



# What will affect future Scottish horticulture production? identifying drivers of change



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# Research Aim



- **Work with agricultural stakeholders to identify ways to prepare for and prevent future threats to arable and horticultural production in Scotland**
- First step, we consulted farmers, farming organisations, agricultural suppliers, processors, retailers, and industry regulators **to characterise the main threats** to arable and horticulture production



# What will affect the future resilience of Scottish arable and horticulture production?



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- This information will help us to
  - **Prioritise** the threats to crop production
  - Construct **future scenarios** of likely risks (and opportunities)
- In the next phase, **scenarios will be analysed with stakeholders** to identify ways of avoiding these risks and highlight knowledge gaps
- The findings will be reported in a policy briefing summarising key actions for stakeholders in the agriculture sector to safeguard the sector against future risks



# As part of this presentation



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- Present the findings of the consultation
- Invite you to participate in a scenario-planning workshop
- Invite you to determine the focal question and time span for scenario planning
  - Focal question: should create a context for the solution space; should explore the long-range consequences of change and should define time and space dimensions

***What will the fruit and horticultural sector look like in ....?***

***In your opinion what is an appropriate time horizon for the sector to think strategically in the light of future uncertainty?***



# Consultation: categories for drivers of risk to crop production



Pests and diseases	Severity level	Likelihood scale
Invasive species		
Resistance-breaking strains/genotypes		
Changing weather conditions		
Loss of pesticides		
Other: [free text]		

Societal	Severity level	Likelihood scale
Low labour availability		
Employment/wage regulations		
Dietary change by consumers		
Changing farming demographics		
Changing consumer demographics		
Other: [free text]		

Economic	Severity level	Likelihood scale
High input costs		
Export regulations		
Economic prosperity/Affordability to consumers		
Access to natural resources		
Globalisation/Trade across borders		
Retail sector developments		
Other: [free text]		

Climate	Severity level	Likelihood scale
Climate and pest and disease pressures		
Climate and water/nutrient stress		
Net zero carbon targets		
Future land use		
Other: [free text]		

Political	Severity level	Likelihood scale
Global instability		
EU exit		
Scottish independence		
Fiscal policy		
National and local agendas on food system governance		
Other: [free text]		

Technological	Severity level	Likelihood scale
Crop breeding advances		
Precision management tools		
Digitalisation availability/access		
Reduced waste/Circular economy		
Other: [free text]		





# Severity Levels & Likelihood Scale

## Likelihood Scale

- 1= Very unlikely, little or no chance of it happening.
- 2= Unlikely but could occur.
- 3 = Possible, but less than 50/50 chance.
- 4= Probable, more than 50/50 chance.
- 5= Probable, highly likely/certain to occur.

## Severity level

- Negligible/very minor (temporary) effect
- Small effect
- Moderate effect
- Major (Long term) effect
- Permanent change

