

# PANACEA Roadmap for The NETHERLANDS

PANACEA



Photo: Sugar beet, UK/ Source: <https://is-portal.eu/>



Photo Credit: University of Bologna



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



Photo Credit: <https://www.agropro.it/en/photo-album/agropro-ekologiniai-laukai-2015/>



Photo Credit: JKI, <https://www.julius-kuehn.de>



# Approach & Links to PANACEA Work Packages

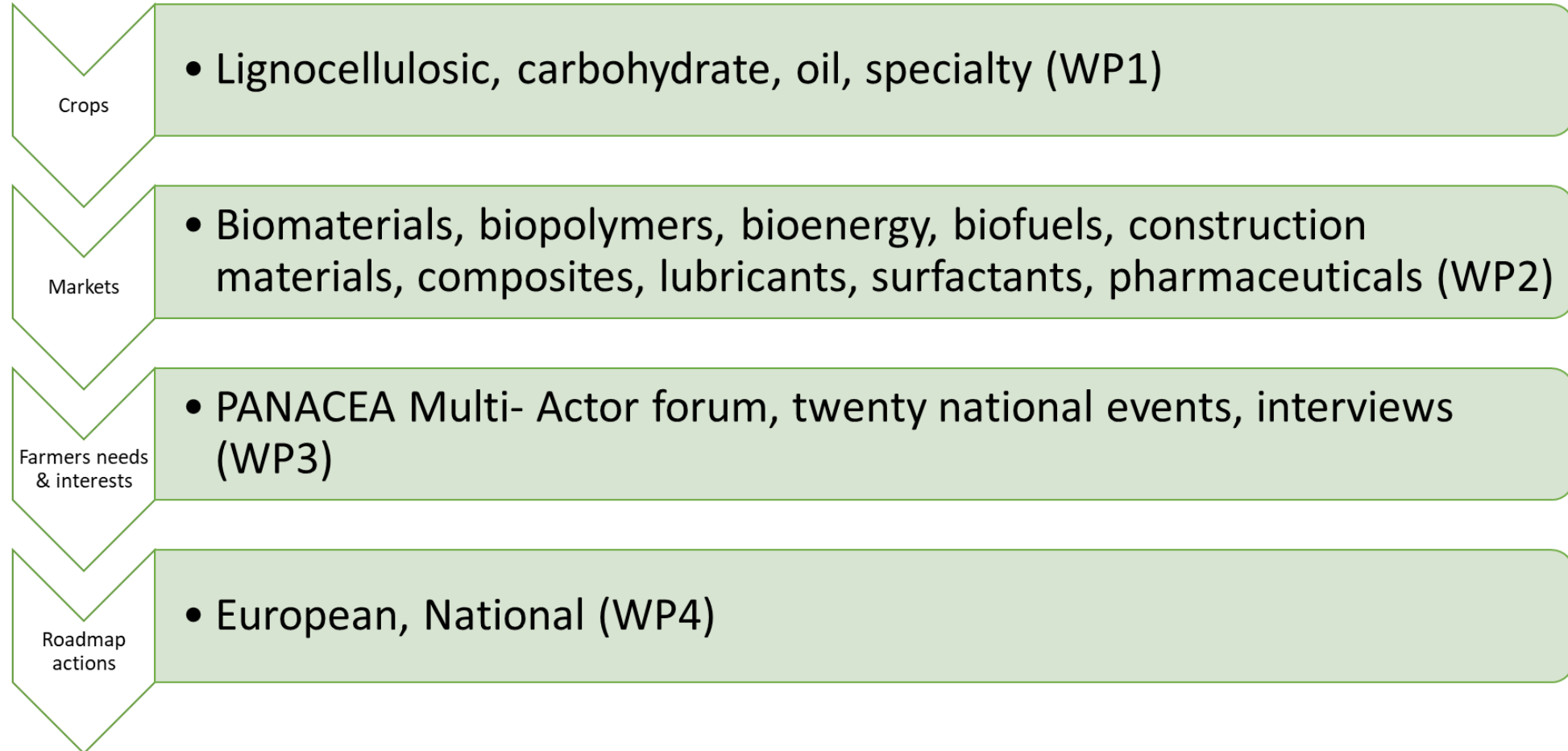




Photo: Sugar beet, UK/ Source: <https://is-portal.eu/>



### Markets

Bioenergy

### 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



No infrastructure for small scale use (except fodder beet);  
limited storage time of beets, seasonal production

