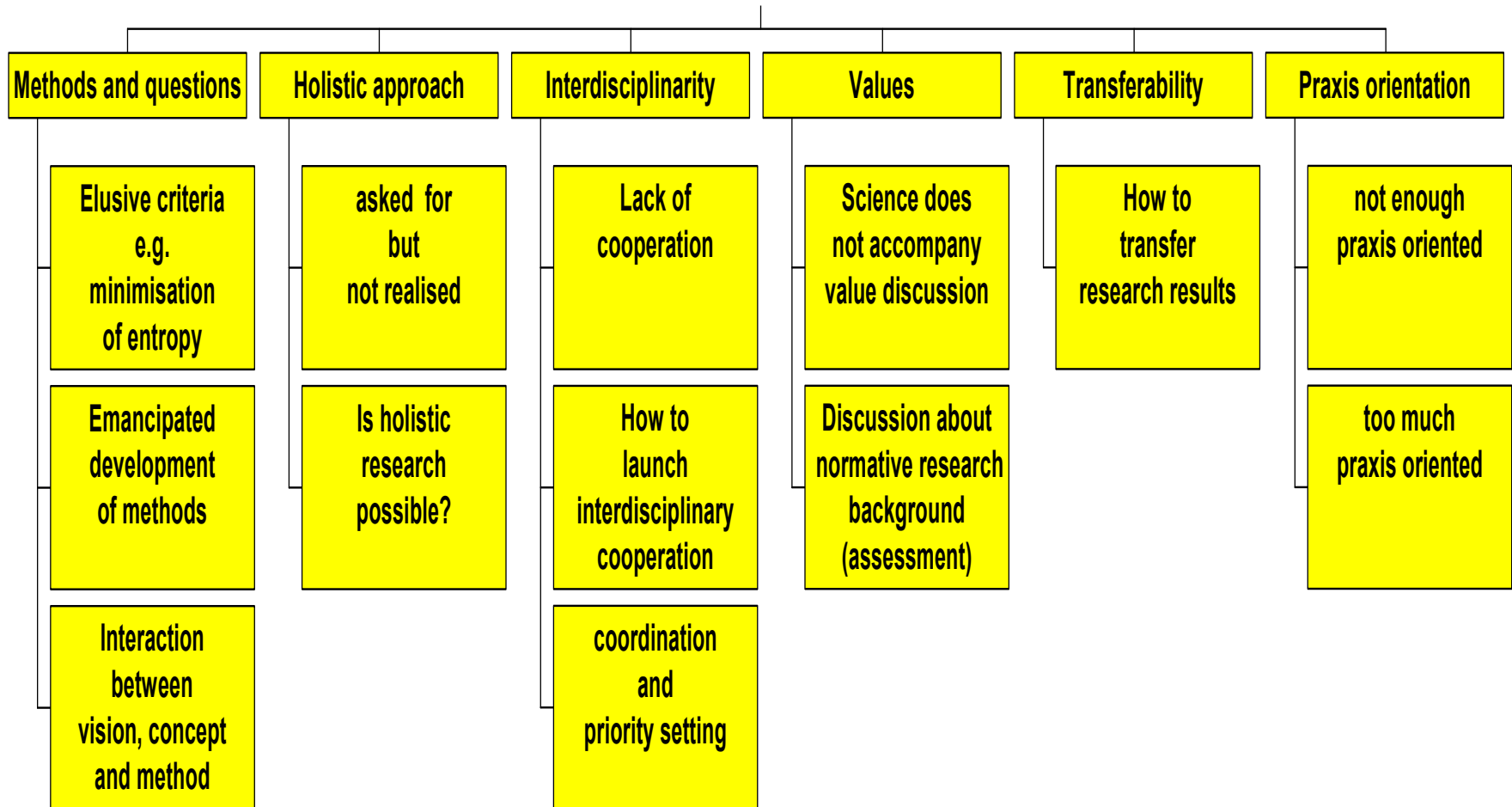
