



# PANACEA Roadmap for **SPAIN**

Camelina, Spain.  
Photo credit: downloaded from  
[www.camelinacompany.es](http://www.camelinacompany.es)



Chamomile, Spain  
Photo credit: Pixabay



Altramuz (Lupinus spp), Navarra, Spain  
Photo credit: INTIA



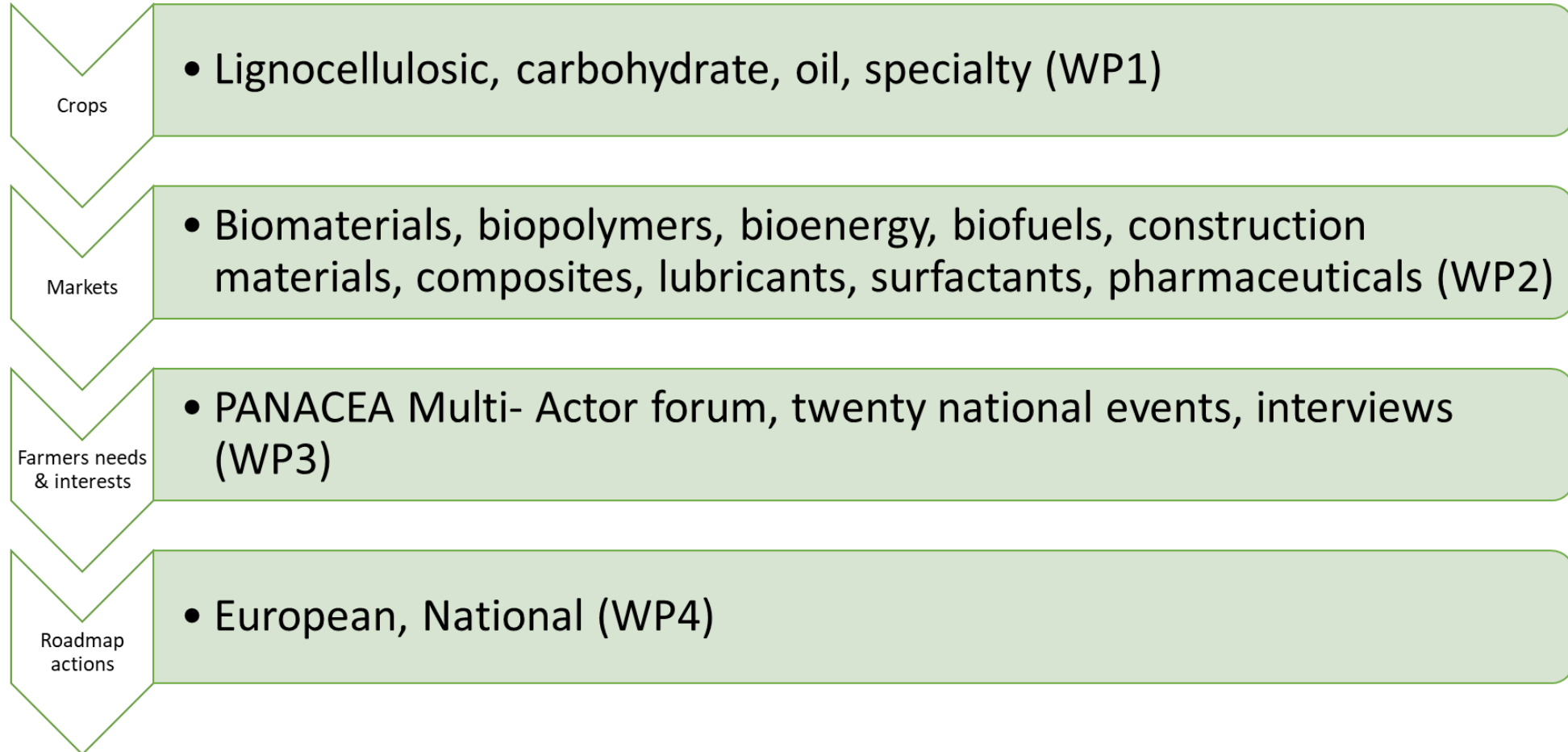
Linseed Farm in UK  
Photocredit: <https://thelinseedfarm.co.uk>