Competition with other crops for bioethanol  
Competition with food industry & food crops

Dependence on fossil oil market price  
Competition with sugar for food production

Acceptance sugar beets as industrial crop

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

Photo: Sugar beet, UK/ Source: <https://is-portal.eu/>



## Barriers



No infrastructure for small scale use (except fodder beet); limited storage time of beets, seasonal production

Competition with other starch crops for bioethanol  
Competition with food industry

Dependence on fossil oil market price  
Competition with sugar for food production

Acceptance sugar beets as industrial crop

2021

2025

2030

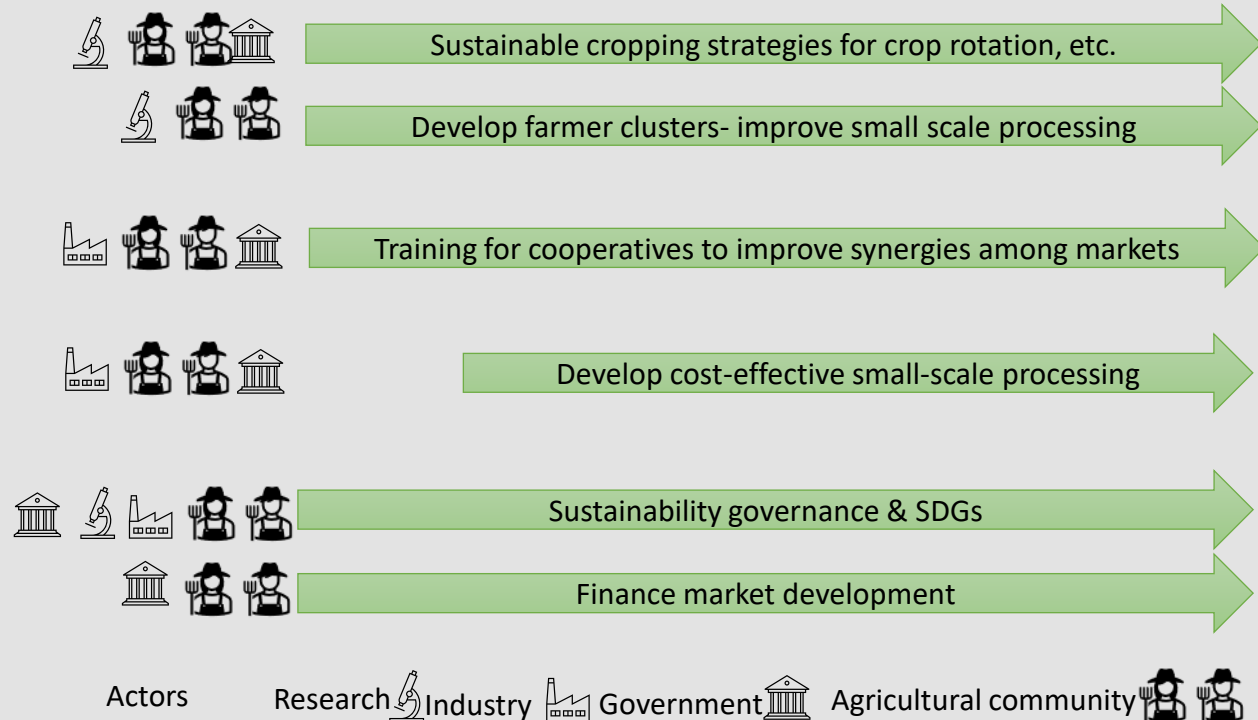




Photo Credit: <https://www.agropro.lt/en/photo-album/agropro-ekologiniai-laukai-2015/>





### Markets

Textiles

### 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












Harvesting and processing to obtain fine fibres still needs to be developed.