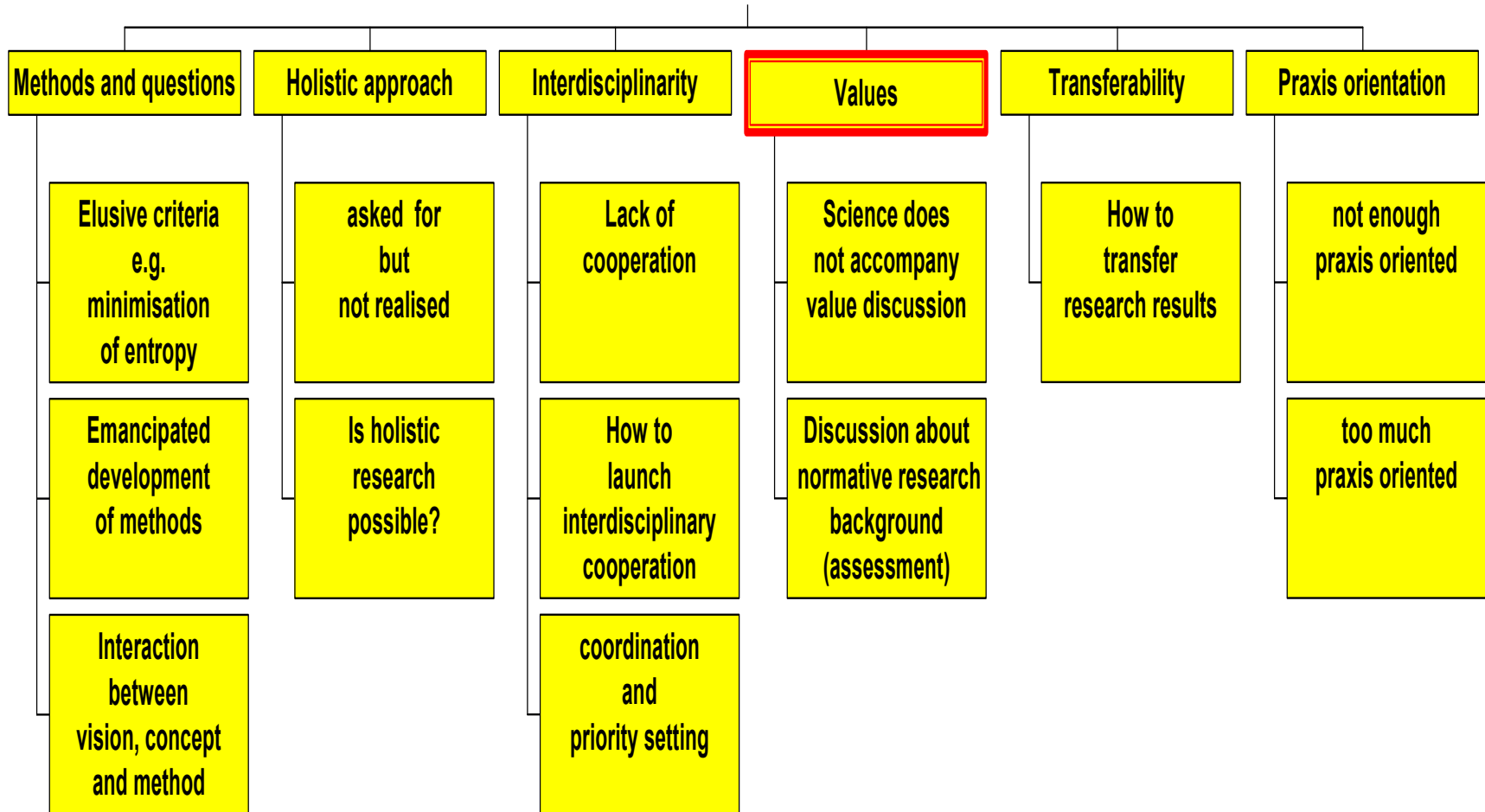