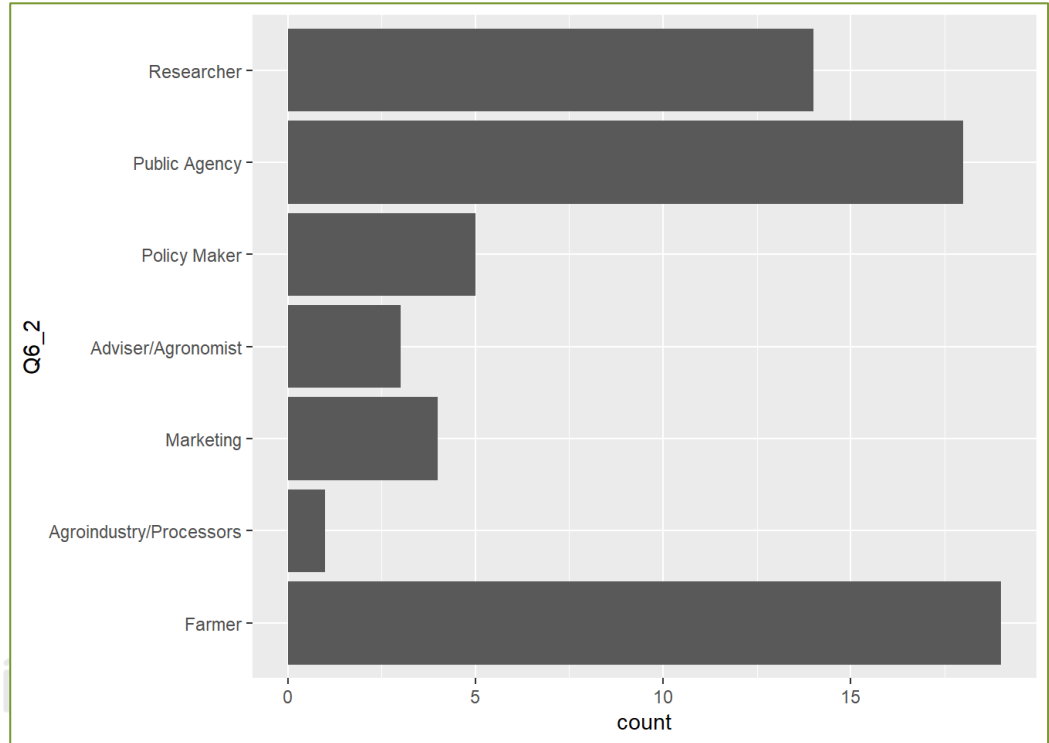
# Summary of survey results to date



We had 71 valid responses (August to December 2022). However not all participants responded to all questions therefore we analysed the data by question. Questions are independent variables.

## GENERAL CHARACTERISTICS

- Male (36) and female (22) (some prefer not to answer or did not answer)
- Arable, horticulture and both systems were represented in the survey.