Low experience of use in large scale, commercial production

High processing costs; other crops offer higher income for farmers

Avoidance of monoculture

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>
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# Roadmap actions to overcome the barriers



Photo Credit: <https://www.agropro.lt/en/photo-album/agropro-ekologiniai-laukai-2015/>



## Barriers

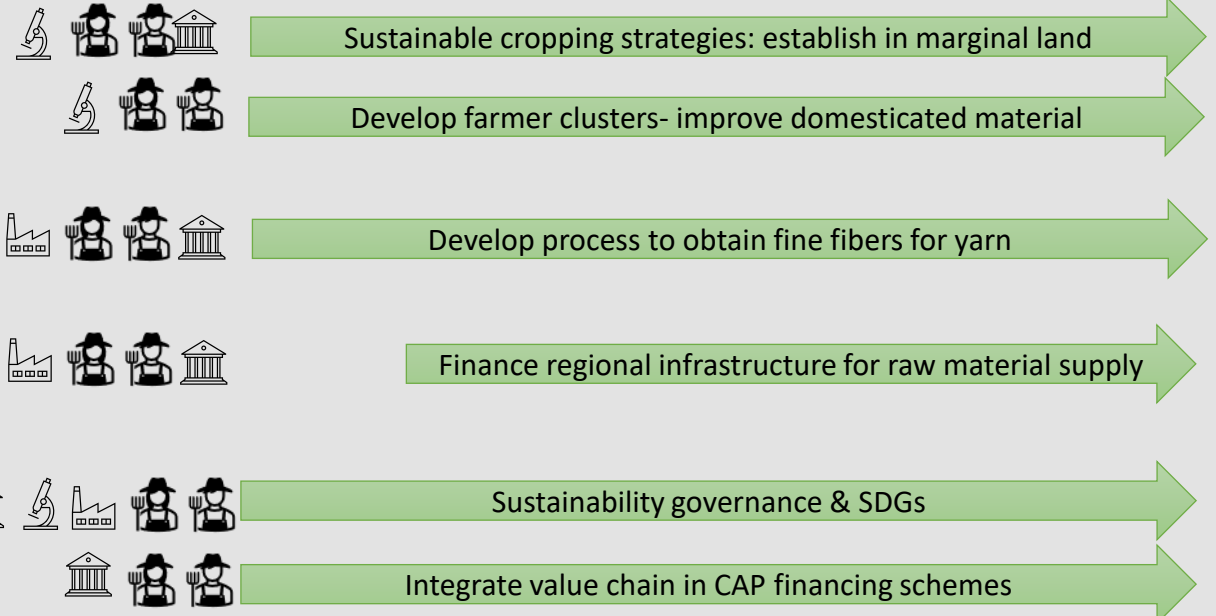


- Harvesting and processing to obtain fine fibres still needs to be developed.
- Low experience of use in large scale, commercial production
- High processing costs; other crops offer higher income for farmers
- Avoidance of monoculture

2021

2025

2030



Actors      Research Industry Government Agricultural community

# Miscanthus

## Markets, drivers and barriers


Photo Credit: University of Bologna




### Markets

Bioenergy

### 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

Planting and harvesting requires specialized equipment  
Low yields in low quality soils

Low experience of use in large scale, commercial production

Costs of processing are high, labour intensive processing  
Long term contracts required for production.

Avoidance of monoculture









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Photo Credit: University of Bologna