Methodical problems in organic farming research



Methodical problems in organic farming research



”Values”

Paradigma constraints

1. Organic farming research follows up **natural science** methods:
Theory, hypothesis, experiment.
Excludes
 - empiric sciences and methods,
 - large areas of engineering sciences
 - large areas of social sciences
 - art
2. Why observations about “living life” have to be forced in and expressed by models or statistical terms?
3. To whom we are committed? Funding agency, scientific society, farmers, food production, ecology (biodiversity, landscape and environment)?

”Values”

Career constraints

1. Are we committed to please the ministry of agriculture?
 - Number of published reviewed papers/year
 - Amount of external funds allocated from third parties

2. Profile of the successful researcher
 - Successful fund riser/salesman?
 - Successful public relations officer?
 - Successful manager? (budget size, number of subordinates)
 - Successful publisher? (citation reports, impact factors)
 - Successful discoverer?
 - Successful inventor? (number of patents)
 - Successful farmer?

”Values”

Financial constraints

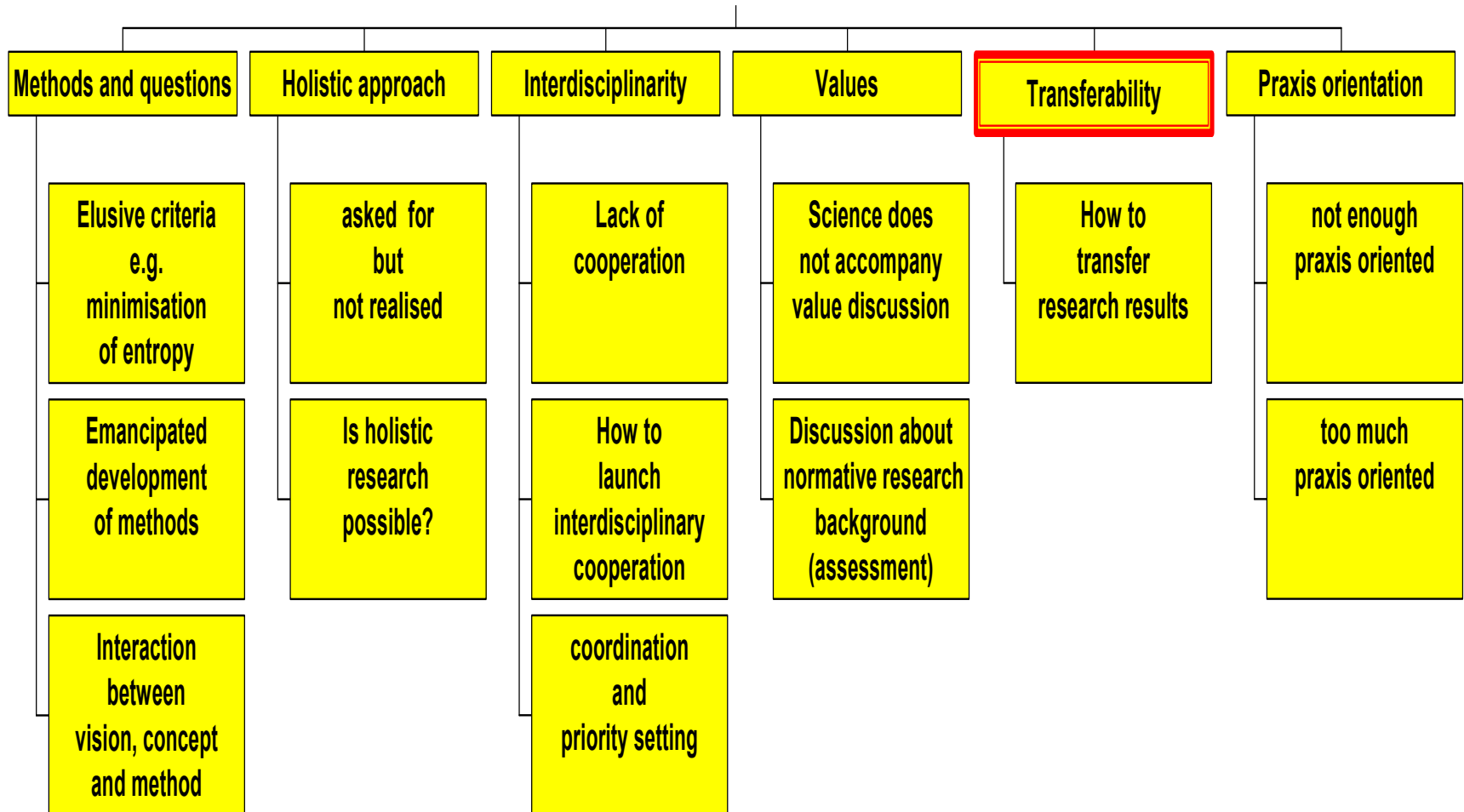
1. Research must repay

- Basic research neglected. E.g. Interaction edaphon <-> plant roots. How plants take up nutrients?