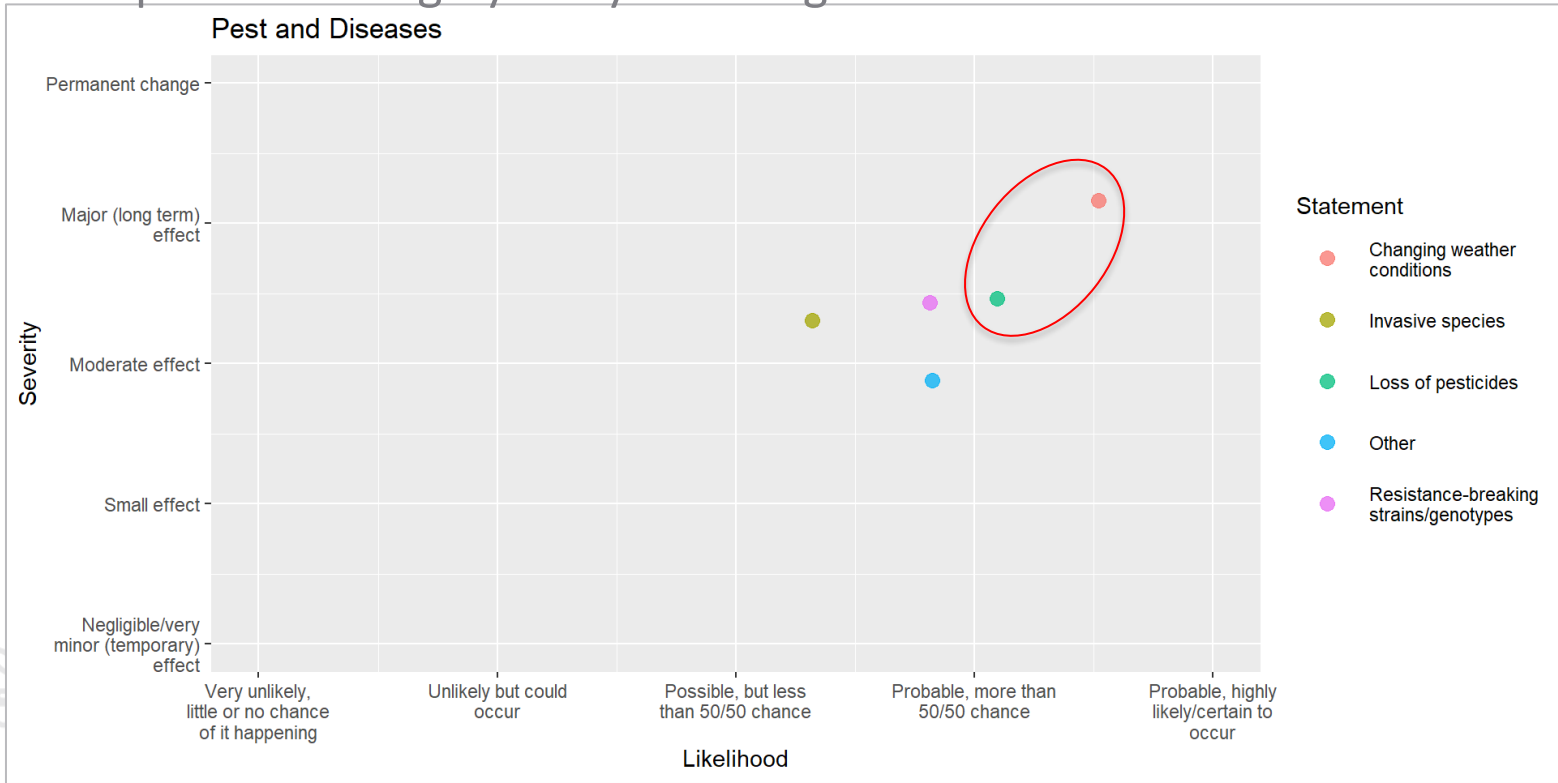


# Pest and Diseases

- Changing climate conditions represent a highly likely and permanent threat
- Loss of pesticides: highly likely and long term effect



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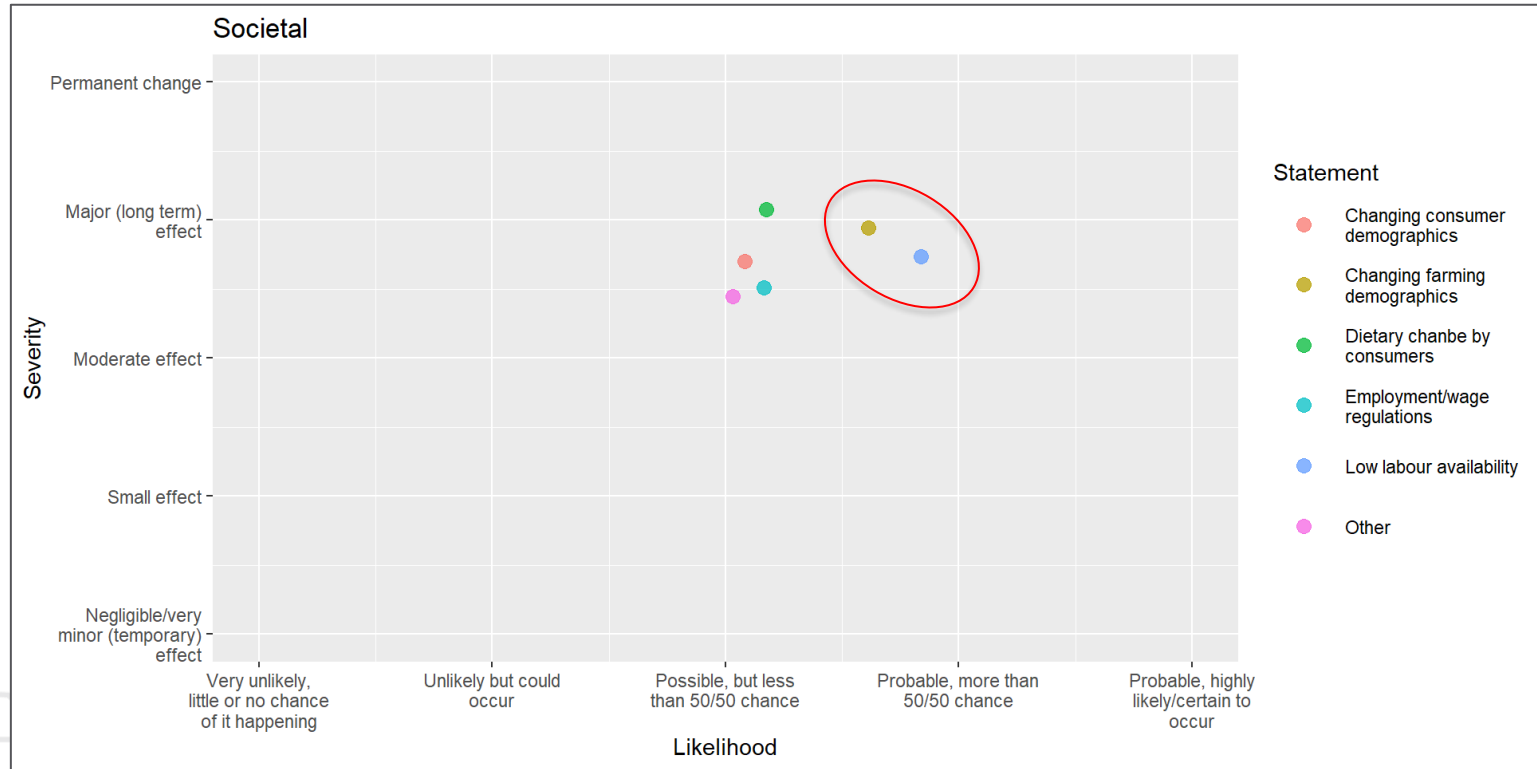


