

# SUSTAINABLE PRODUCTION

## Session 2



THE 2019  
**EU AGRICULTURAL  
OUTLOOK CONFERENCE**

**Sustainability**  
from Farm  
to Fork





# Bo Melander

Associate professor, Aarhus University, Department of Agroecology, Research Centre Flakkebjerg, Denmark

THE 2019  
**EU AGRICULTURAL  
OUTLOOK CONFERENCE**

Sustainability  
from Farm  
to Fork



# NON-CHEMICAL WEED MANAGEMENT IN ARABLE CROPPING SYSTEMS

EIP-AGRI Focus Group: Topics discussed at two meetings

- Weed biology
- Breeding for crop competition
- Design of cropping systems
- Precision non-chemical weed management in 2050 and beyond
- Farmers behavior



# WEED BIOLOGY

## Options

- Life forms and population dynamics
- Knowledge of noxious weeds
- Germination dynamics to improve control events
- Weed interference
- Species diversity in arable cropping systems

## Challenges

- Unreliable predictions from weed models
- Great weather dependency
- Funding difficult
- Conservation agriculture



# BREEDING CEREAL VARIETIES FOR CROP COMPETITION

## Options

- Weed suppression
  - Herbicide resistance / low-input systems / organic production
- Variety tolerance
  - High weed pressures / intercropping / undersowing of cover crops

## Drawbacks

- Yield, quality and disease resistance
- Attributes for weed suppression
- Economic incentives for breeding for weed suppression
- Variety selections under non-realistic conditions



# DESIGN OF CROPPING SYSTEMS

## Options



- Crop rotation
  - Crop sequence / crop composition / perennial crops
- Cover crops
  - Species / establishment / termination
- Physical methods

## Challenges

- Trade-off between optimal rotation and crop revenues
- Acceptance of cover crops
- Costs of non-chemical tactics
- More time-consuming to employ
- Limited effects
- Commodities from perennial crops



# PRECISION NON-CHEMICAL WEED MANAGEMENT

## Options

- Steering systems – cameras / GPS
  - Sowing / inter-row cultivation
- Weed mapping
  - UAV / sensors / satellite imaging
- Automated weeding in row crops

## Challenges

- Costs for advanced technologies
- Reliability
- Accuracy
- Work rates
- Applicability in sown row crops
- Single plant detection
- Identification at the species level



# FARMERS BEHAVIOR

## Motivating factors

- Herbicide resistance
- Criticism from the public
- Strict legislation
- Lack of effective chemical solutions
- Biological benefits
- Organic production

## Challenges

- New active ingredients
- Drop in revenues
- Uncomfortable with complexity
- Knowledge intensive
- Long-termed effects?
- Economic incentives
- Social reputation







# THANK YOU !

## #AgriOutlook

© European Union, 2019 | © fotoVoyager, #165807391-170054274-453281653-508212549-537698055, iStockPhoto.com

THE 2019  
**EU AGRICULTURAL  
OUTLOOK CONFERENCE**

**Sustainability**  
from Farm  
to Fork



# SUSTAINABLE PRODUCTION

## Session 2



THE 2019  
**EU AGRICULTURAL  
OUTLOOK CONFERENCE**

**Sustainability**  
from Farm  
to Fork