2. Who is ready to finance organic farming research?

- Farmers?
- Consumers?
- Trade?
- Food processing industry?
- Agro-chemical industry?
- Farm machinery industry?

Methodical problems in organic farming research



Transferability: Useful models?

ECOBAS a system for documentation of mathematical descriptions of ecological processes

a selection of 641 models

Crop Models

- BACROS: Basic crop growth simulator
- COME_ON : A Crop growth simulation environment
- CROP_ECOLOGY: Crop Growth Simulation
- CROPS: Crop and Soil system model
- CROPSYST: Cropping Systems Simulation Model
- CROPSYST_2: Cropping Systems Modelling Framework
- DAISY: Soil-plant system model
- DEMETER_SOIL_MOD: water-, heat-, nitrogen dynamics in soil
- DENLEFWAT: Dynamics of partial anaerobic, denitrification and water in soil
- EXPERT-N: soil-plant system model
- SUCROS1: Simple and Universal Crop growth Simulator
- SUCROS2: Simple and Universal Crop growth Simulator
- SWACROP: Soil Water and crop production model
- VEGIGRO: crop growth
- WWFLEVO: Growth model to simulate crop growth, optical reflectance and radar

Nitrogen/Carbon models

- CANDY: Carbon and Nitrogen Dynamics in soils
- CARBON: Wageningen Carbon Cycle Model
- CARBON_IN_SOILS: Turnover of Carbon In Soil
- CARDYN: Carbon dynamics
- MINERVA: Minerva - nitrogen dynamics in arable soil
- N_ABLE: Nitrogen Crop Response Model
- N_CYCLE: A computer assisted learning module to model the Nitrogen Cycle in Grazed Grassland
- N_DICEA: Nitrogen Dynamics In Crop rotations in Ecological Agriculture
- NCRM: Nitrogen Crop Response Model
- NM: Nitrogen Movement in Soil Model
- ROTHC-26.3: A model for the turnover of carbon in soil
- SOIL-N: SOIL-N - simulation model for nitrogen conditions in soils

Transferability: problem solution?

E.g. soil compaction

- Soil-wheel research is done more than 100 years, but nevertheless soil compaction increases all over the world.

Hugh quantities of (useless) results ?

“Soil Tillage Research”: 68 volumes à 10 articles and “Journal of Terramechanics”: 40 volumes à 20 articles = 1480 articles * 10 000.- €/article = 14 800 000.- €

- Do farmers need a device indicating permission to traffic the field (red or green light)?
- If we know that wheel traffic damages the soil, why do we not use zero traffic technologies like gantry?

Transferability: acceptance in praxis?

- E.g. nutrient leaching: if we know, that mixed farms are closer to the ideal of nutrient recycling than stockless farms, why do we not have a mixed research farm?
- E.g. environmental hazards: dioxin content of Baltic herring is extremely high. Why officials recommend to eat in spite of the cancer risk?
- E.g. environmental pollution: use of domestic fuel wood reduces CO₂ impact. Why do we heat our research institute by fuel oil?

Future organic farming research methodical approach

Holistic approach

Diversity of methods

Sharing the work, inter- and transdisciplinary research

Interdisciplinarity

Criteria to finance interdisciplinary research

Scientific career assessment

Goal oriented project management

Interdisciplinary panel and research institute

Praxis relevance

Start from grass root questions

Cooperative process science-praxis

Prototype farming, pilot farms, on farm research

Farmers participate in decision making about project financing

Funding criteria

Lobby longterm, holistic and interdisciplinary funding criteria

Effectice self organisation

Future organic farming research methodical approach

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Why prototype farming?

- motivates and convinces financiers and research staff by state of the art professionalism: produce healthy, high quality food
- actual farm work sets research priority and asks the right questions: object oriented research
- actual farm work supports interdisciplinary problem solution and research
- at least the research method and the issuing management procedures are transferable to other farms even though results of on farm research may not seem to be transferable
- actual farm work and on farm research challenge the whole human being: thinking, feeling and willing

Why prototype farming?