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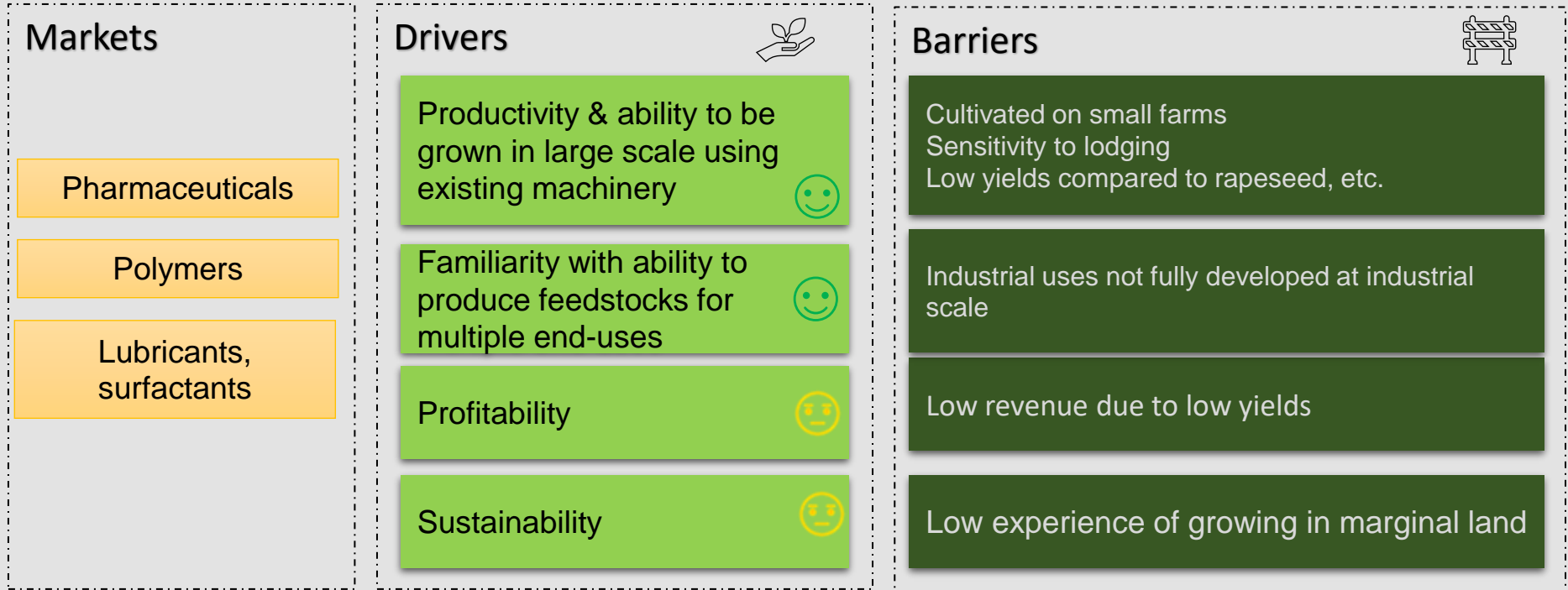










# Approach & Links to PANACEA Work Packages





Markets, drivers and barriers



TRL>7			a) industrial production already available at commercial scale b) used at commercial scale for multiple end-uses c) high
TRL5-7			a) production available at demo scale b) recognized for its multiple end-uses c) medium
TRL3-5			a) research to production development b) recognized end-use but still at the research level c) low
TRL<3			a) basic research data available b) no recognized end-use c) very low

## Roadmap actions to overcome the barriers

Camelina, Spain.  
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### Barriers

Cultivated on small farms  
Sensitivity to lodging  
Low yields compared to rapeseed, etc

Industrial uses not fully developed at industrial scale





Low revenue due to low yields




Low experience of growing in marginal land





2021





2025






2030




    Sustainable cropping strategies for crop rotation, cover crop, etc.






