



Laying Hens' Husbandry Systems on Different Animal Welfare Levels

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Agenda

- Rationale: comparison of production cost at different welfare levels
- Production systems in comparison:
 - Description
 - Physical performances
 - Production costs
- Conclusion

Introduction / Rational

All systems (still) have serious weaknesses

Barn



Fotos: www.deutsche-eier.info

Free Range



Foto: Isermeyer

Mobile Housing



Outdoor climate

Place/Animal

Emissions

Biosecurity

Profitability

Biosecurity

Killing male chicks, robustness of animals, ...

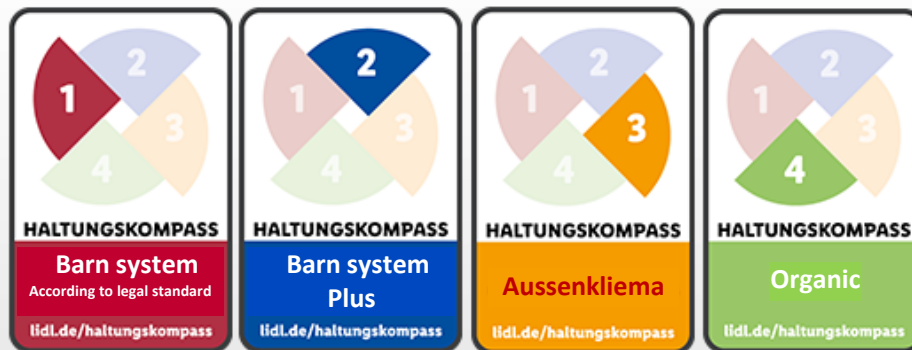
Introduction / Rational

Interim conclusion: Where do we stand today?

- Intensive system: major weaknesses, massive criticism
- Alternative systems: also major weaknesses
- Triple risk for farmers: justice, politics, market



Does the new animal-welfare label (AWL) lead to a better future?



Only partially. Many poultry farmers create cost-effective 2 or 3. Consumer feel great. but: At some point, disillusion

- With regard to this issue, a **comparative analysis** of current layer production systems has been carried out
- Together with producers and consultants, **criteria** for the objective evaluation **of the different farming systems** have been developed
- This was done on the basis of evaluations of the poultry enterprises of the German Chamber of Agriculture (base year 2018)
- According to the criteria of the German Animal Welfare Association and organic associations (e.g. Naturland, Bioland, Demeter)



- Since the abolition of classic cage system, barn system dominates accounting for 63 % of all laying hens in Germany (MEG, 2020)
- 2010 to 2019: increase of approx. 40 %
- Includes both husbandry methods with floor husbandry as well as husbandry in aviaries
- Stocking density: 9 (18) birds/ m²
- Flock size per unit: max. 6.000 birds
- Shift towards medium-sized farms (around 40.000 laying hens)



- 20 % of all laying hens are kept in free range system (Germany); 2010 to 2019: 96 % increase
- Provision of an unrestricted free-range area of 4 m² per head
- 9 birds/ m² - and 18 birds/m² in aviaries
- Majority of outdoor area must be covered with vegetation, not be used for any other purpose except orchard, forest or pasture
- Limit of the outdoor space: max. 350 m; between 150 and 350 m, shelters and, if necessary, drinking troughs must be provided



- Laying hens are housed in a kind of "caravans" which change their location regularly and can vary in size and degree of automation
- Mobile layer housing does not require a veranda
- Can be operated with organic and non-organic laying hens with sheds used having the same characteristics
- Change of outdoor area greatly reduces nutrient deposition on the floor and wear and tear as well as pathogen build-up