# Societal



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- Labour and changing farming demographics with similar trends of major long term effect with >50% probability

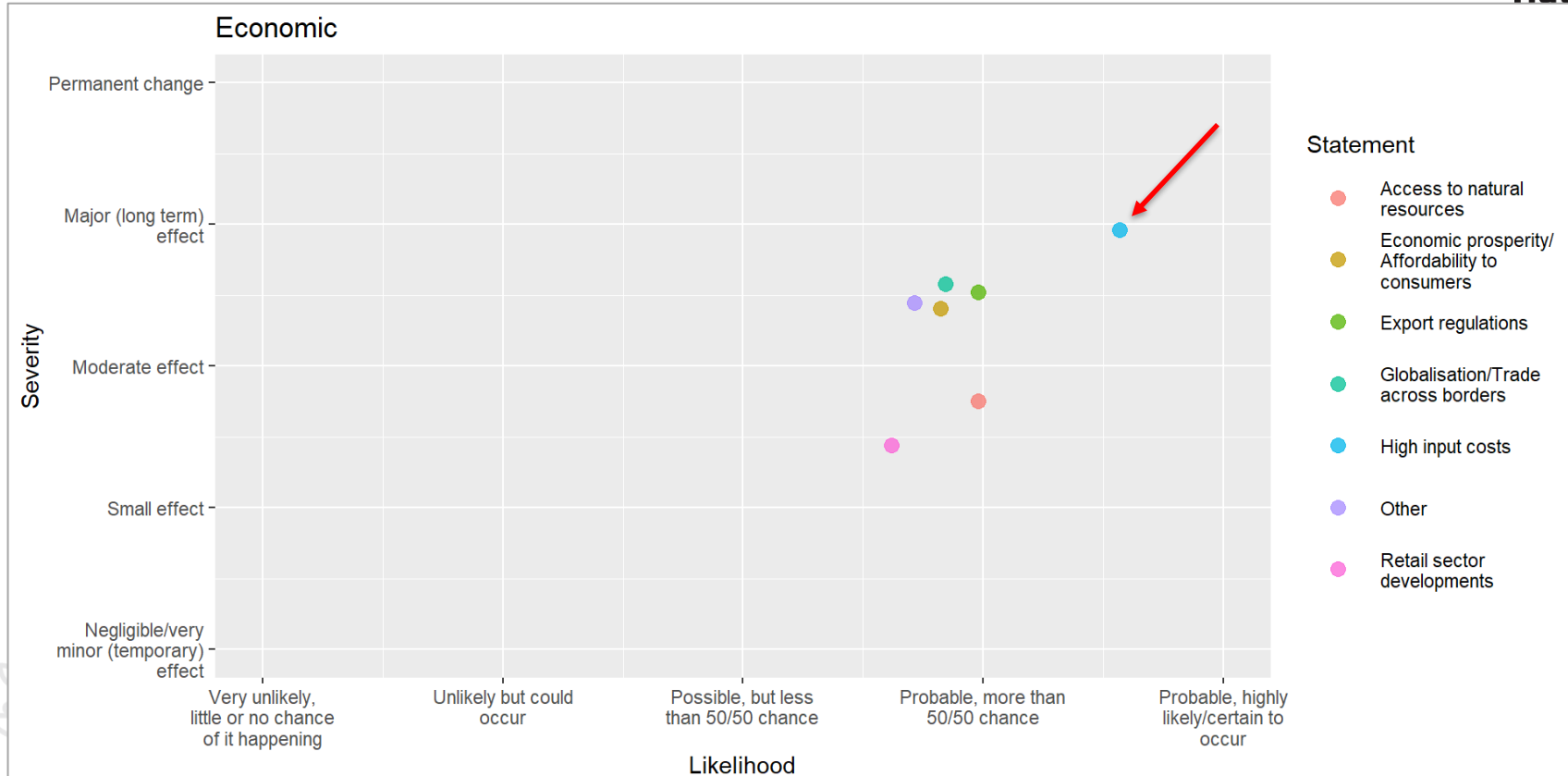


# Economic



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- High input costs are seen as having a highly likely and long term effect

