

The role of alfalfa in the transition to organic rice production on farms in *Camargue*, France



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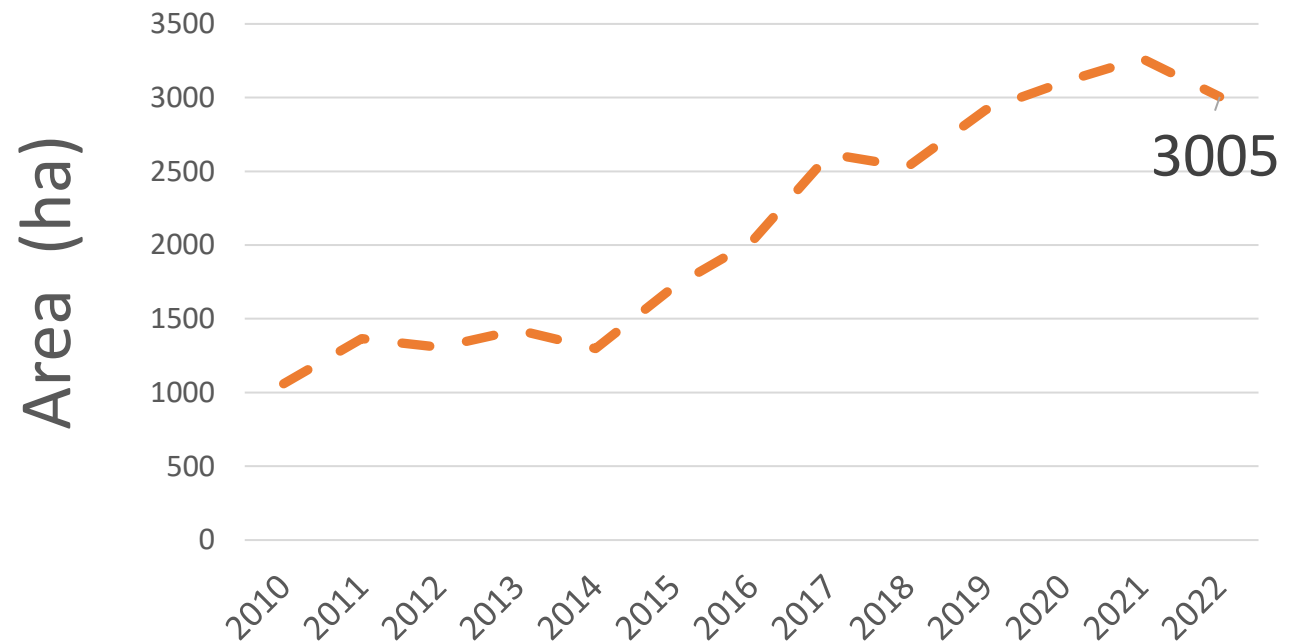
The development of **organic rice production** in *Camargue* (France)

Starting from the 1990s.

Area of rice under organic farming : increased rapidly in the 2010s.

Organic rice share in total rice area

- 2015 : **11%**
- 2020 : **25%**



On the order of **90 farms** involved in organic rice farming

Transition to organic farming on farms : a two-steps process



Conversion length at plot and herd levels

- Land : 3 years
- Livestock : 6 months

Conversion length at farm level

- from at least 3 years
- to 10 – 12 years (gradual conversion)

Transition to organic farming : a process in two steps

First step

CONVERSION

After the conversion of a plot
(3 years of alfalfa)...

Second step

ORGANIC CROPPING SYSTEM EVOLUTION

... farmers experiment various organic cropping systems

introducing **new crops** (rapeseed, lentils or open-field market gardening, as melon or tomato), as well as **intercrops** for green manuring

This step is generally still ongoing for recent conversion

Aim of the study

Appraisal of the roles of forage crops, and peculiarly alfalfa, in the transitions observed in Camargue.

How did the farmers convert their farm to organic farming?

What cropping systems did they developed to produce rice in organic farming?

What were the interests and constraints of alfalfa in these transition processes?

What are the links with livestock farming, at farm level or through exchanges between farms ?