Production Systems in Comparison

Physical performances

	Barn. no winter-garden 9 animals/m ²	Free range with fixed barn and winter-garden	Free range Animal welfare Premium	Organic	Organic mobile housing	Small mobile housing conventional	Medium mobile housing conventional
Number of starting birds	39,999	14,999	12,000	12,000	240	300	900
Stocking density* Animal/m ²	9 (<u>18</u>)	9 (<u>18</u>)	7 (<u>14</u>)	6 (<u>12</u>)	<u>6</u>	<u>9</u>	9 (<u>18</u>)
Investment (€/operation)	2,000,000	1,050,000	1,050,000	1,200,000	32,400	32,400	76,500
(€/head)	50	70	88	100	135	108	85
Outside area (ha/operation)	0	6	4.8	4.8	0.2	0.24	0.7
Labour (hrs/operation/yr)	2,800	1,800	1,800	1,800	500	550	800
(hrs/100 animals/yr)	7	12	15	15	208	133	89
Mortality (%)	6	10	10	10	12	12	12
Laying performance**	290	270	270	260	257	267	267
Feed (g/animal and day)	118	125	125	130	130	130	130
Feed prices (€/100kg)	26.5	26.5	26.5	47	56	34	32

* In parentheses: aviaries; underlined values were calculated

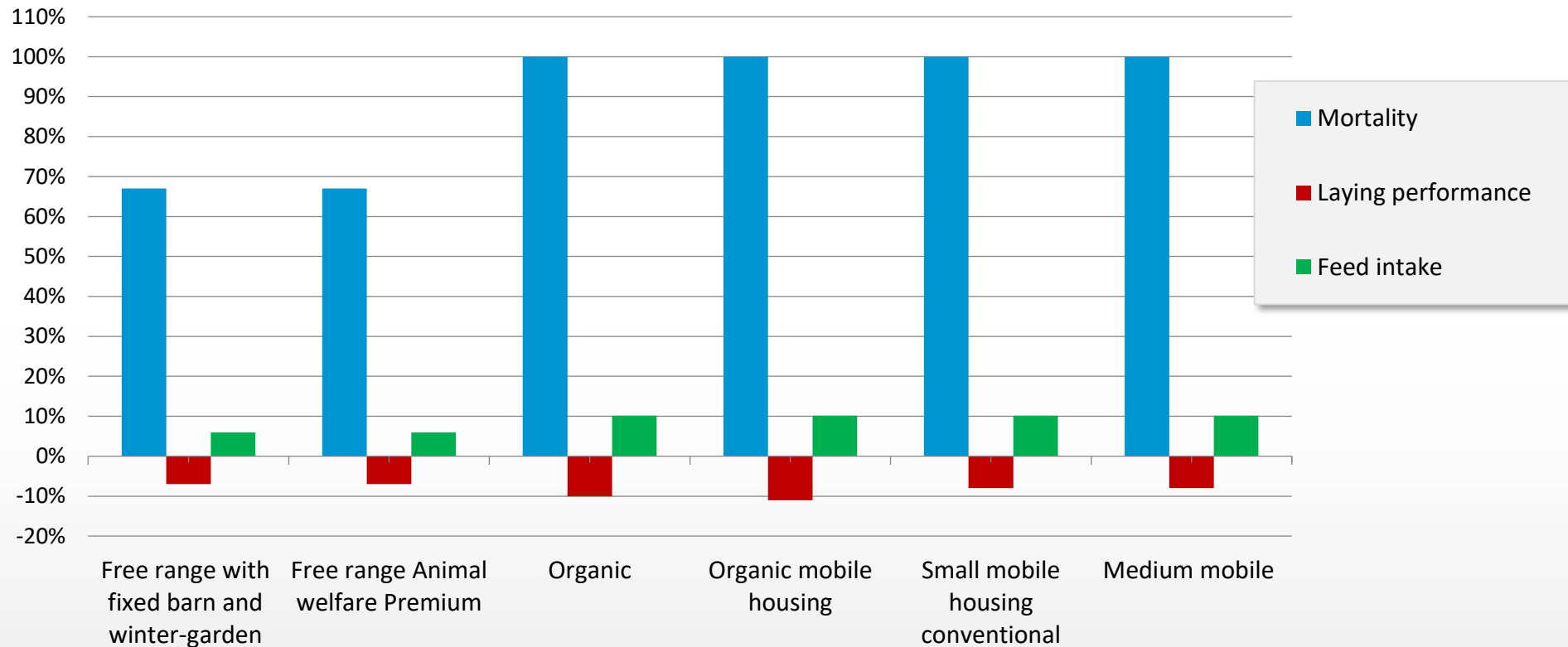
** Marketable eggs (quality class A) per initial hen and year