   Develop farmer clusters- improve domesticated material

    Training for cooperatives

    Finance crop rotations

     Sustainability governance & SDGs

   Finance market development

Actors  Research  Industry  Government   Agricultural community



Altramuz (Lupinus spp), Navarra, Spain  
Photo credit: INTIA



### Markets


Pharmaceuticals


Polymers

Lubricants,  
surfactants

### Drivers



Productivity & ability to be grown in large scale using existing machinery 

Familiarity with ability to produce feedstocks for multiple end-uses 

Profitability 

Sustainability 

### Barriers











Difficulties to adapt to basic and limestone soils. The mechanical harvest of the crop is not well organised.

Low consumer awareness small market and high competition with other oil crops

Low revenue due to low yields

Low experience of growing in marginal land

TRL>7			a) industrial production already available at commercial scale b) used at commercial scale for multiple end-uses c) high
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Altramuz (*Lupinus spp*), Navarra, Spain  
Photo credit: INTIA



**Barriers**



Difficulties to adapt to basic and limestone soils.  
The mechanical harvest of the crop is not well organised.

Low consumer awareness  
small market and high competition with other oil crops

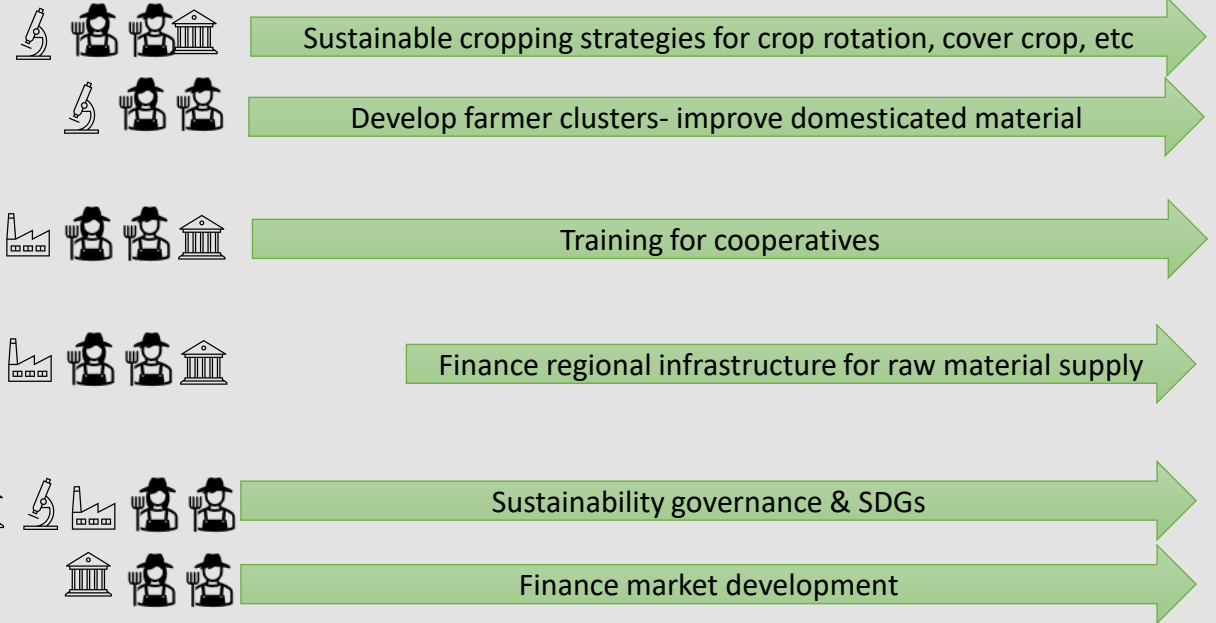
Low revenue due to low yields

Low experience of growing in marginal land

2021

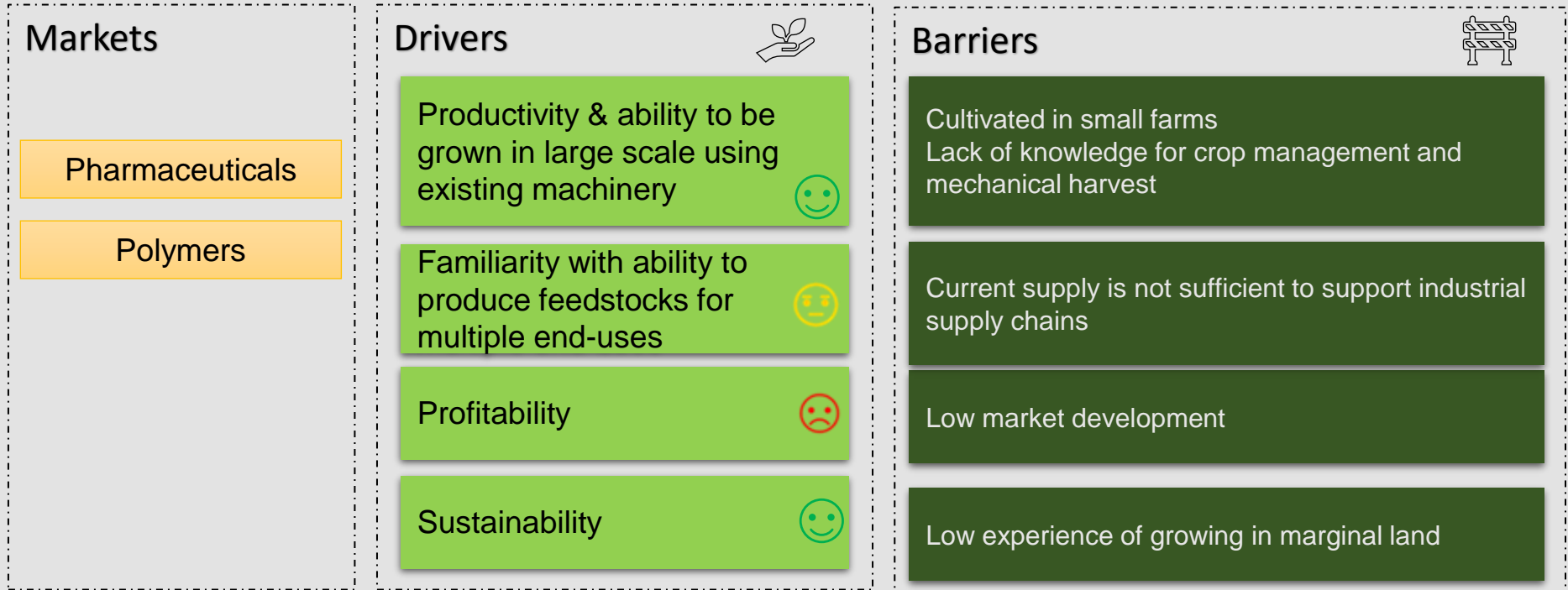
2025





2030



Actors      Research Industry Government Agricultural community

## Markets, drivers and barriers



TRL>7		<ul style="list-style-type: none"> <li>a) industrial production already available at commercial scale</li> <li>b) used at commercial scale for multiple end-uses</li> <li>c) high</li> </ul>
TRL5-7		<ul style="list-style-type: none"> <li>a) production available at demo scale</li> <li>b) recognized for its multiple end-uses</li> <li>c) medium</li> </ul>
TRL3-5		<ul style="list-style-type: none"> <li>a) research to production development</li> <li>b) recognized end-use but still at the research level</li> <li>c) low</li> </ul>
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Chamomile, Spain  
Photo credit: Pixabay