Methods

Study of the transitions from **a case study database**

- 42 farms, 24 of which switched to organic farming

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Case study building

From a training session with Master 2 level students, from **2010 to 2023**

(Michel et al., 2018)

Data collection: farmer surveys (story telling about the **history** of their farms, since their installations or their arrivals on the farm as crop manager)

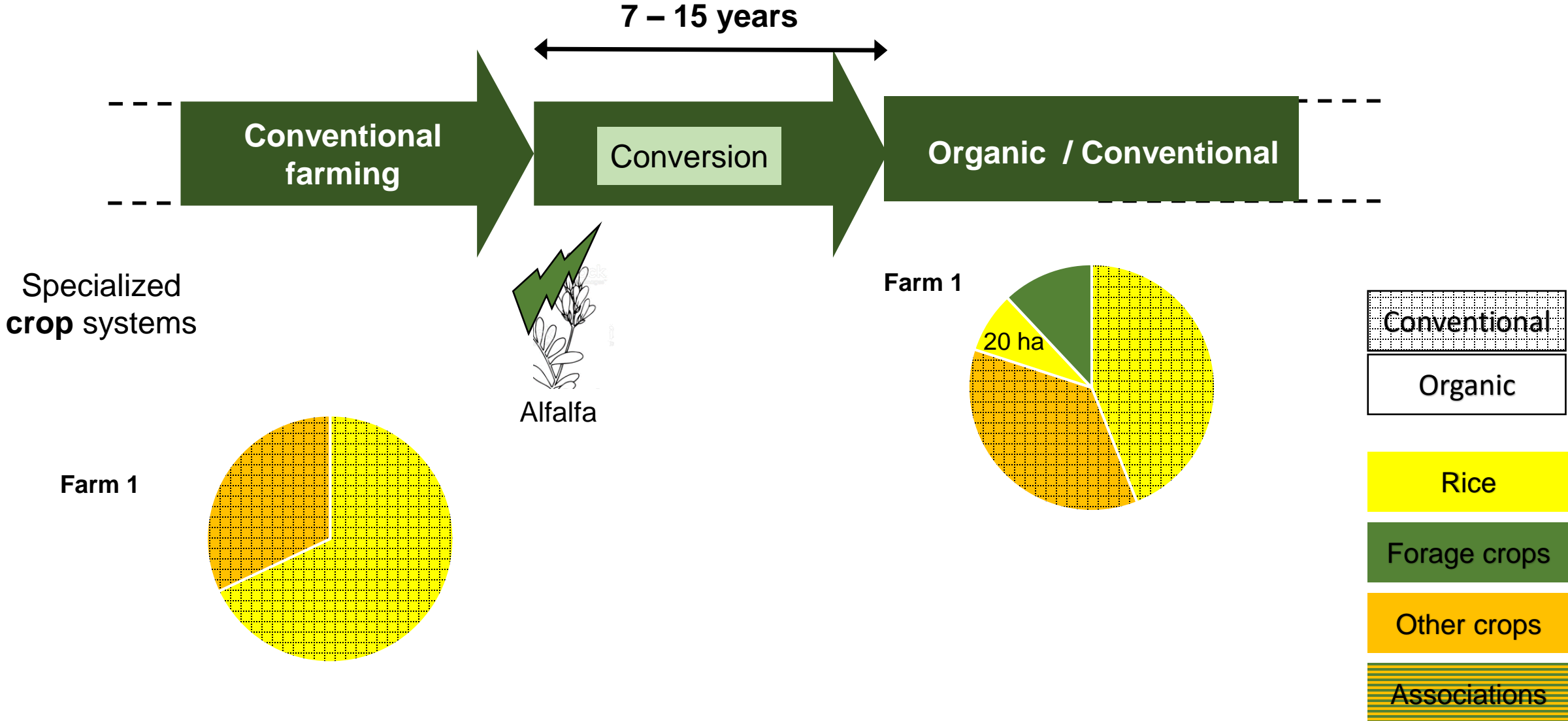
Data processing: representation of the **farm trajectory**, as a succession of stable periods, presenting a coherence of operation, and periods of change

(Moulin et al., 2008).

