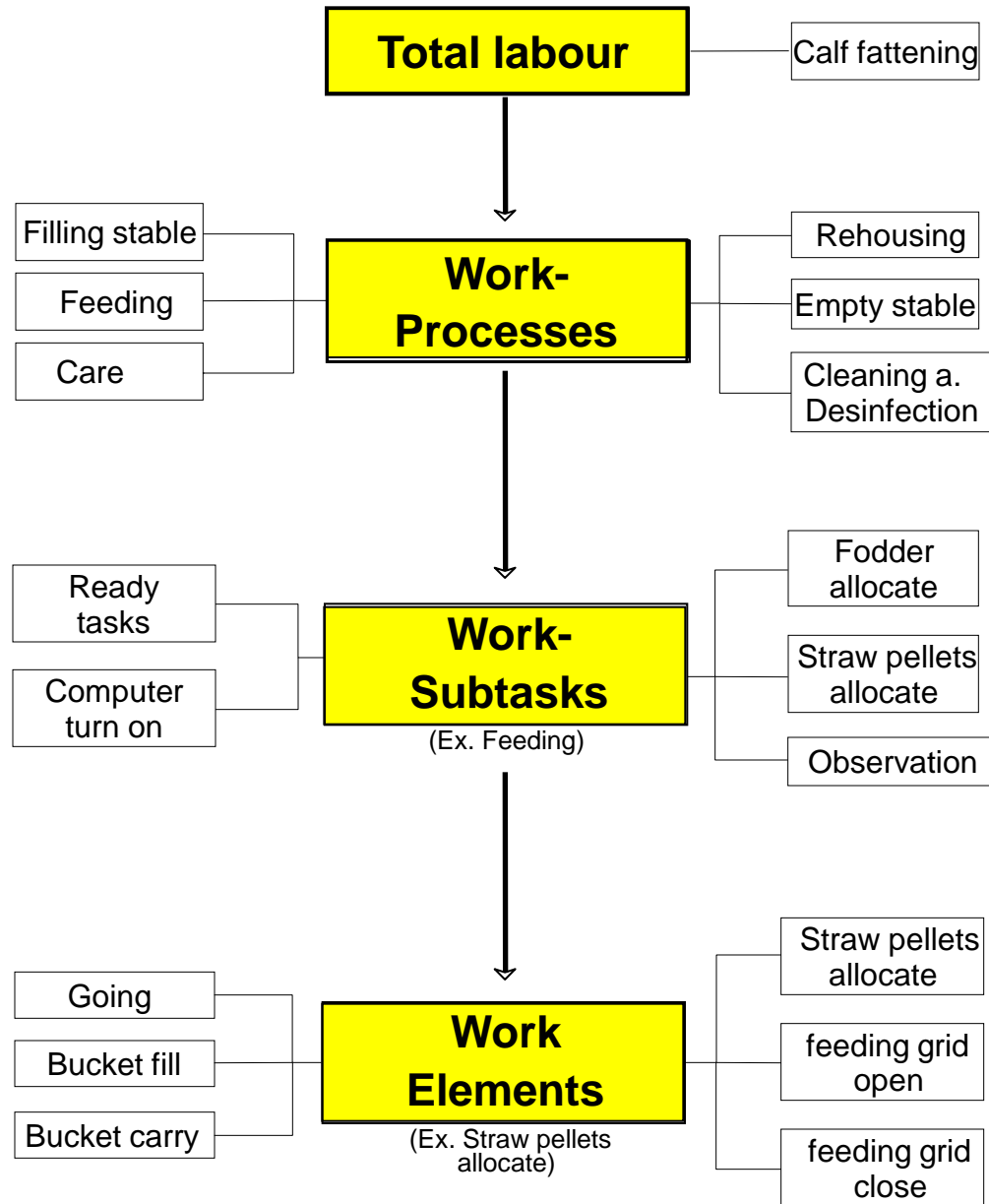


Work Diary

Work Diary

Measurement

Measurement



Quelle: SCHICK 1995



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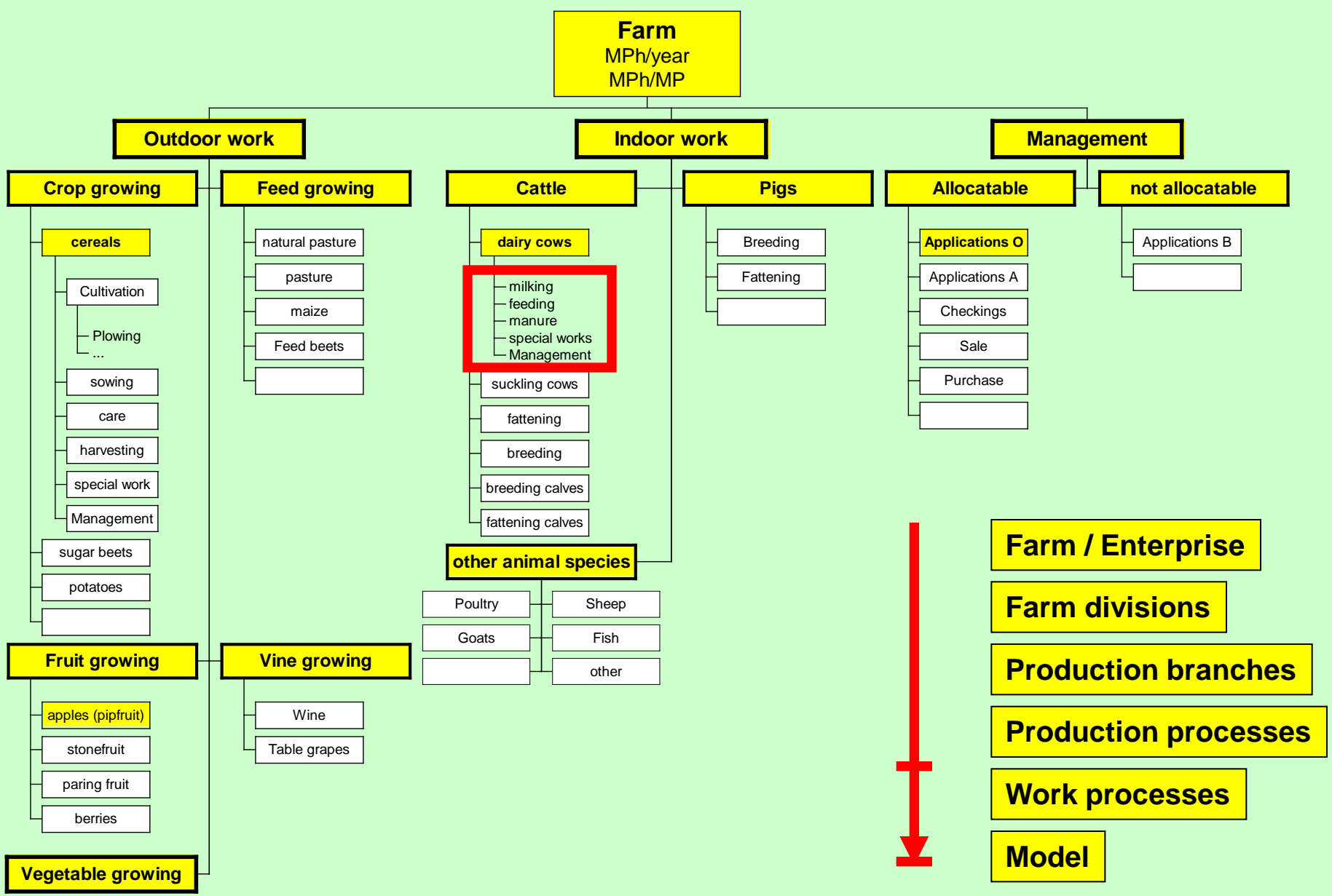
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Procedure – Structuring of the work (model-oriented, top - down)





Structure and procedure for the modelling of work economics reference figures using a model calculation system

- 1) Define work procedure (database)**
- 2) Define work sequence model (database)**
- 3) Generate list of variables and auxiliary variables (database)**
- 4) Make connection between variables and/or auxiliary variables, and reference quantities**
- 5) Link decision-making models with the reference quantities**
- 6) Generate results table of results graph**
- 7) Generate range of information**



Concept for new work process structure (bottom up)

- Results at 3rd level:
(rough evaluation of farm / enterprise)

GAV/IVAV/SAK

- Results at 2nd level:
(det. Farm WB)

Work distribution (graph) | Total farm working-time requirement (work budget)

- Model to include the locations of the farms

Field-work times / Available field-work days at farm location

- Results at 1st level:
(independent of farm)

Field-work process | In-barn-work process | Management | Housework etc.