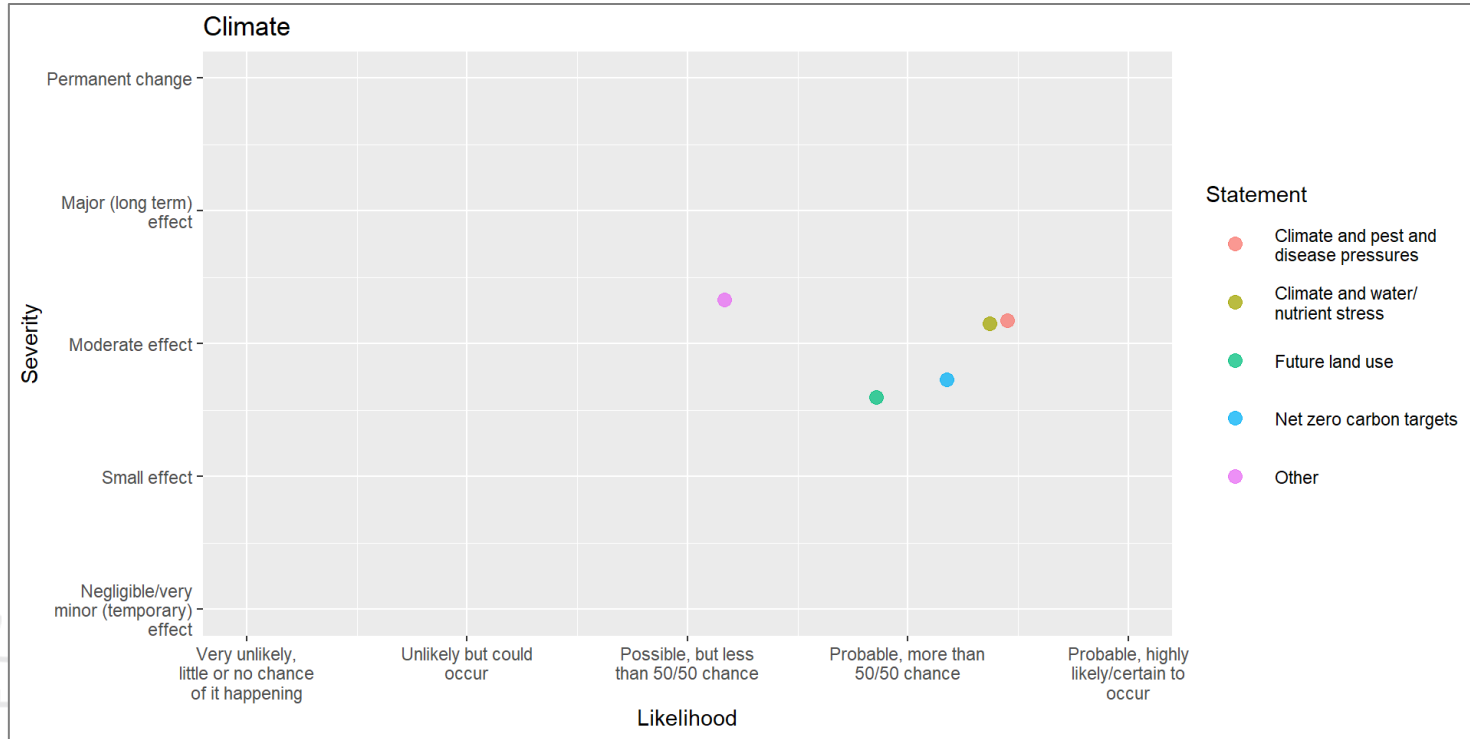


# Climate

- Climate and pests and disease pressures are seen as highly likely with moderate effect
- Climate and nutrient stress is seen as with more than 50% chance