**Barriers**

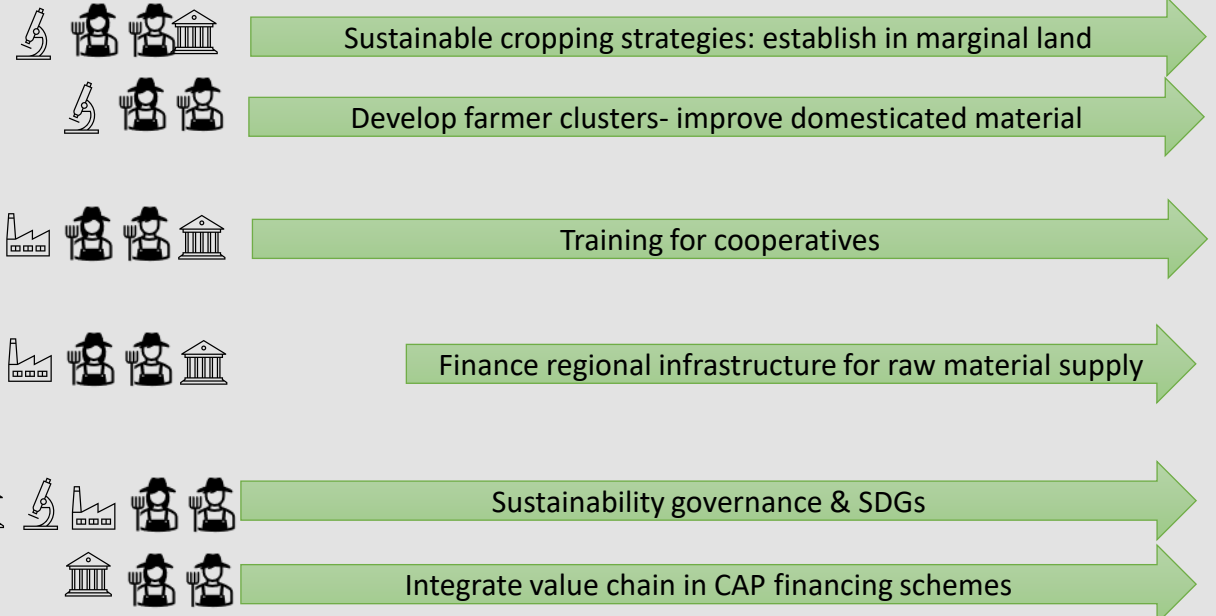


- Planting and harvesting requires specialized equipment  
Low yields in low quality soils
- Low experience of use in large scale, commercial production
- Costs of processing are high, labour intensive processing  
Long term contracts required for production.
- Avoidance of monoculture  
Low experience of growing in marginal land

2021

2025

2030



Actors      Research Industry Government Agricultural community





Photo Credit: JKI, <https://www.julius-kuehn.de>







Markets

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



- Cultivated in small farms  
Lack of knowledge for crop management
- Current supply is not sufficient to support industrial supply chains
- High cultivation costs  
Low revenue due to low yields
- Low experience of growing the crop









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**Barriers**



Cultivated in small farms  
Lack of knowledge for crop management

Current supply is not sufficient to support industrial supply chains

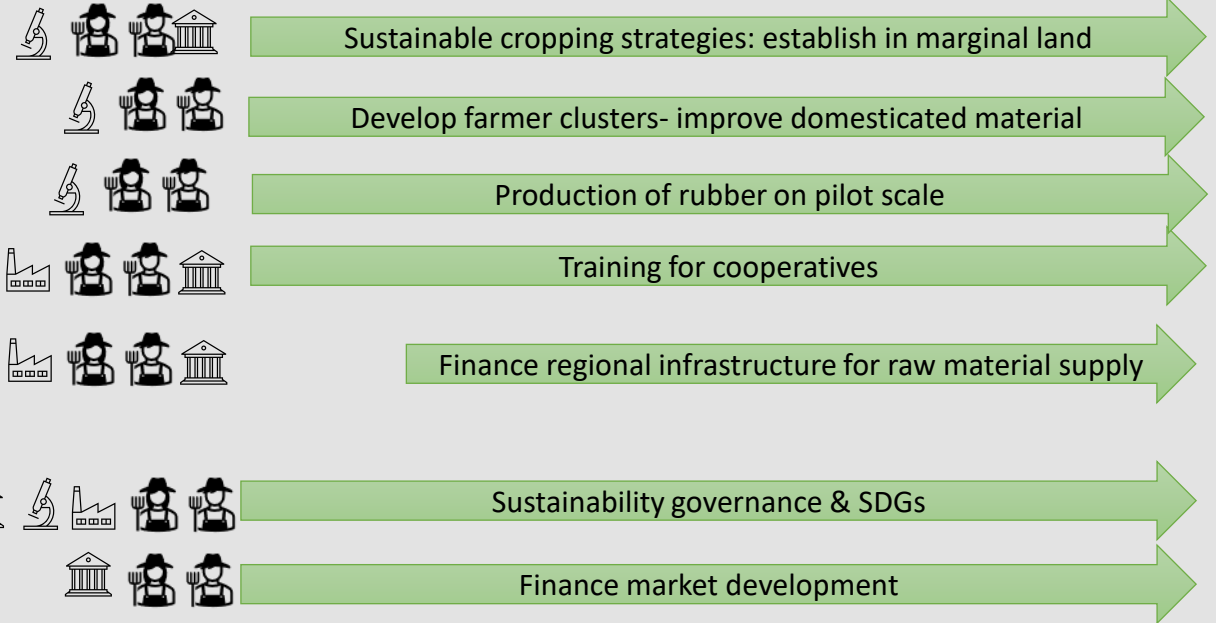
High cultivation costs  
Low revenue due to low yields