- Models for the correct linking of the elements and influencing factors

PROOF Modul 1 ↔ PROOF Modul 2 ↔ PROOF Modul 3 ↔ PROOF Modul 4 ↔ PROOF Modul 5 ↔ PROOF Modul 6 etc.

- Work elements + influencing factors

■ ■ ■ ■ ■ ■ □ □ □ □ □ □ □ □ □ □ □ □ □ □ etc.



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Model calculation & Work budget



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Swiss Confederation

Federal Department
of Economic Affairs DEA
Agroscope Reckenholz-Tänikon
Research Station ART

ART-WB

Work budget & Model calculation system

Version 2011 (1.1.1)

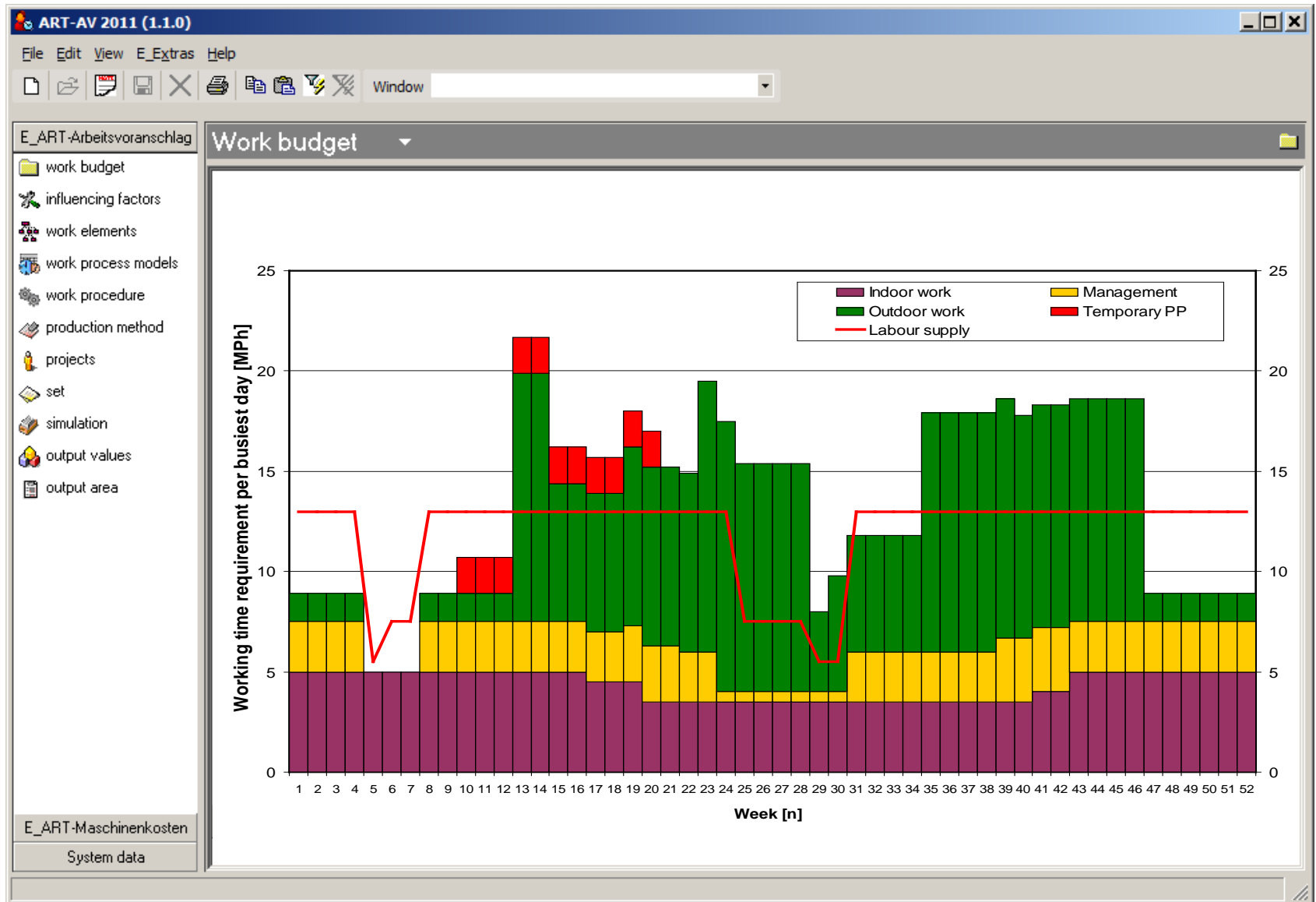
Concept and data
Matthias Schick and Ruedi Stark, Agroscope Reckenholz-Tänikon ART

