

The use of animal welfare indicators



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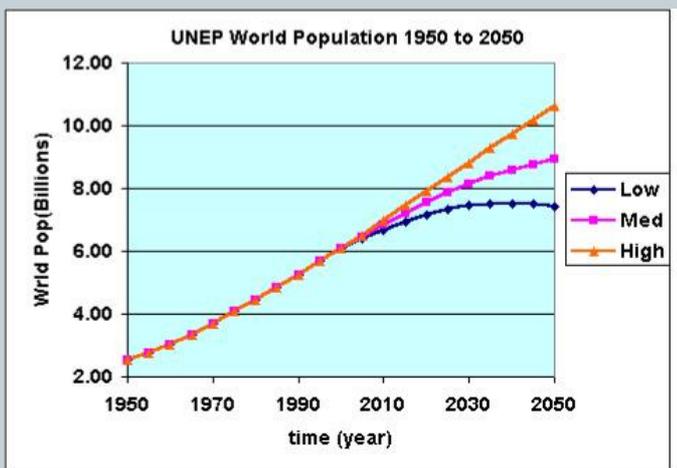


Welfare in Europe



Introduction

- Projections show global populations reaching 9-10 billion by 2050

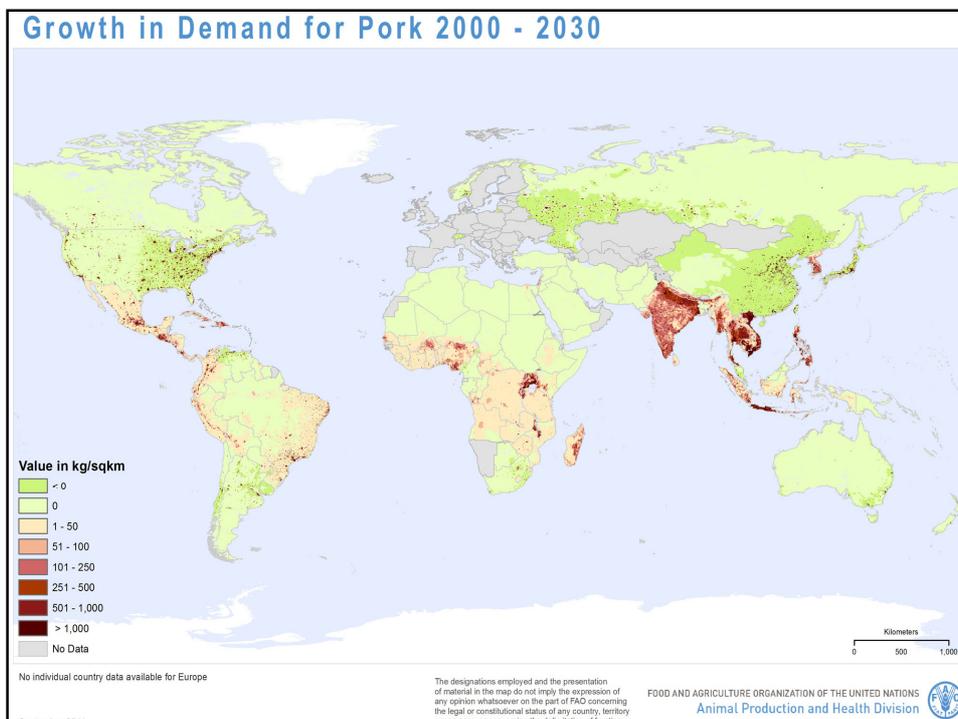
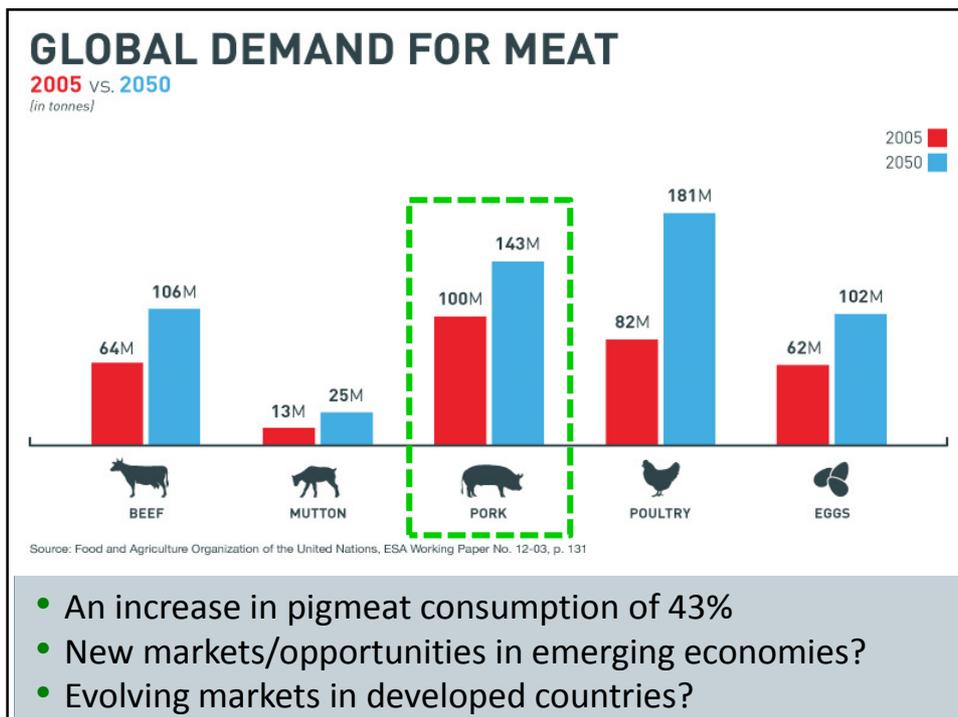