- allows long term research and observation
- makes experiences and observations of versed farmers of the region scientifically available
- makes consumers curious: open the farm for public
- enhances the farm vision from a production unit to a social organism including social education tasks like
 - landscape preservation
 - kindergarten
 - school
 - on farm shop
 - health care
 - senior care

Kindergarten

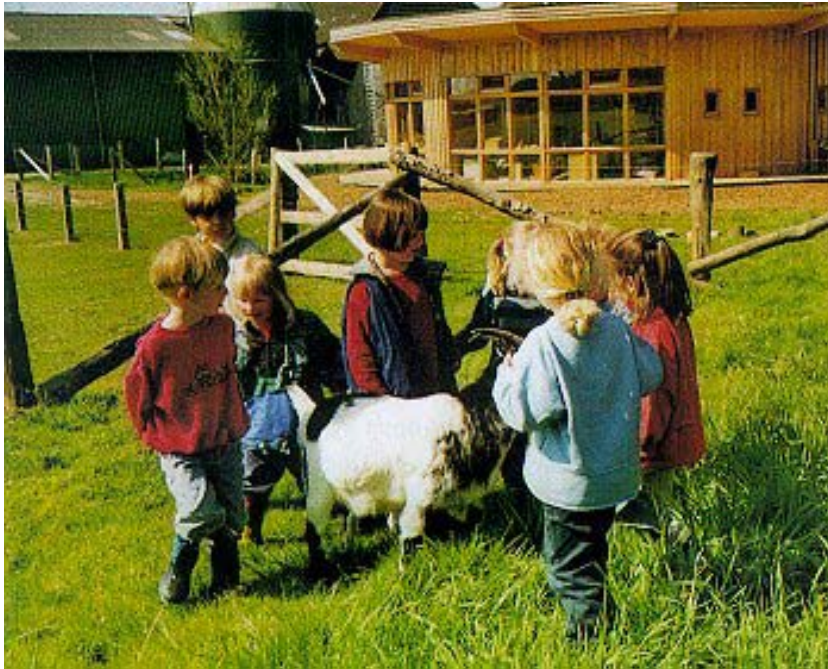


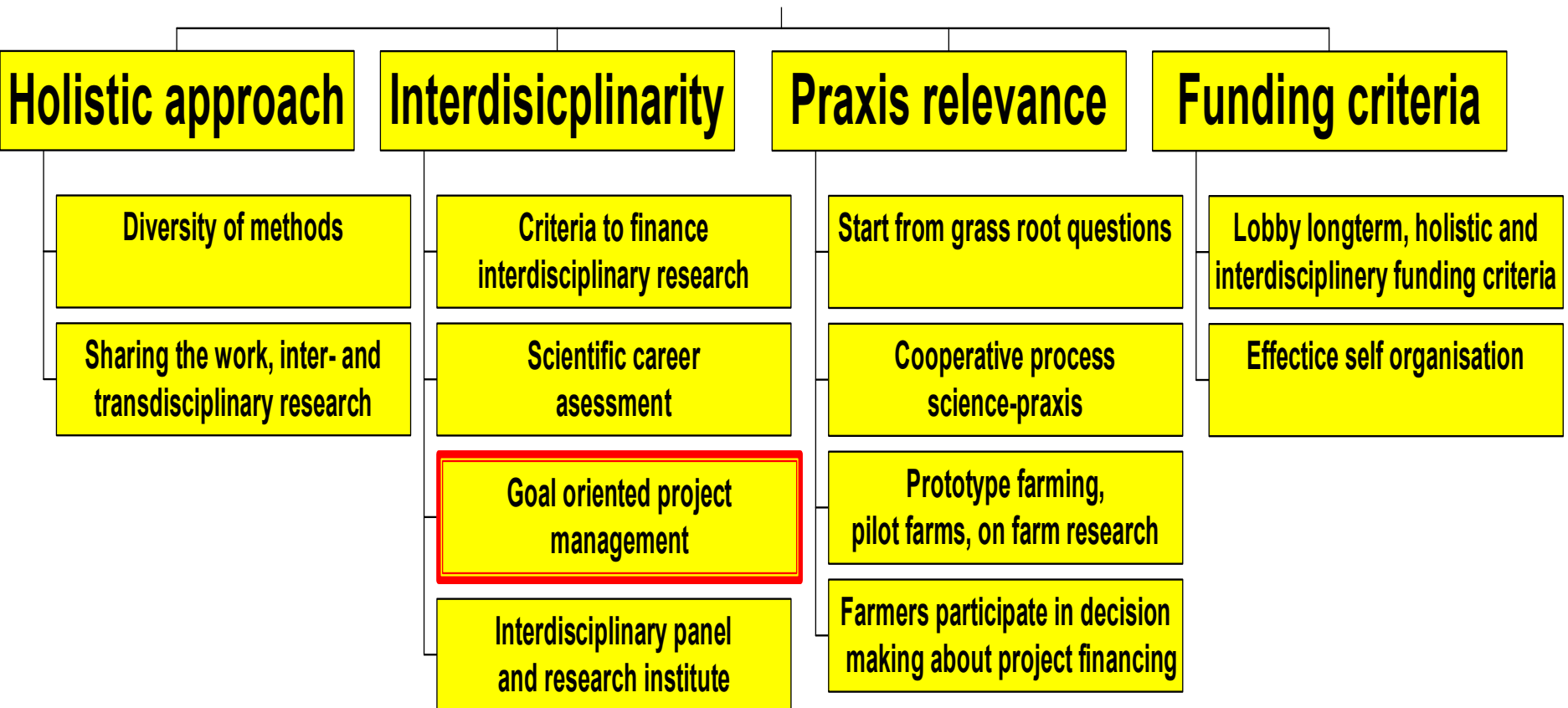
Foto: Anne-Marie Muhs.