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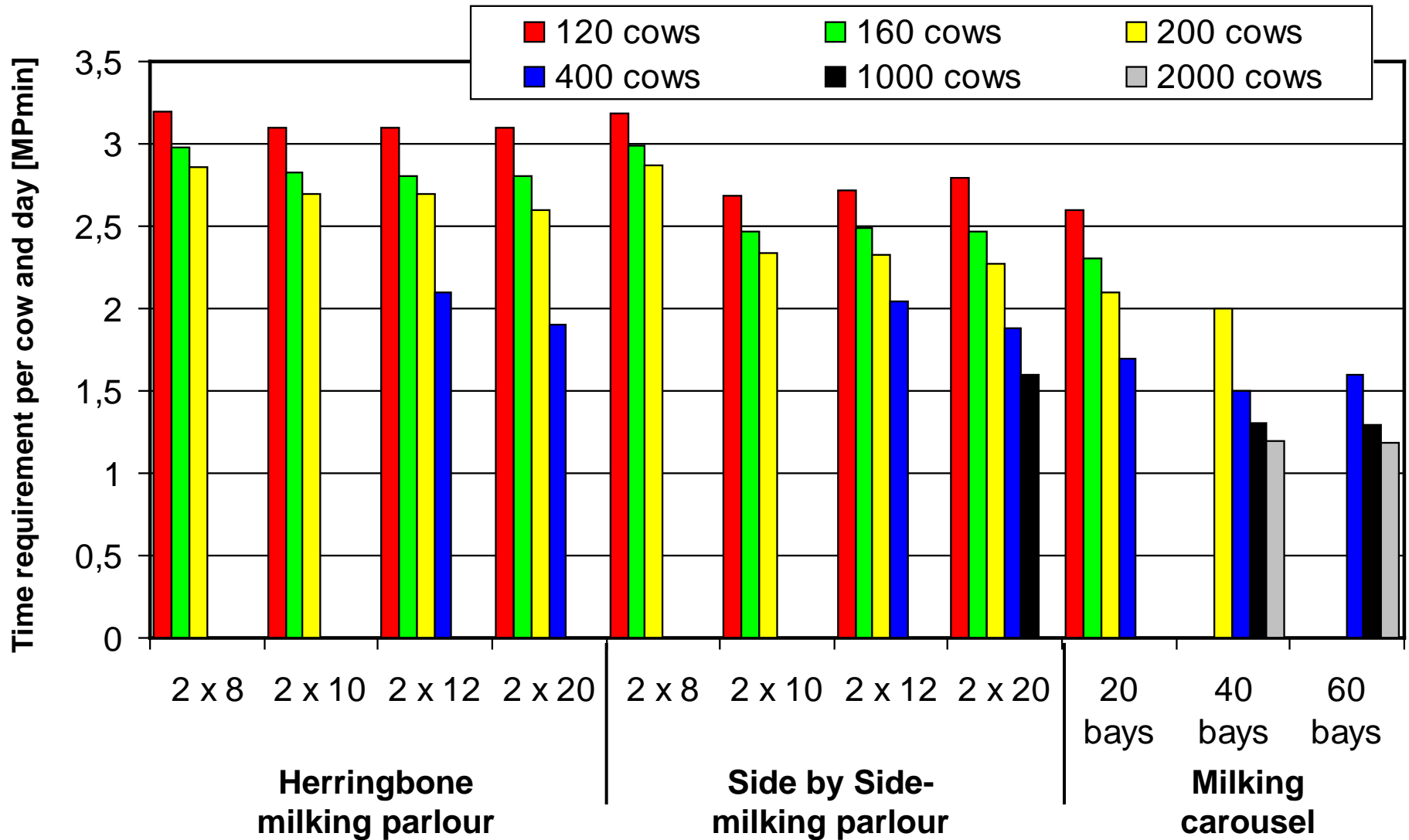
Samples of the presentation of results – “WB”