Typology of trajectories

4 types distinguished from the comparison of the 24 trajectories with transition

Trajectory 1 Large crop farm converting part of the land



7 – 15 years

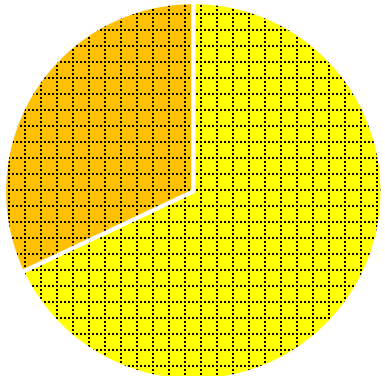
Conventional farming

Conversion

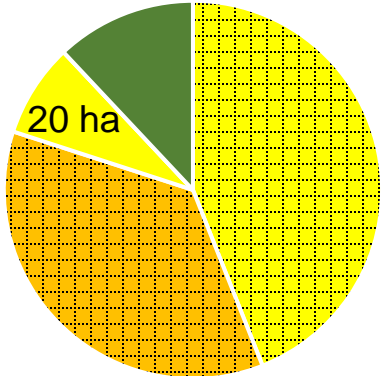
Organic / Conventional

Specialized crop systems

Farm 1



Farm 1



Conventional

Organic

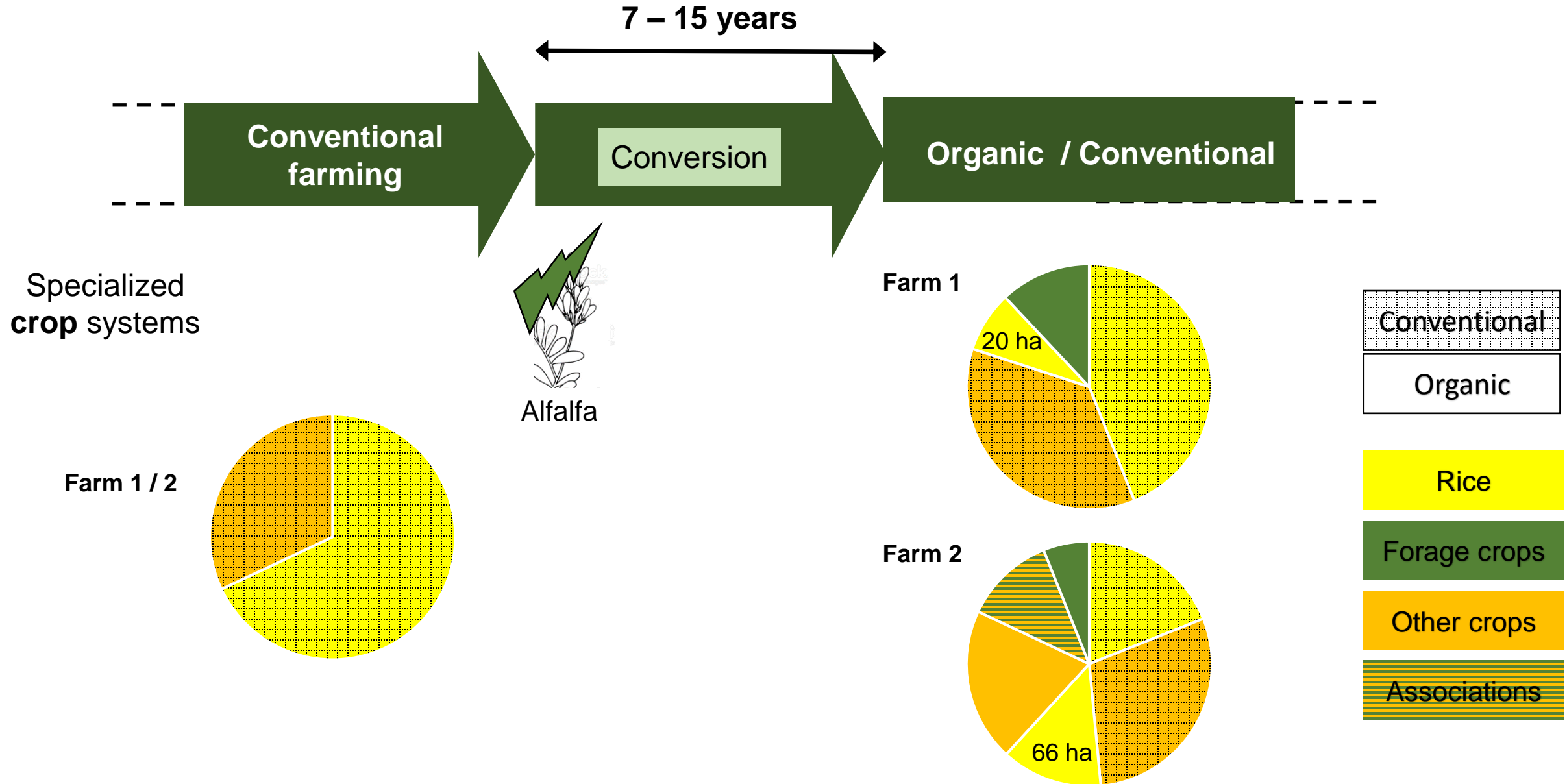
Rice

Forage crops

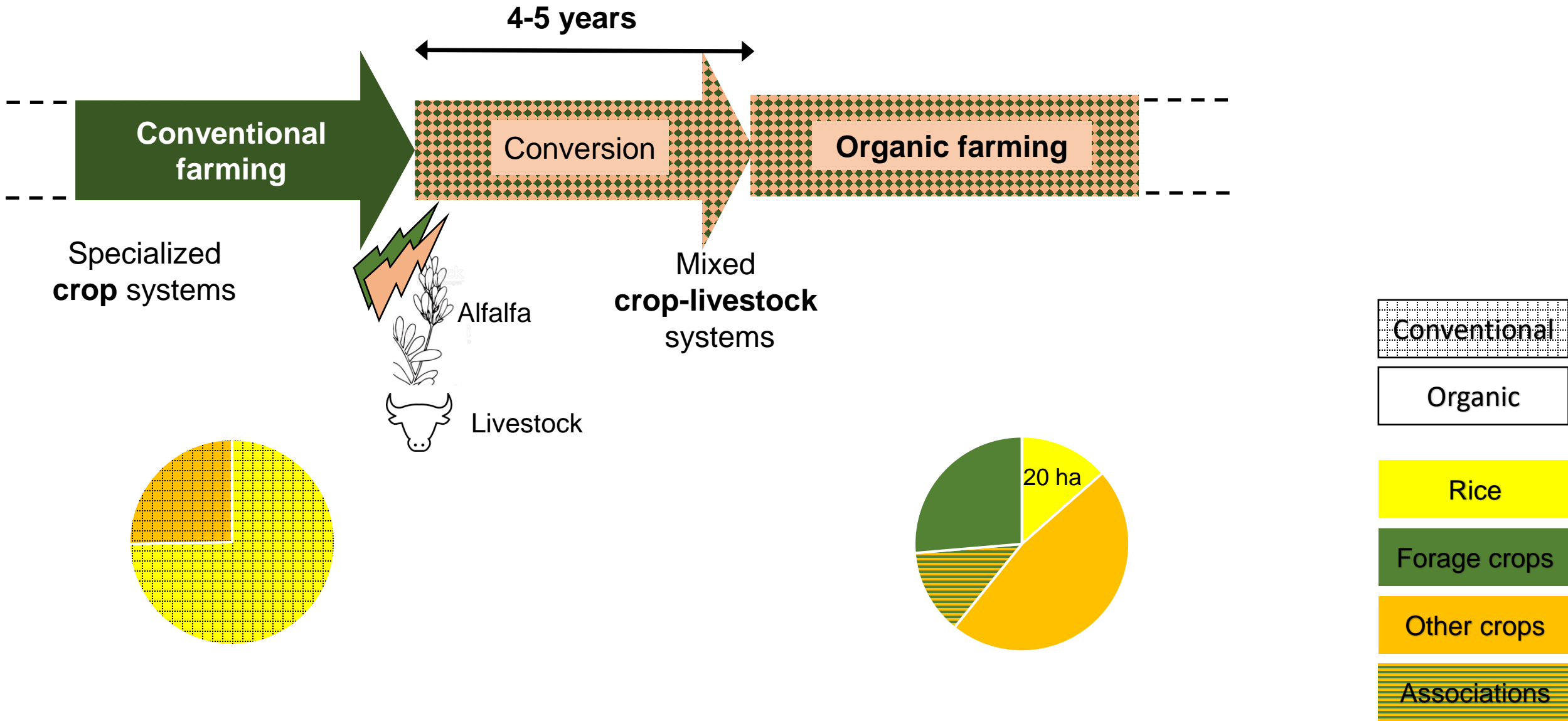
Other crops