Source: top agrar 12/2002, p 12

Der Bauernhof als ständiger Lern- und Spielort" unter diesem Motto hat **Anne-Marie Muhs** (37), Direktvermarkterin auf ihrem „Natur-Erlebnis-Hof Krummbek“ bei Plön/Schleswig-Holstein, einen Kindergarten eingerichtet. Rund 16 Kinder im Alter von drei bis sechs Jahren werden in einem eigens dafür errichteten Holzhaus vormittags von einer Erzieherin und zwei weiteren Fachkräften betreut. Der Kindergarten wird vom Verein „Wurzelkinder e.V.“ betrieben. Der Hof dient den Kids als Abenteuerspielplatz, aber alles unter Aufsicht versteht sich! Beim Füttern der Tiere, Bestimmen von Pflanzen oder dem Beobachten der Hofarbeit wird ihnen auch die Landwirtschaft näher gebracht.

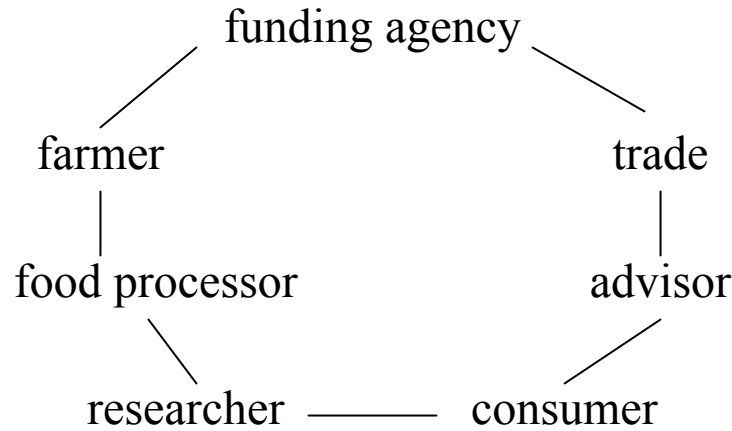
Nachmittags bietet Anne-Marie Muhs Lehr- und Spielveranstaltungen für Kinder im Alter von drei bis sechs bzw. sieben bis zehn Jahren an. So feiern sie ein Danke-Schön-Fest, gehen mit Ziege Marlene, Lupe und Mikroskop auf Entdeckung oder lassen sich von „**Rudi Rüssel**“ zum Basteln von Tiermasken anregen.

Future organic farming research methodical approach



Goal oriented management

- Participative decision making and funding



- Coaching co-operation
- Coaching conflict management

Conclusions

- Lobby long term, holistic and interdisciplinary funding criteria
- Effective self organisation
- Engage in public relation