Working-time requirement in the course of the year per MP





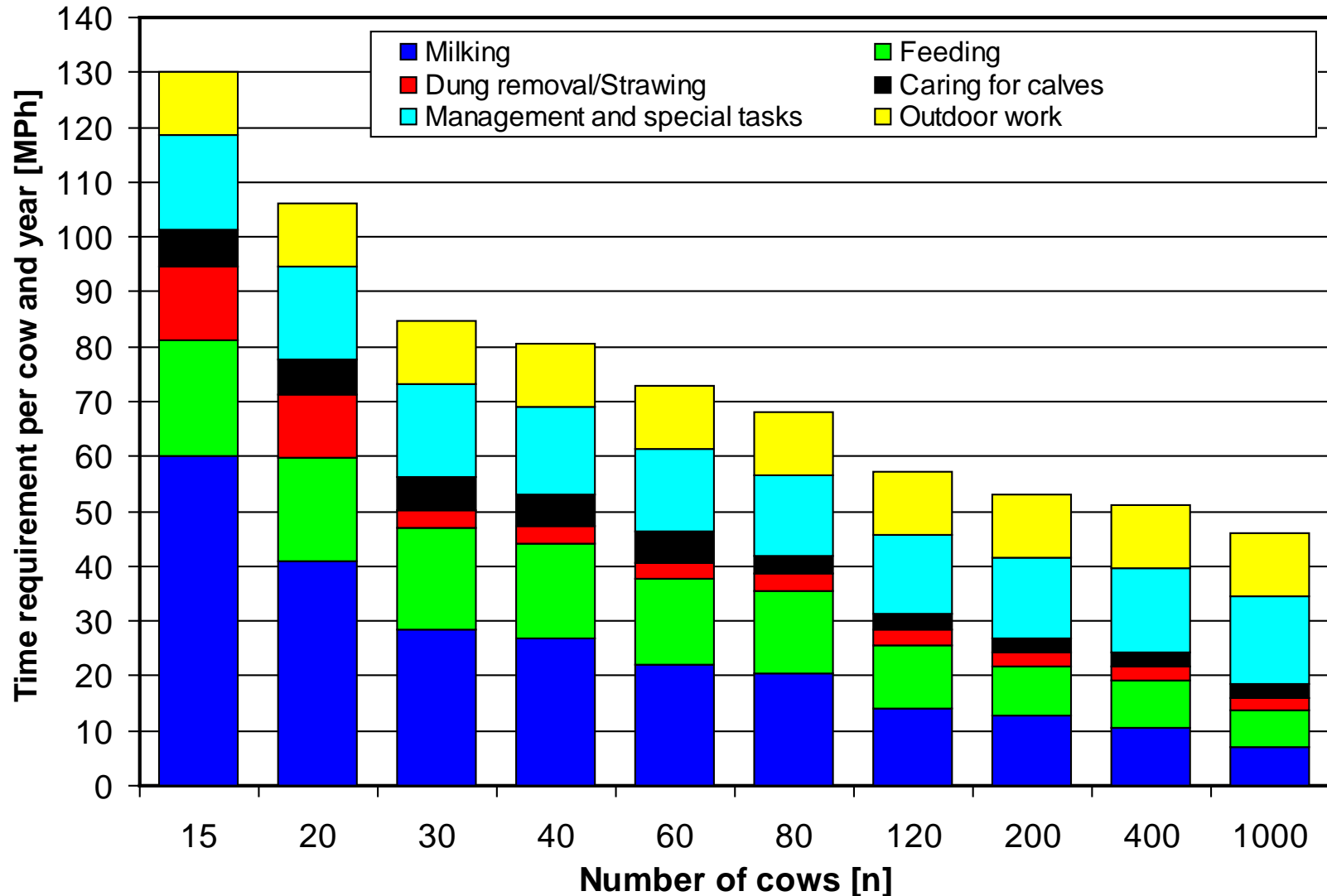
Working-time requirement for the work process „milking“ in large milking parlours