Introduction

- An increase in animal product consumption of 50-70% between 2011 and 2050
- Greater growth in countries with developing economies



Source: International Food Policy Research Institute, 2012



What we think the consumer wants..

- Animal products from farms or systems that :
 - Promote human and animal health
 - Ecologically friendly
 - Welfare friendly
- Surveys tell us consumers care about animal welfare
- Surveys tell us of a “willingness to pay” extra for welfare-friendly products
- Reality tells us actual consumer behavior does not always equal survey results



The U.S. Consumer

- Only 0.7-1.0% of the U.S. population are directly engaged in farming
- Their exposure to farm animals is confined to shopping for animal products
- Their perception of animal agriculture is fantasy rather than reality



The U.S. Consumer

- Knowledge of farming practices and welfare impacts is generally low

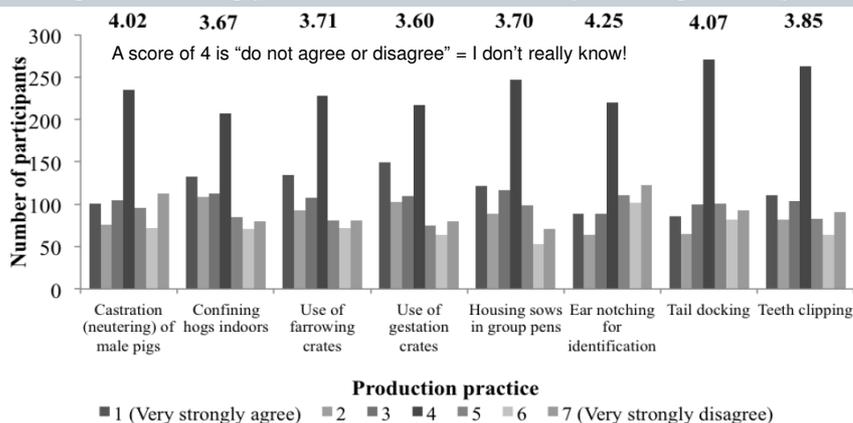


Figure 1. Survey Respondents' Agreement that Practice Reduces the Welfare of Pigs
 McKendree et al, 2013. J Agric Resource Econ, 38:397-417