Source: Isermeyer, Thobe, 2018; Own estimates based on farm evaluations. supported by Christina Gaio (KTBL) and Henning Pieper (Lower Saxony Chamber of Agriculture)

Production Systems in Comparison

Mortality, laying performance and feed intake

Percentage change compared to barn system



Production Costs in Comparison

Cent/egg

	Barn. no winter-garden 9 animals/m ²	Free range with fixed barn and winter-garden	Free range. Animal welfare Premium	Organic Free range	Organic mobile housing	Small mobile housing conventional	Medium mobile housing conventional
Feed	3.9	4.5	4.5	8.6	10.3	6.0	5.7
Pullet	1.5	1.6	1.9	3.5	4.3	2.6	2.6
Other variable costs	1.1	1.3	1.4	1.5	2.0	1.7	1.5
Stable (depreciation. interest)	1.2	1.7	2.2	2.6	4.4	3.4	2.7
Outside area	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Labour	0.4	0.7	0.8	0.9	12.2	10.3	5.0
<i>Subtotal</i>	8.0	9.8	10.8	17.0	33.3	24.2	17.6
Ancillary revenues* (-)	0.5	0.5	0.5	0.7	1.1	1.2	1.6
Total	7.5	9.3	10.3	16.3	32.2	23.0	16.0

Half stocking?
 costs max.
 2 ct./egg

Labor costs!
 Digitization as an opportunity?

Additional cost 2-3 ct./ egg. approx. 30%

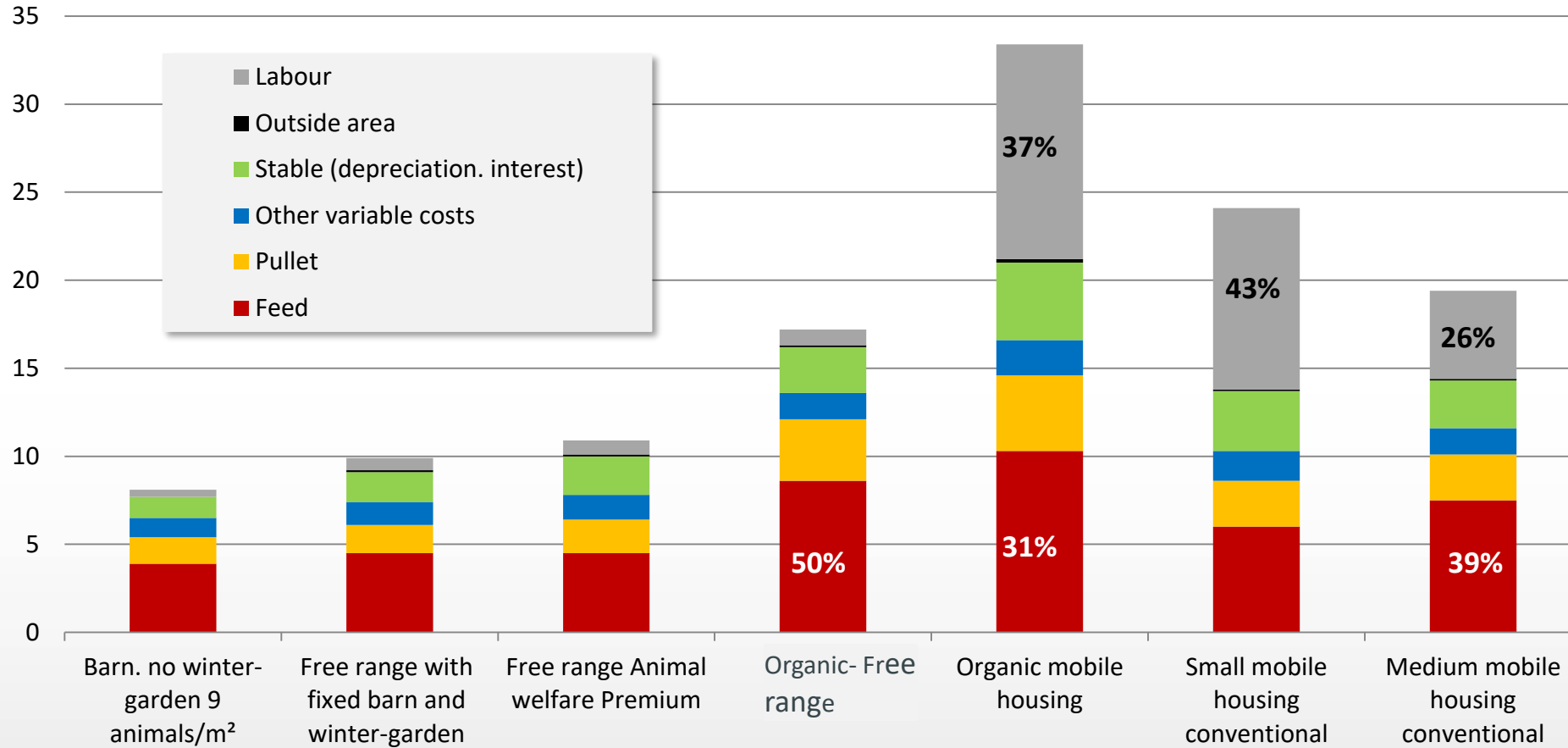
Additional costs vs. barn > 100%. 10-20 ct./egg