Associations

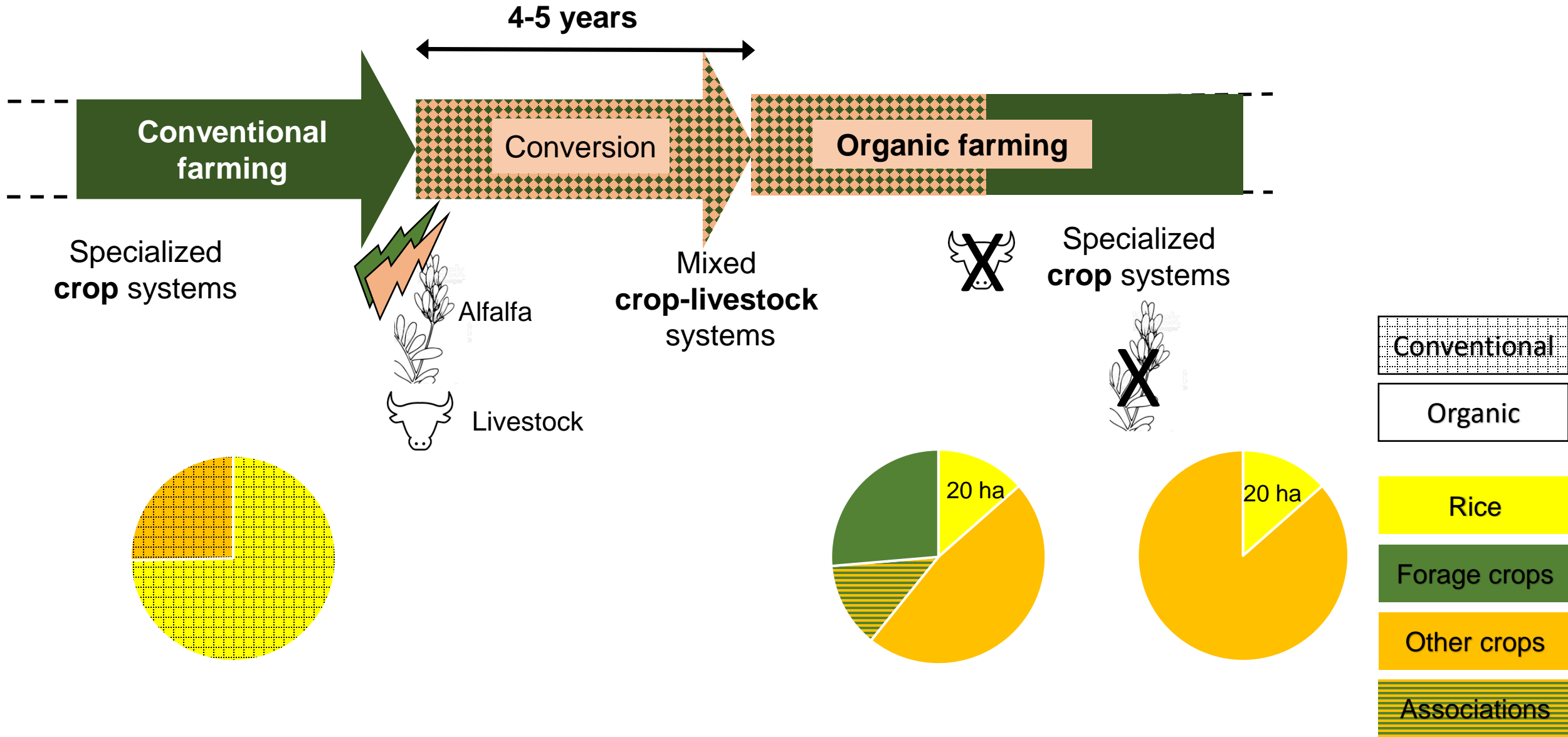
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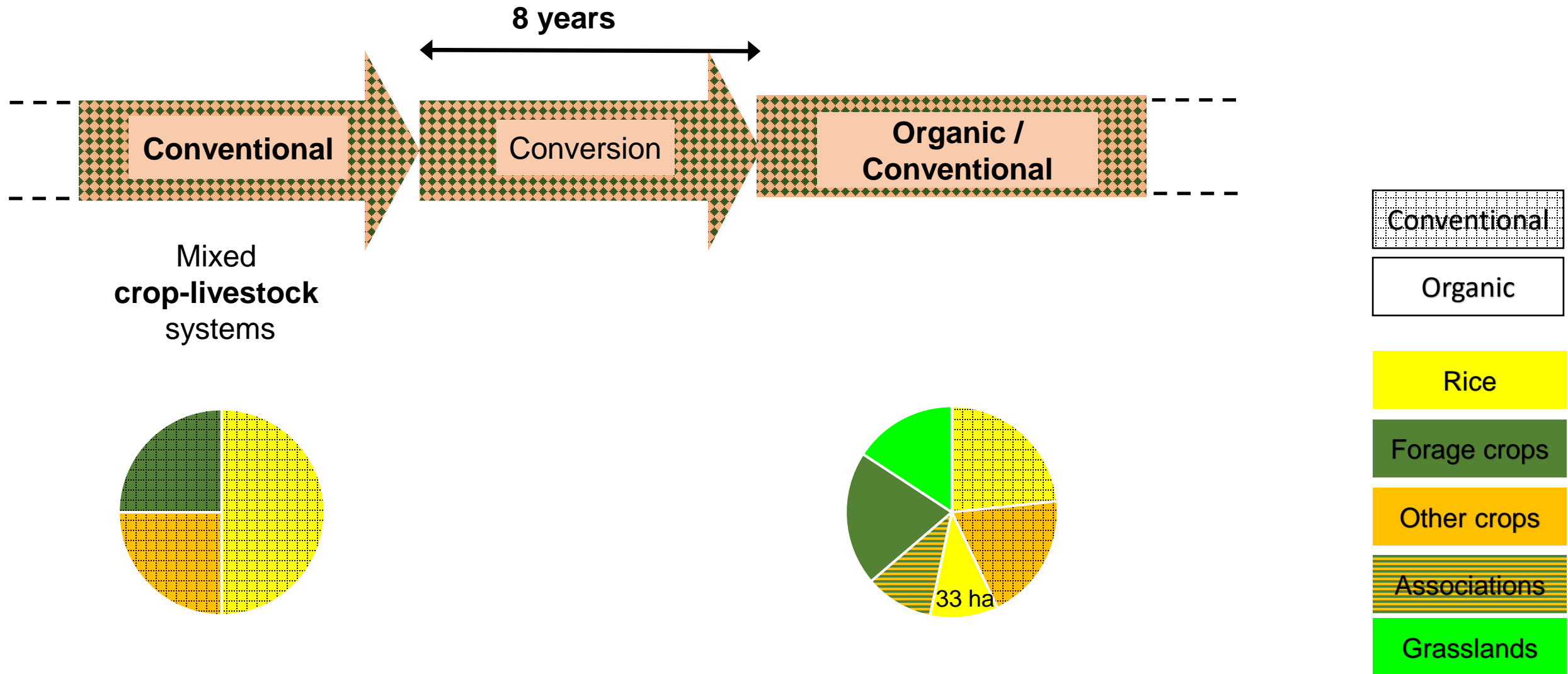
Trajectory 2 Small to medium crop farm introducing livestock and alfalfa to convert all land