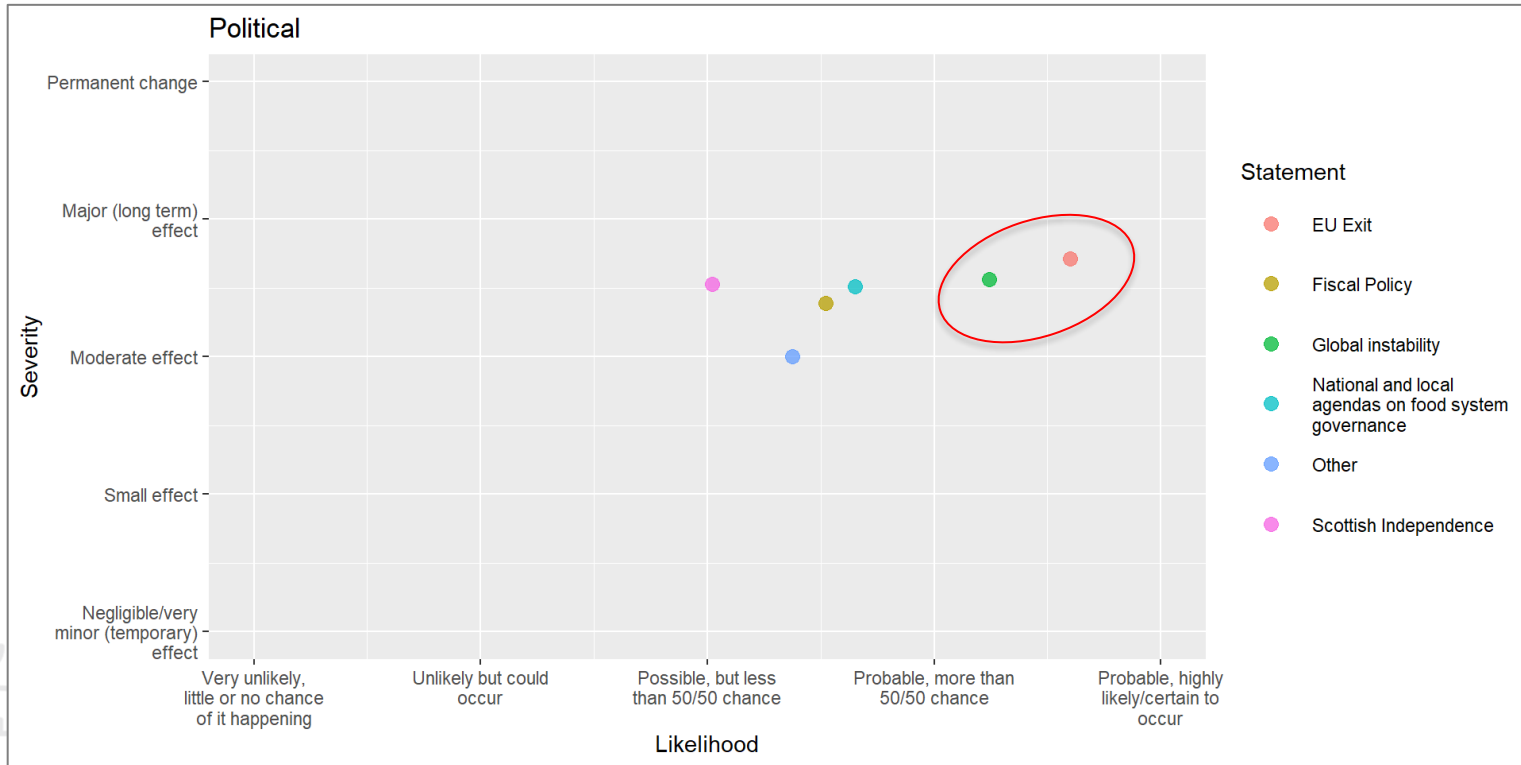


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# Political

- EU exit: highly likely to represent a threat to arable and horticulture production
- Global instability is seen as more than 50% chances of occurring