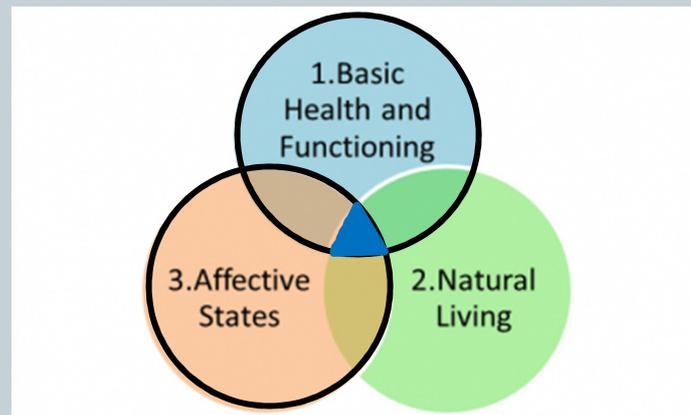
Animal Welfare

- Within the U.S., it might be argued that the major players driving change are:
 - 
 - 
- However, debating the source of demand for higher animal welfare does not change the facts that:
 - The demand exists and will continue to increase
 - We continue to need methods for on-farm assessment of animal welfare:
 - Valid
 - Easy to use



Animal Welfare

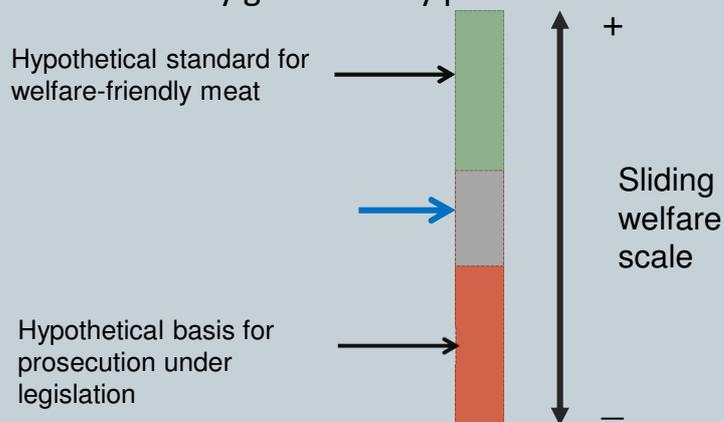
- Three overlapping concepts



Adapted from Fraser et al., 1997

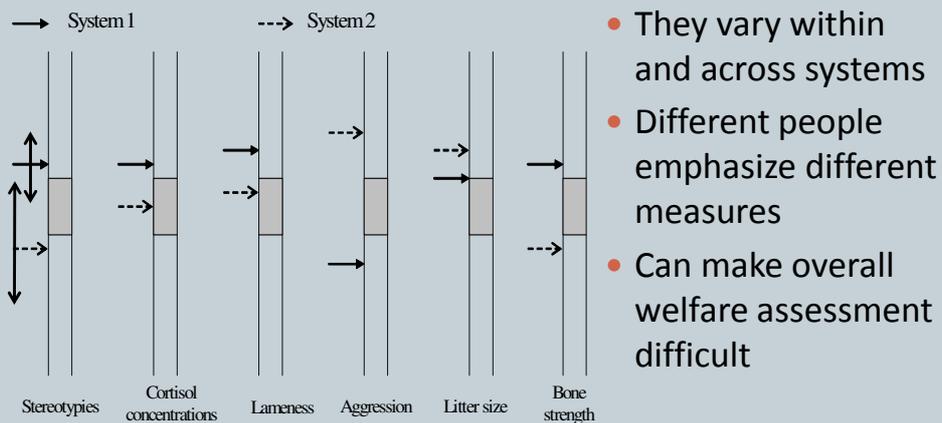
Measuring Welfare

- At any given time, an animal's welfare ranges on a scale from very good to very poor



Measuring Welfare

- But welfare is made up of multiple individual measures



Measuring Animal Welfare

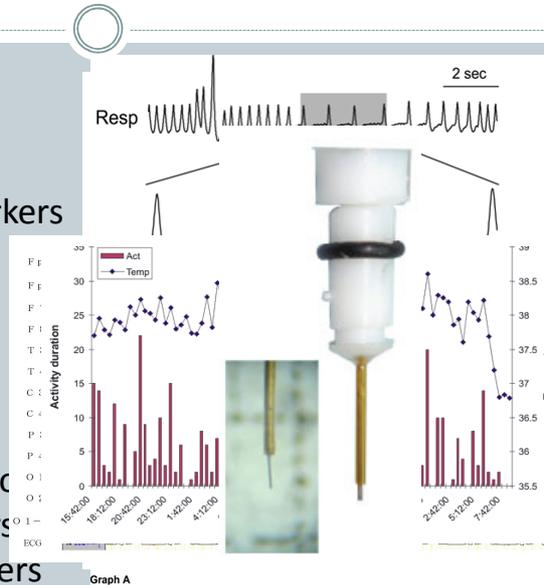
- In an experimental setting, there can be few limitations in the types of data collected