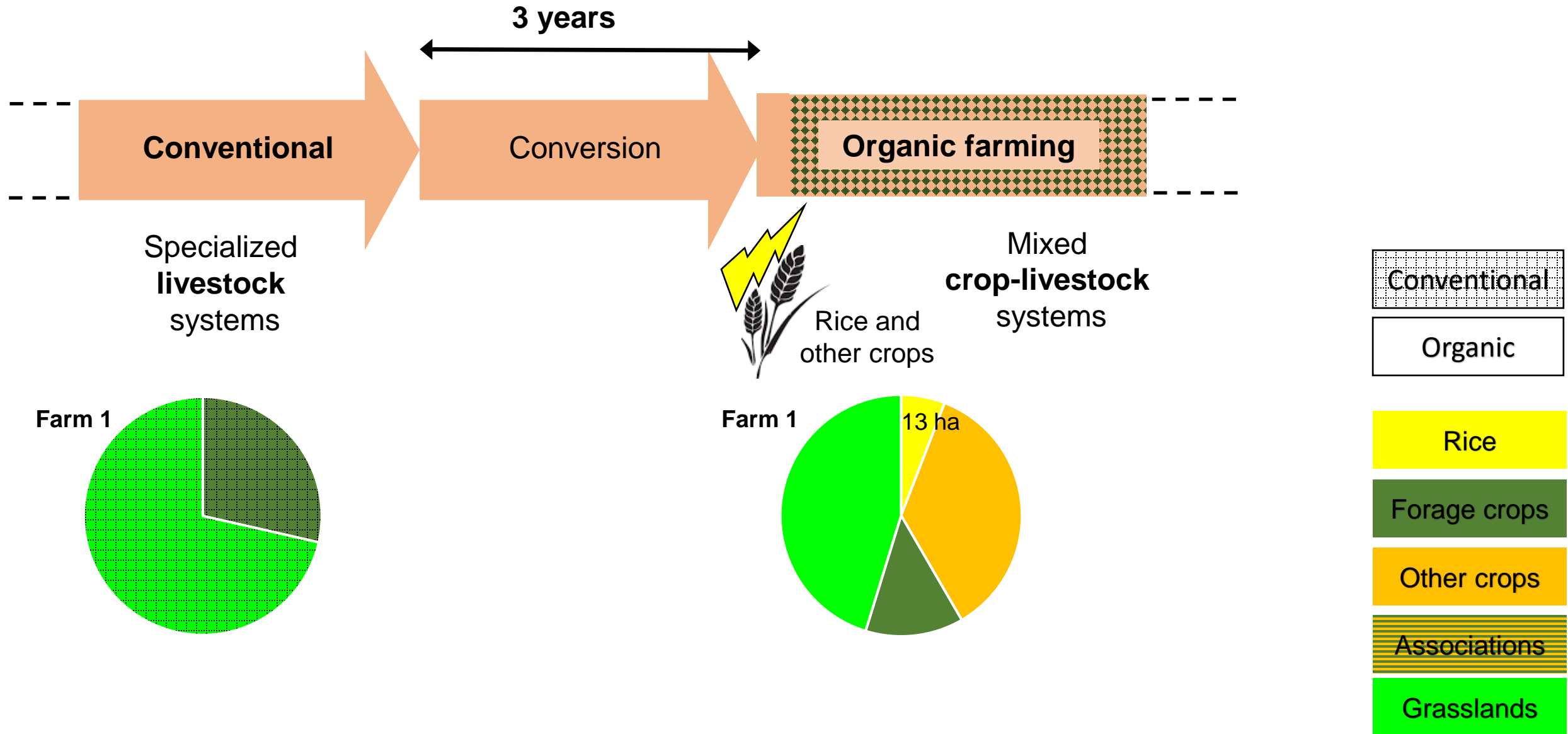
Trajectory 2b Abandonment of livestock and alfalfa during the second step after conversion