Low experience of growing the crop

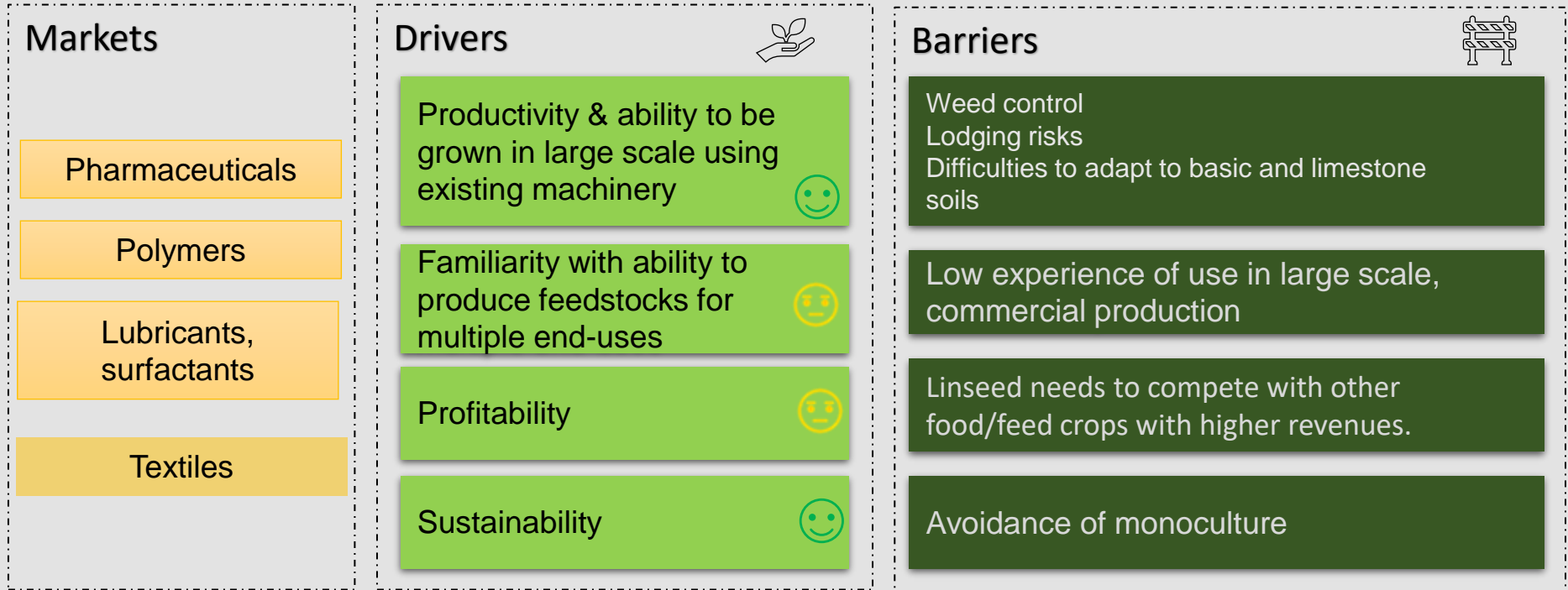
2021

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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
- Linseed needs to compete with other food/feed crops with higher revenues.
- Avoidance of monoculture  
Low experience of growing in marginal land