Measuring Animal Welfare

IN VIVO

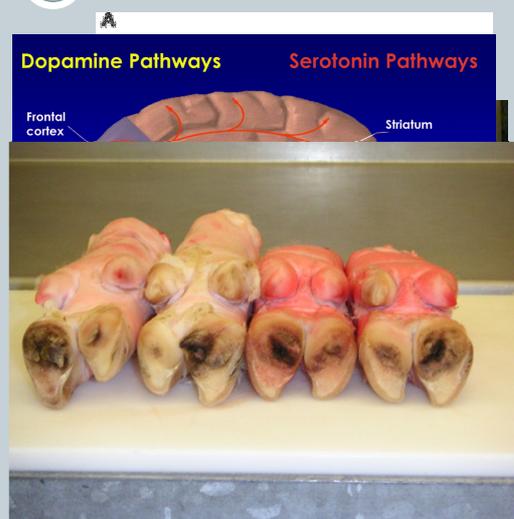
- Serial blood samples
 - Stress hormones
 - Immunological markers
- ECG/BP
- Respiration rate
- EEG
- Automated behavior
- Body temperature
- Live/recorded behavior
- Urinary/Fecal markers
- Brain neurotransmitters



Measuring Animal Welfare

POST MORTEM

- Bone pathology
 - Density
 - Strength
- Gastric ulceration
- Cartilage scores
- Adrenal weights
- Brain neurotransmitters
- Hoof scores
- Lung pathology



Measuring Animal Welfare

- In an experimental setting, there can be few limitations
- In a production setting, there can be many limitations

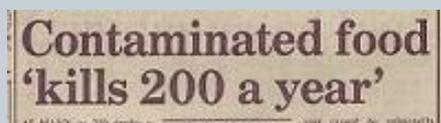


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The Development of On-Farm Assessment

- Food scares - driving factor behind assessment



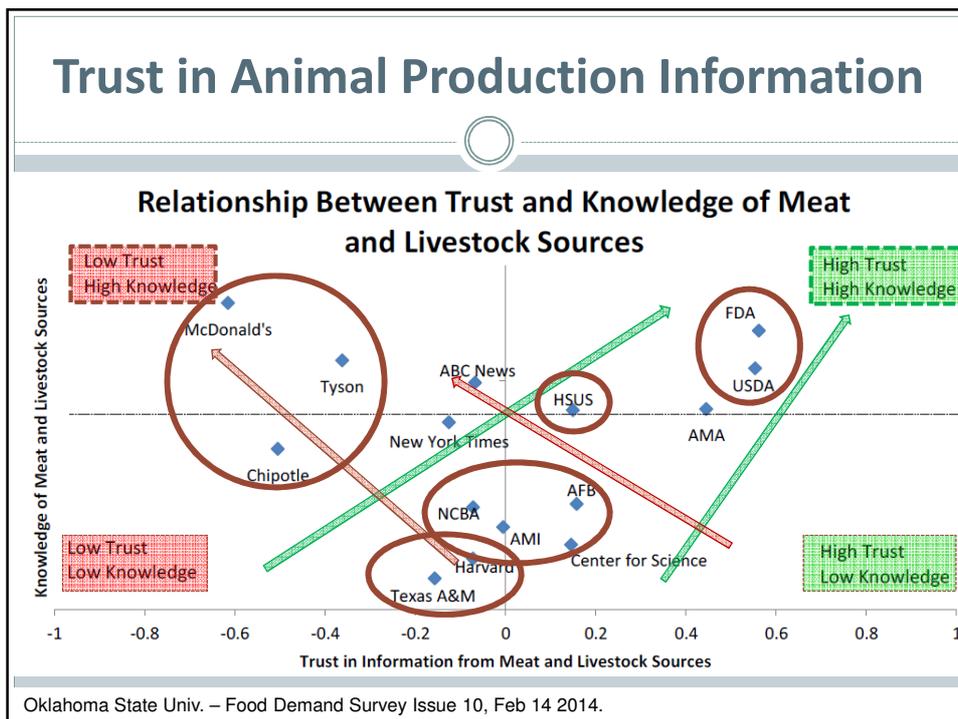
The Development of On-Farm Assessment

- Rapid expansion of Assurance Schemes
 - Quality
 - Organic
 - Welfare
 - Sustainability