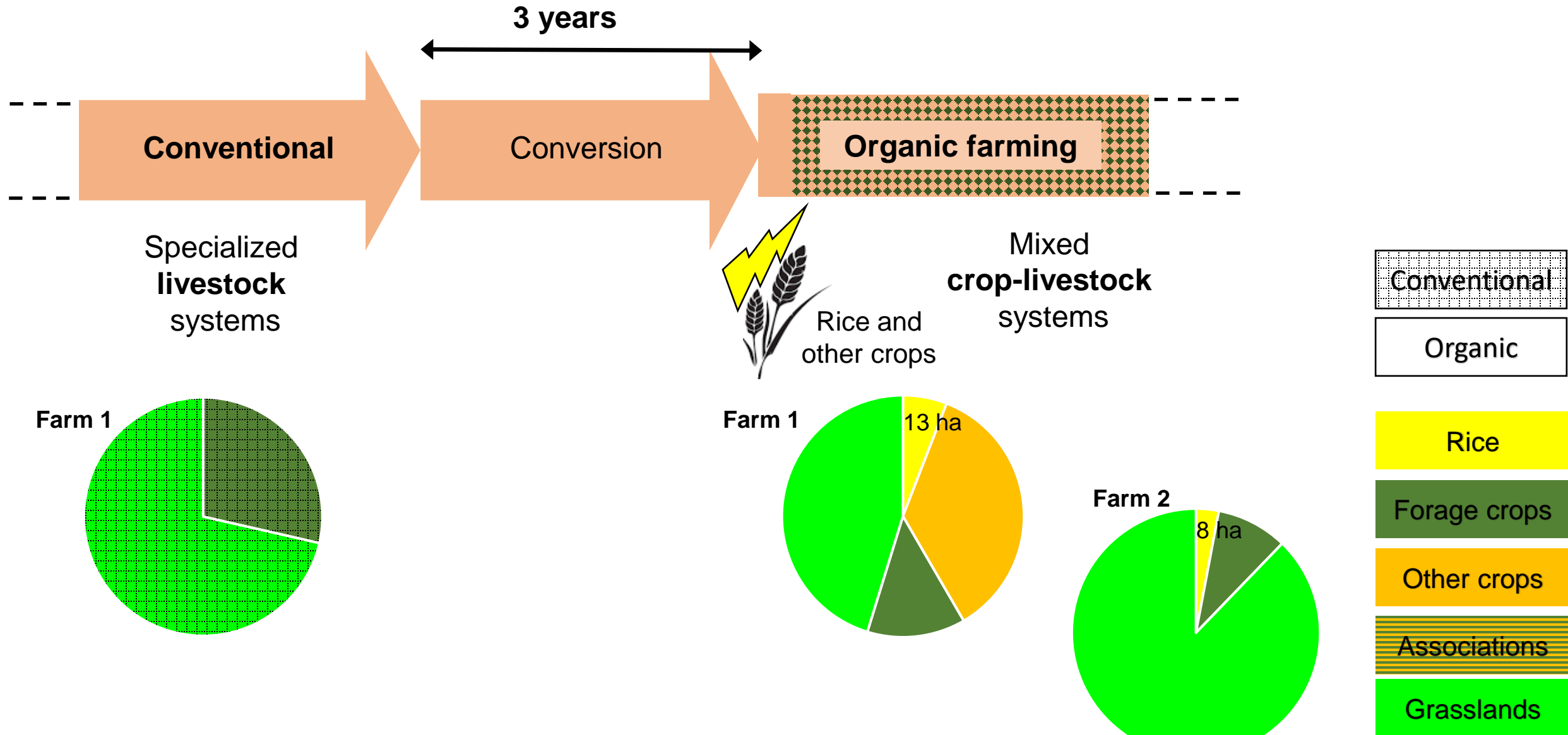
Trajectory 3 Medium to large mixed crop-livestock farm converting part of the land