Working-time requirements for the production process „milk production

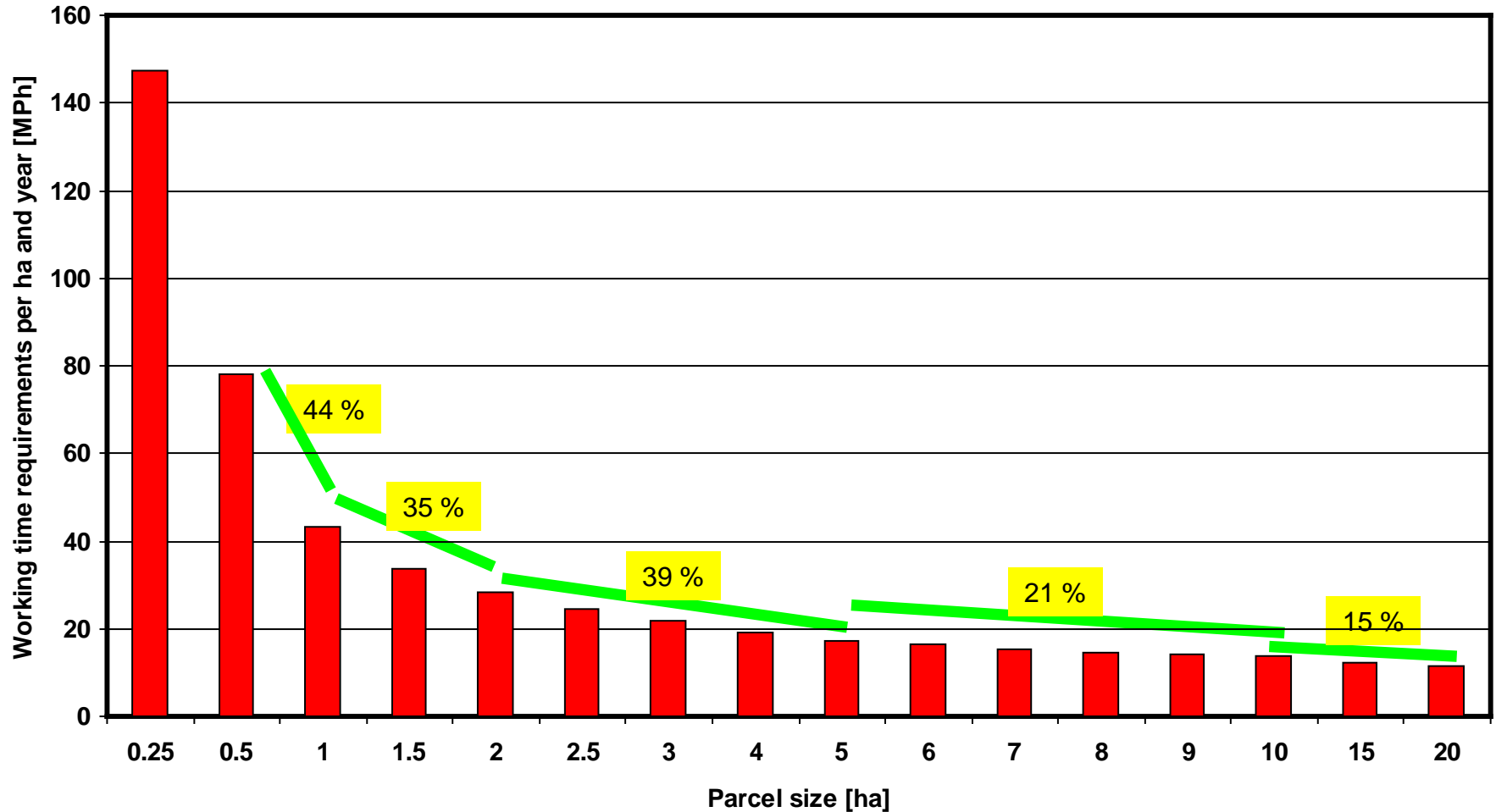