The Development of On-Farm Assessment





Trust in Animal Production



Trust in Animal Production



Trust in Animal Production



Trust in Animal Production



- On-farm assessment has a major role to play in transparency and consumer trust



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On-farm Welfare Assessment

What measures can we take?

- **Resource-based measures**
 - Measure that is taken regarding the environment in which the animals are kept
- **Management-based measures**
 - Measure which refers to what the animal unit manager does on the animal unit and what management processes are used
- **Animal-based measures**
 - Measure that is taken directly from the animal

Source: Welfare Quality®, 2009

Resource-Based Measures

Resource-based measures

- Housing system type
- Space allowance
- Bedding substrate
- Air quality
- Feeder system/space
- Flooring quality
- Temperature control



Management-Based Measures

Management-based measures

- Qualifications/training
- Daily observation
- Weaning age
- Mortality/morbidity at all stages
- Tail docking, castration, teeth clipping
- Euthanasia protocol
- Treatment protocol
- Handling



Animal-Based Measures

Animal-based measures

- Productivity
- Body Condition Score
- Lesion Scores/Shoulder Ulcers
- Lameness/Claw Length
- Tail Damage/Vulva Damage
- Stereotypies
- Huddling/Panting
- Negative/Positive Social Behavior
- Exploratory Behavior
- Human Approach
- Qualitative Behavioral Assessment



What to include?

- The menu of measures will depend on the focus of the scheme. For example:



- PQA+ is more resource measure –based
<https://www.pork.org/pqa-plus-certification/program-materials/>



- Welfare Quality® is more animal measure-based
<http://www.welfarequality.net/network>

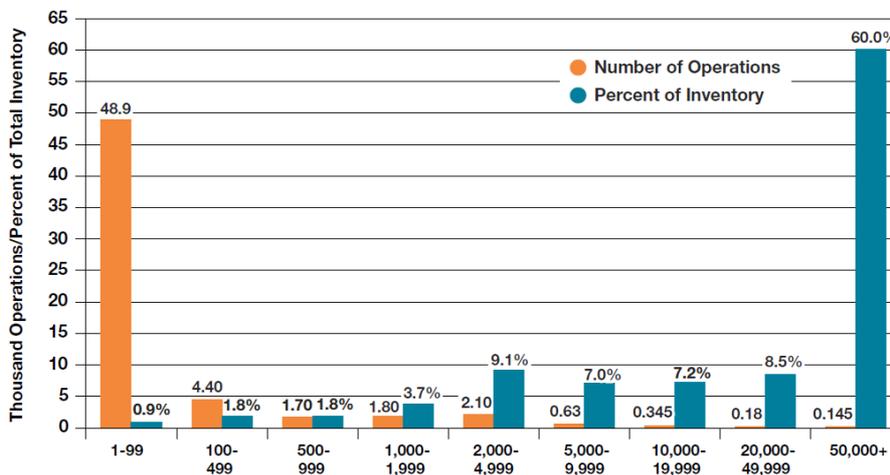
Challenges

- Increasing size of operation and ability to assess a representative population
- Choice of measures that give good enough detail without being too time-consuming



The U.S. Swine Industry

U.S. Hog Operations by Size Groups and Percent of Inventory - 2012



Source: USDA, 2012 Census of Agriculture

PQA+ - Numbers to Assess

		Avg sows per pen	Total No. of pens	No. to assess	Minimum no. of pens to assess	Assess everyth pen or crate
Total Sows on Site	10000			294		
Number in gestation – individually housed	2500			74		34
Number in gestation – group housed	5000	80	60	147	2	30
Number in farrowing – individually housed	2500			74		34
Number in farrowing – group housed	0					