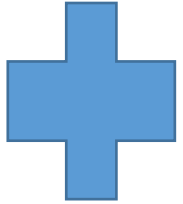
Trajectory 4 Livestock farm introducing crop after the conversion



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Agronomic advantages and limits of alfalfa



- No need to use inputs during cultivation (3 years = duration of organic conversion)
- High biomass production for direct grazing
- Enrichment of soil with organic nitrogen; weed smothering



- Incompatible with lowlands, as sensitive to salt and flooding
- No reduction in weed seed stocks
- Repeated harvesting over several months of the year, within very short timescales, to obtain quality cuts.

Interests and constraints of alfalfa at the **farming system** level

Constraints for **specialized crop** systems

- Harvesting : specific equipment and skills needed for a good quality hay
- Marketing : storage capacity needed to take advantage of seasonal price variations
- Income building : low gross margin per hectare compared to other crops

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Interest for **mixed crop-livestock** systems or **livestock** systems

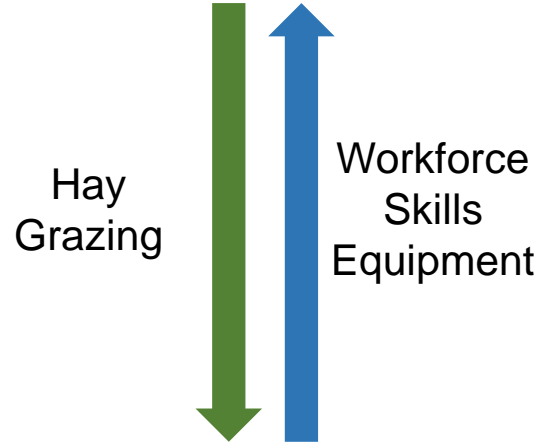
- Alfalfa : an excellent forage to feed livestock during winter
- Alfalfa : an excellent crop for organic rotations
- Direct valorisation by own livestock
- Skills and equipment to harvest alfalfa on crop farms

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Exchanges
between farms



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Conclusion

Alfalfa plays a key role in the **organic conversion step** for all farms

After conversion, farmers operate a **diversity of organic systems**, with or without alfalfa (uplands and intermediary lands), with or without rice (in lowlands)

Farmers use several **levers to develop organic rice production** in Camargue

- Mixing organic and conventional
- Mixing crop and livestock
- Exchanging with other farmers

In diversified trajectories, with possible back-and-forth movements

Livestock played a key role in the development of organic rice in the last two decades, but **large-scale market gardeners** looking for plots to rent for organic farming could alter this role in the future

Thank you