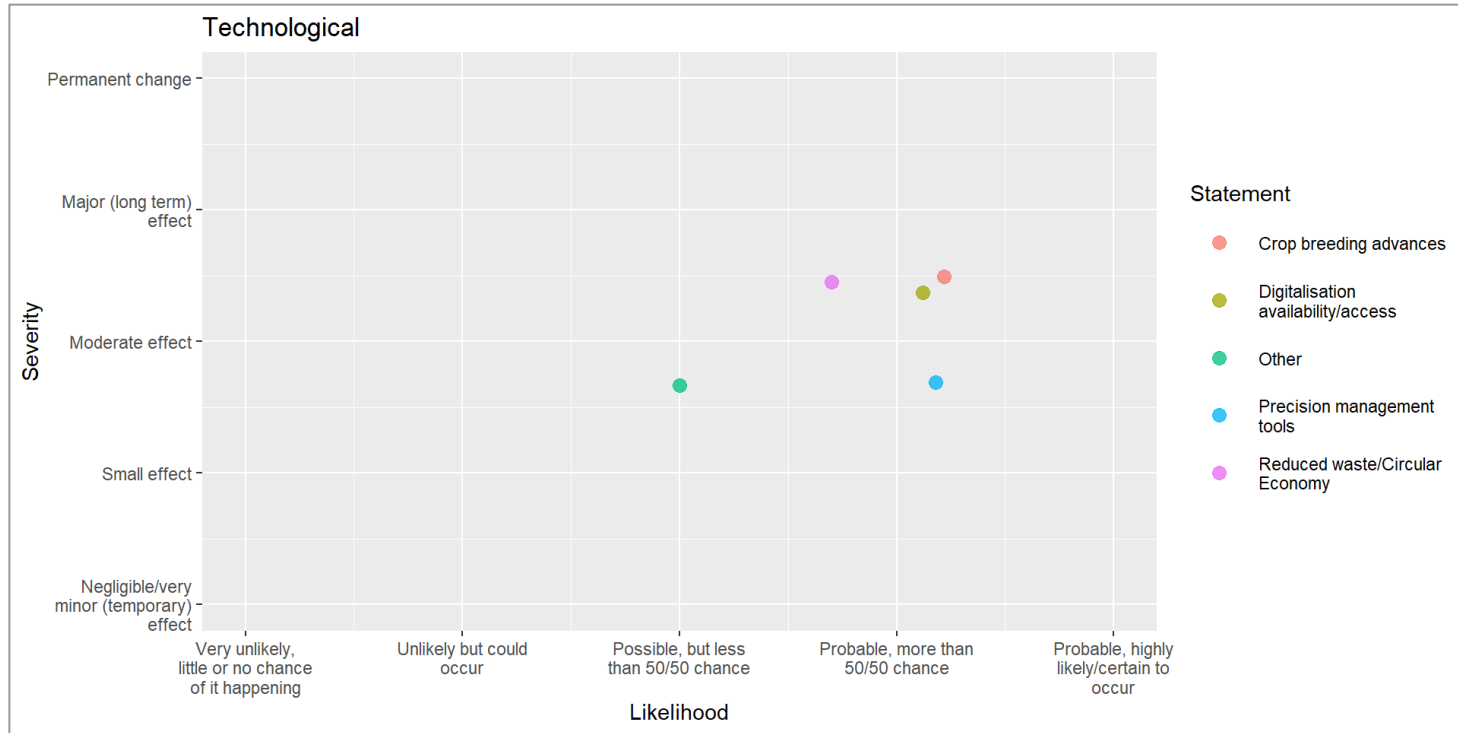


# Technological

- Reducing waste, digitalisation and crop breeding present similar pattern of likely to occur with more than 50% chances and major long term effects



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## Next steps

- **Priority threats to crop production**
  - Changing climate conditions represent a highly likely and permanent threat
  - Increasing pest and disease pressures
  - Loss of pesticides: highly likely and long term effect
  - Labour and changing farming demographics
  - High input costs
  - EU exit and global instability
  - Reducing waste, digitalisation and crop breeding present technical opportunities
- Construct **future scenarios** of likely risks (and opportunities)
- Workshops to **analyse scenarios with stakeholders** to identify ways of avoiding these risks and highlight knowledge gaps
- Policy briefing summarising key actions for agricultural stakeholders to safeguard the sector against future risks



# Participatory process

***In your opinion what is an appropriate time horizon for the sector to think strategically in the light of future uncertainty?***

5 years? 10 years?



# Participatory process

## *What will the fruit and horticultural sector look like in ....?*

Is this the right question or should we frame the question differently?



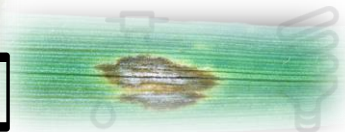


# Participatory process



*If you would like to participate in the workshops  
please leave your contact details*

*Your participation is very valuable for this research*



Thanks to...

All the people who participated in the survey



**Scottish Government**  
Riaghaltas na h-Alba  
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