**Barriers**



Cultivated in small farms  
Lack of knowledge for crop management and mechanical harvest

Current supply is not sufficient to support industrial supply chains

Low market development

Low experience of growing in marginal land

2021

2025

2030



Sustainable cropping strategies: establish in marginal land



Develop farmer clusters- improve domesticated material



Training for cooperatives



Finance regional infrastructure for raw material supply



Sustainability governance & SDGs

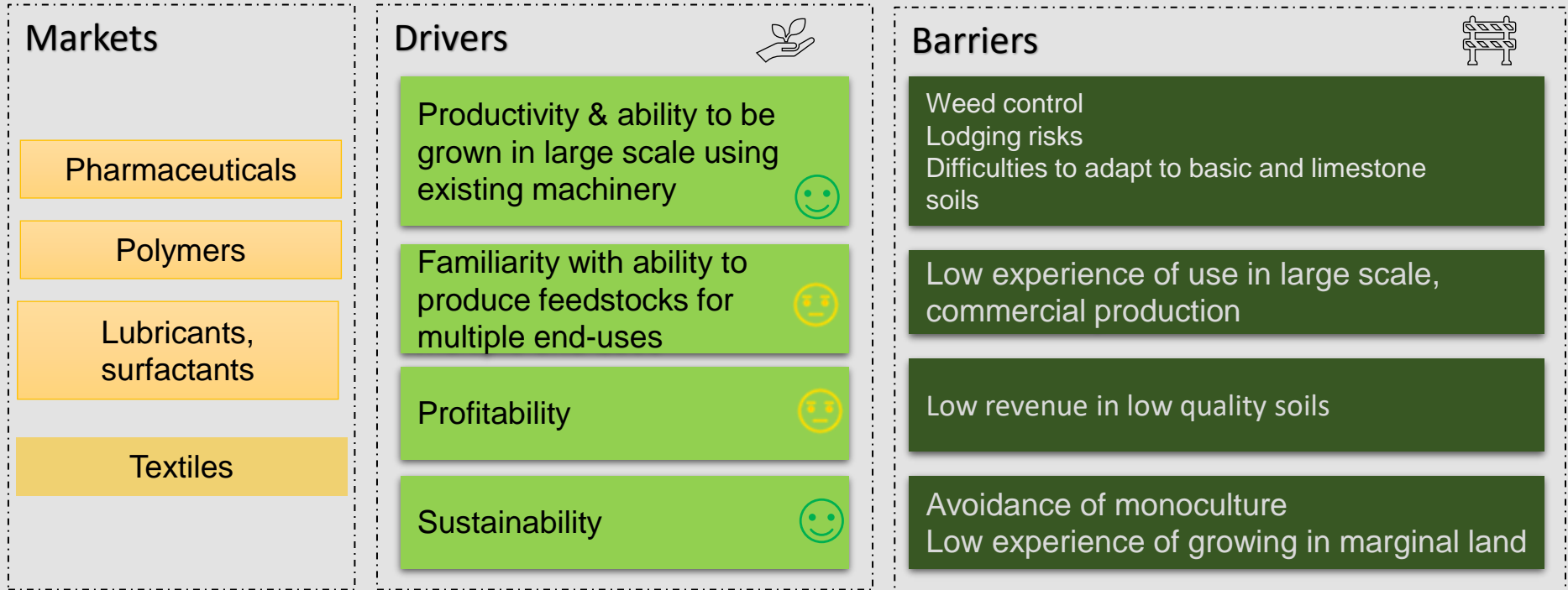


Finance market development

Actors

Research Industry Government Agricultural community






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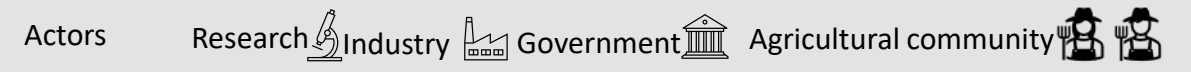
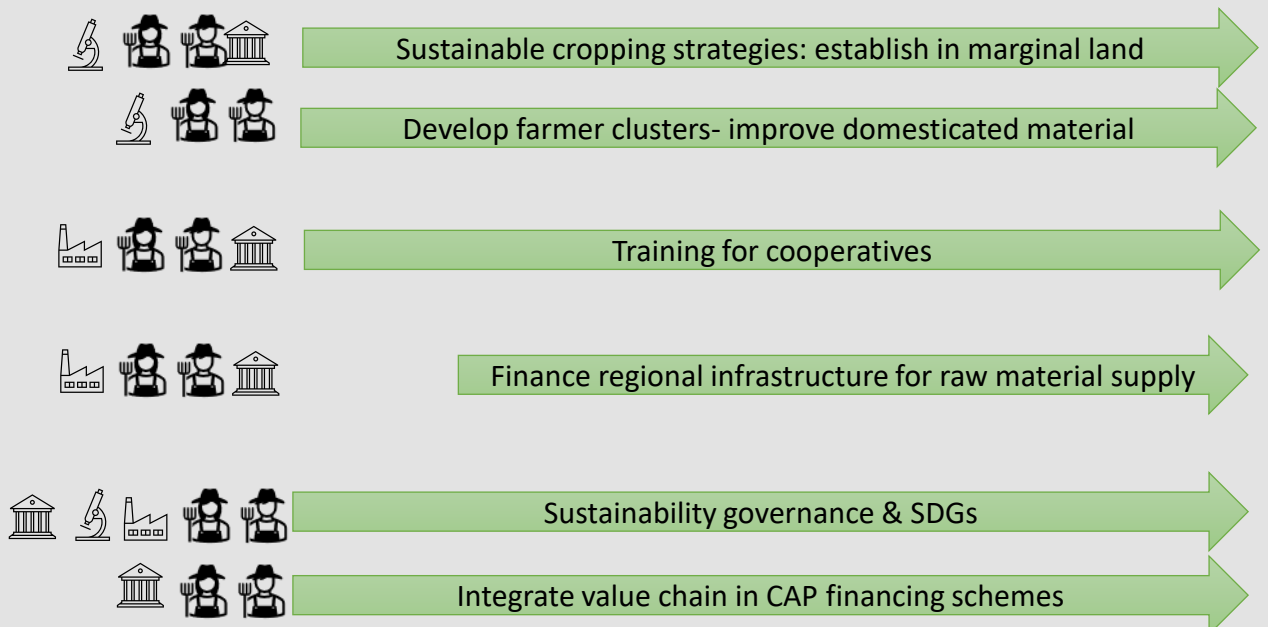
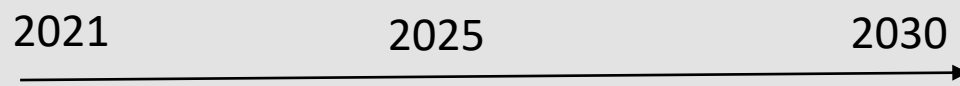


Roadmap actions to overcome the barriers



**Barriers** 

- Weed control  
Lodging risks  
Difficulties to adapt to basic and limestone soils
- Low experience of use in large scale, commercial production
- Low revenue in low quality soils
- Avoidance of monoculture  
Low experience of growing in marginal land



# Markets, drivers and barriers




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### Markets









- Pharmaceuticals
- Polymers

### Drivers

- Productivity & ability to be grown in large scale using existing machinery 
- Familiarity with ability to produce feedstocks for multiple end-uses 
- Profitability 
- Sustainability 

### Barriers

- Lack of cultivation technology know-how
- Low critical mass for industrial development
- Low revenue due to low yields
- Low experience of growing in marginal land

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Akademija, 2018

### Barriers



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Low critical mass for industrial development

Low revenue due to low yields

Low experience of growing in marginal land

2021

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Sustainable cropping strategies for crop rotation, cover crop, etc



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