Total time requirement per cow and year





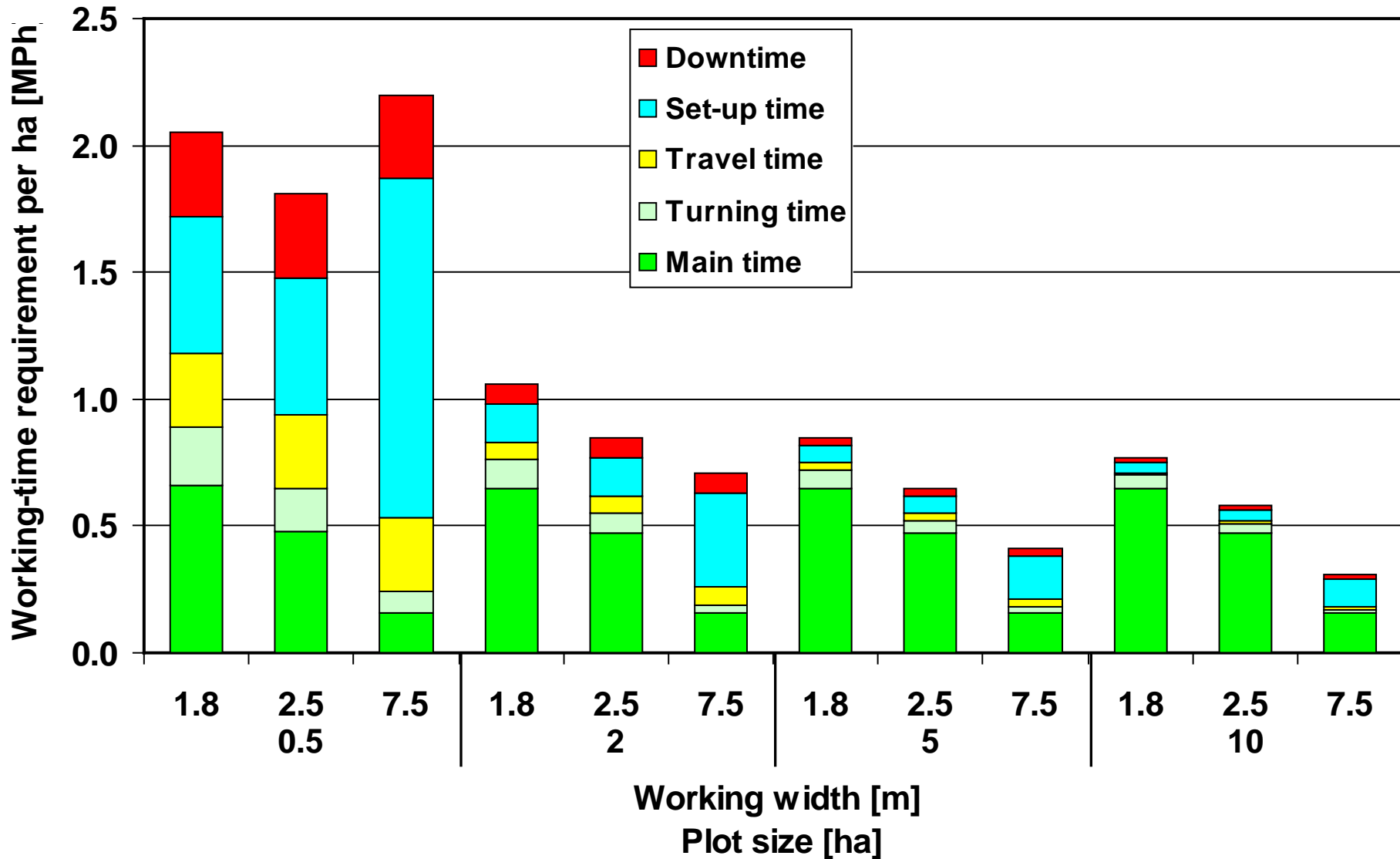
Labor requirements production process grain (W. Wheat)