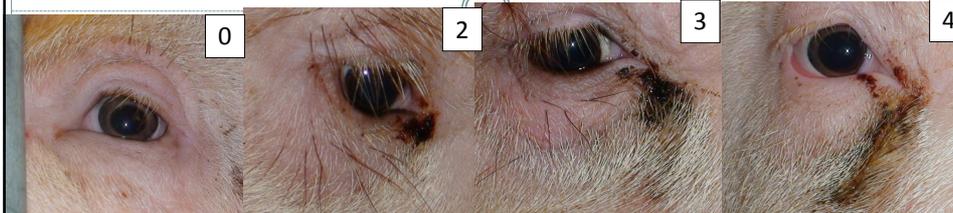
Possible 'New' Measures

- Play behavior
- Eye surface temperature
- Transect walks
- Pain scoring
- Tear staining

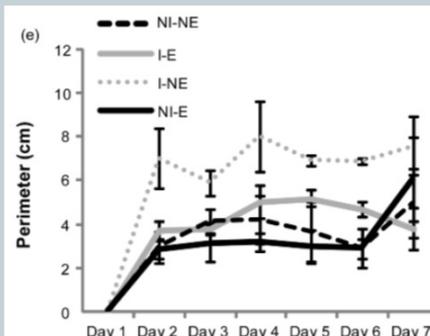


Sources: Held (2014); Savary et al. (2014); Marchewka et al. (2015); Lonardi et al. (2013)

Tear staining in pigs

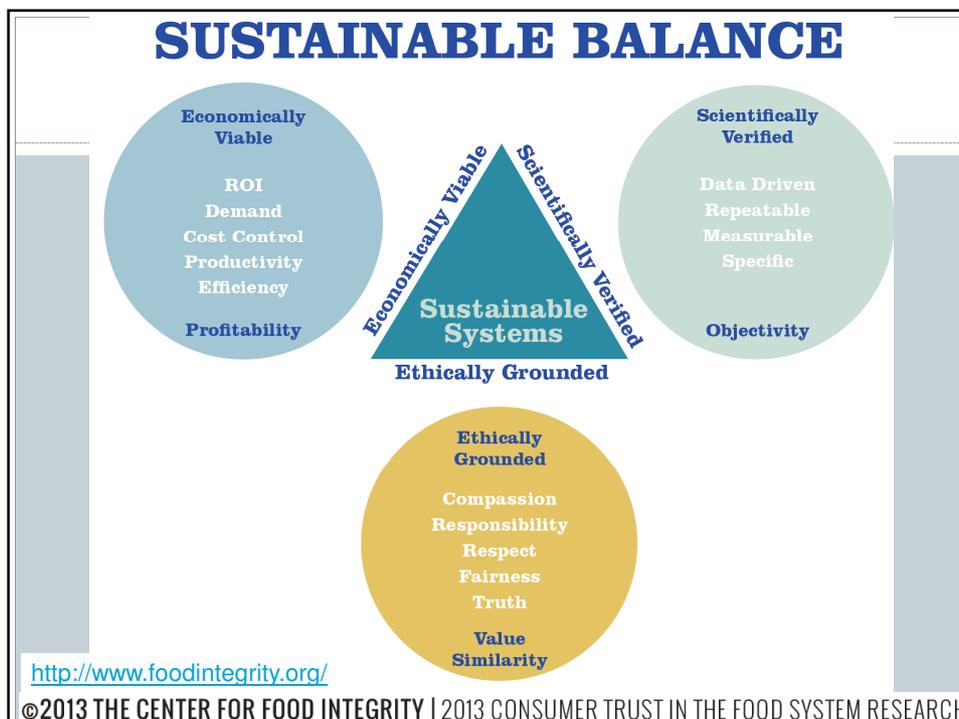


Sources: DeBoer et al. (2015)



Discussion/conclusions

- As an industry, we must be transparent to gain and retain consumer trust
- Welfare remains a high priority and we must continue to demonstrate that we are doing the right thing for the animals
- We need to be more animal-measure focused
- We need to try to find ways to assess individual animals
- As researchers, we must continue to seek out valid, easy-to-use measures that can be applied in on farm



Acknowledgements

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- Thanks to current and past colleagues for discussion and support



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Questions/Discussion?



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