* Marketable eggs grade B and old chicken. No cost or income for manure.

Source: Isermeyer, Thobe, 2018; Own estimates based on farm evaluations. supported by Christina Gaio (KTBL) and Henning Pieper (Lower Saxony Chamber of Agriculture)

Production Costs in Comparison

Cent/egg



Production Systems in Comparison

Feed, labour and total costs

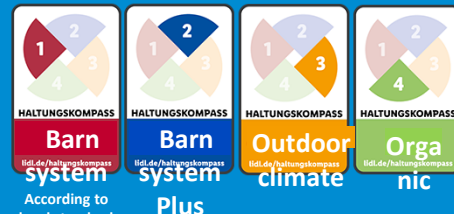
Percentage change compared to barn system

	Free range with fixed barn and winter-garden	Free range Animal welfare Premium	Organic Free range	Organic mobile housing	Small mobile housing conventional	Medium mobile housing conventional
Feed costs						
Labour costs						
Total costs	+24%	+37%	+117%	+329%	+207%	+113%

 Cost increase < 100%
  Cost increase > 100%

- Feed intake has equally increased in organic and mobile housing systems, but lower laying performance has led to higher feed costs in both organic systems
- The low level of technology in mobile housing systems induces high labour inputs and thus higher labour cost
- Despite predators threats, free range systems show lower mortality and moderate increase in total production costs compared to organic and mobile housing systems

- Between the systems there are **major differences in physical performances and production costs**
- **Feed and labour costs** belong to the most important cost components
- Regarding **direct costs** (especially feed), cost disadvantages can arise with smaller flocks, if discounts can only be realized with higher minimum egg purchases
- **Production costs in mobile systems** are today more than **twice as high** as in the case of closed barn systems



- None of the most widespread farming systems is convincing in all parameters (animal welfare, resource efficiency, production costs)
- Digitalisation can help to improve existing processes or to develop completely new systems
- Weaknesses in farming and management systems motivate further work towards a future goal
- For elevating the poultry farming to a significantly higher level of animal welfare, a centrally guided concept might be indispensable

Thank you for your attention!



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