Dependencies on the Parcel Size



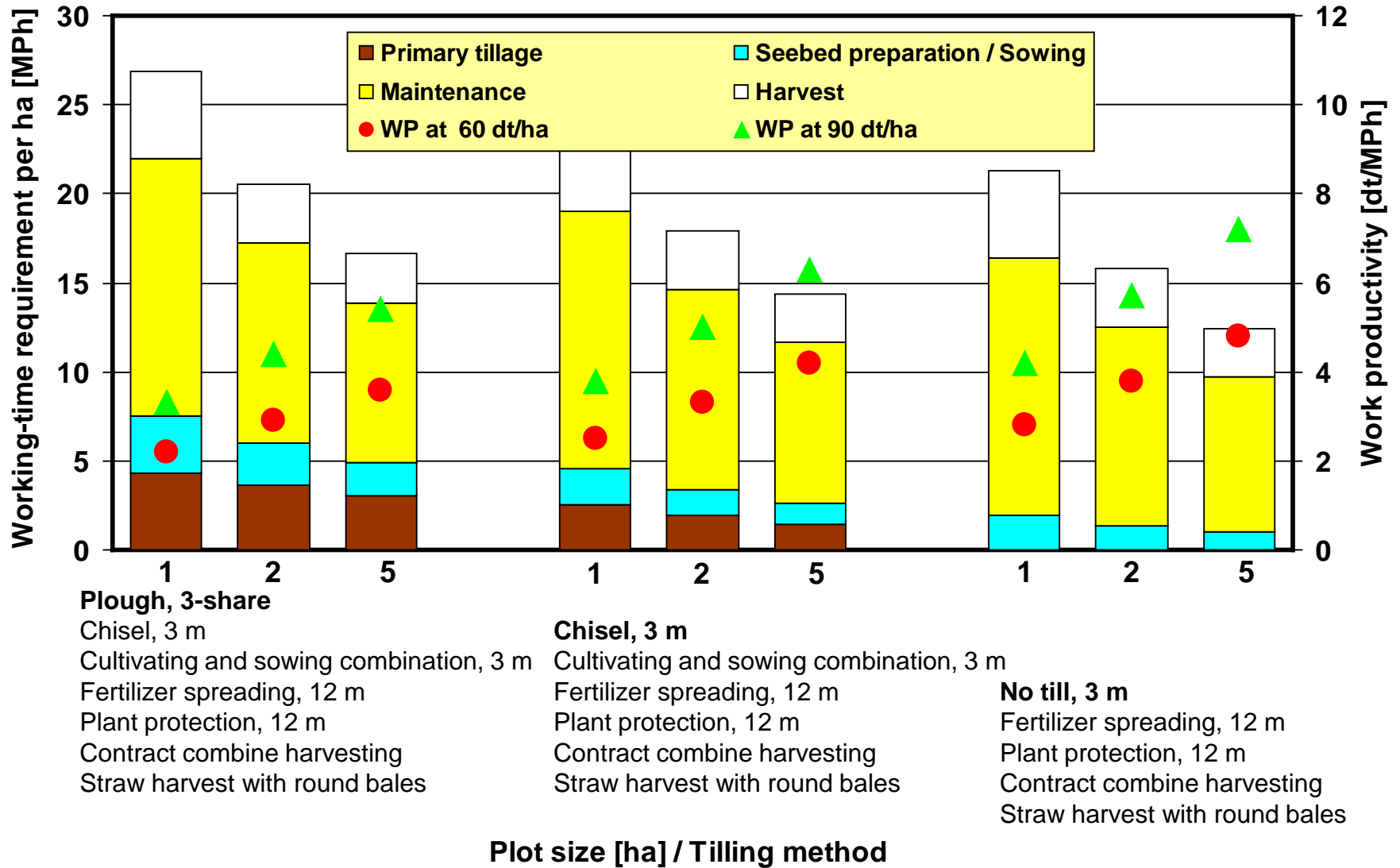
Source: Schick, (2007)

Proportion of time spent at mowing tasks with rotary mowers as a function of working width and plot size





Comparison of various tilling methods production process „Wheat“



Source: Schick u. Stark (2003)



Customer's benefit

Farmers, consultants, Farmers' Association, teachers, students, scientists, insurance companies, contractors, industry, federal authorities:

**Work-economics
key figures
and
Work budgets for:**

Individual processes

Combination of processes

Production branches

Farms / Enterprises

Joint / shared farms, partnerships

Calculation bases for farm / enterprise model

Calculation bases for SILAS

Calculation bases for SAK

Calculation bases for Life Cycle Assessments

...



???

Open questions / prospects

???



International use



International network for work-economics standards



Integration of work-load/stress-related key figures (IVWB)



Integration of agricultural home economics



Conclusions

- Module-based structure simplifies modelling, extensions and error corrections
- Availability of clear and comprehensible (evidence-proof) work-economics data bases
- Interfaces for data exchange are available



Conclusions

In association with working time requirement Values, a work-estimate system that includes Workload indices and physically strenuous working times may constitute a useful tool for Qualitatively and quantitatively assessing workload