Food and Agriculture Organization of the United Nations

International Plant Protection Convention

Climate impacts on plants and pests in tropical areas

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Embrapa 50 ANOS

MINISTÉRIO DA AGRICULTURA E PECUÁRIA

GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

CHALLENGES

01

Increase in world population

02

Availability of area for agricultural production

03

20% to 40% of global agricultural production is lost to diseases and pests

New geography of agricultural production

Cassava

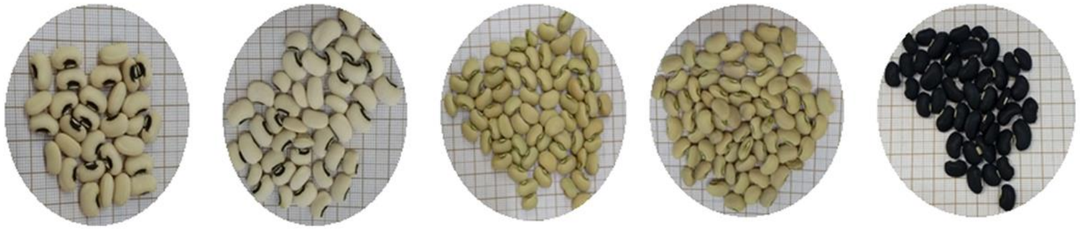
Sugarcane

Corn, rice, bean cotton and sunflower

Cowpea

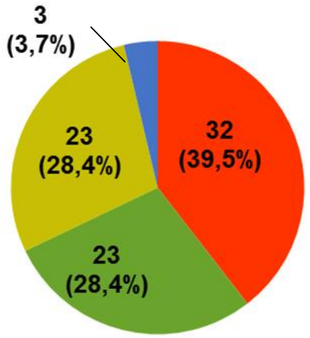
Reduction in the production of seeds of cowpea cultivars with an increase of 4,8 °C in air temperature in Brazilian Semiarid

Carijó - 40%	Itaim - 25%	Pujante - 96%	Rouxinol - 81%	Tapahium - 55%

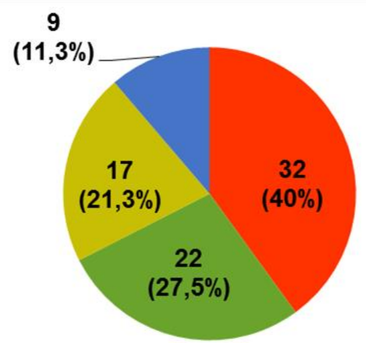


304 pathosystems

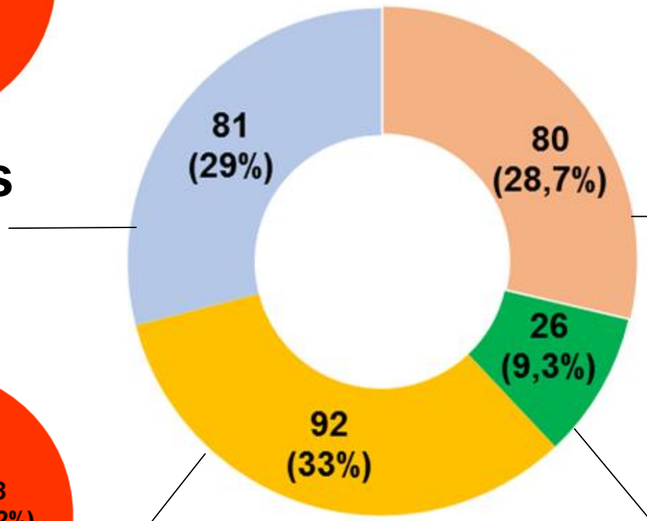
32 crops

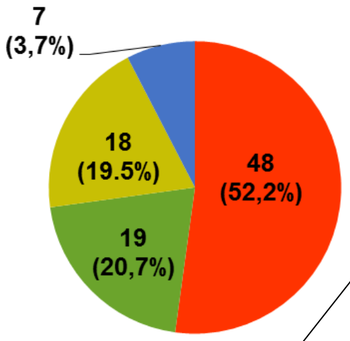


Vegetables

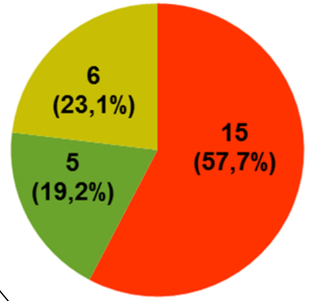


Crops and plantation crops





Fruits



Forest

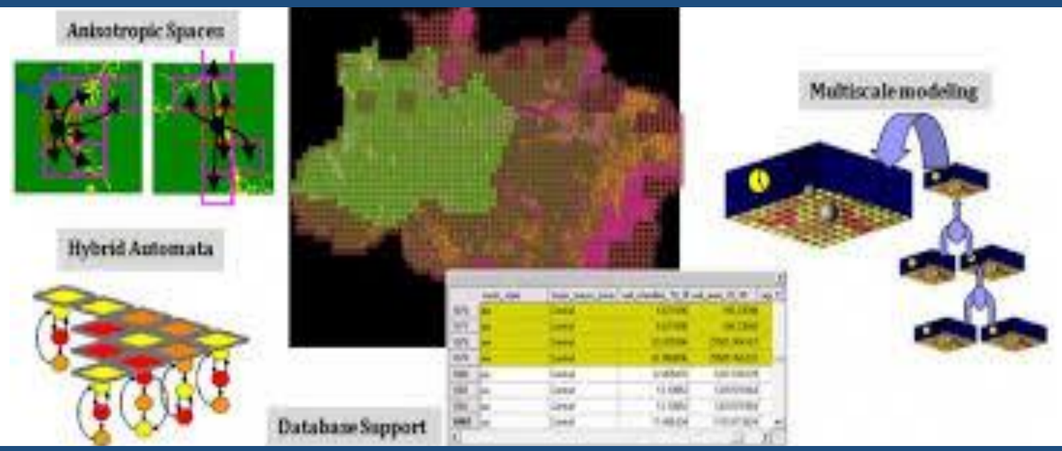
Increase Reduce Remain By Region

Potential impact of climate change on diseases caused by fungi, bacteria, viruses and nematodes in Brazil

Hamada et al., 2024

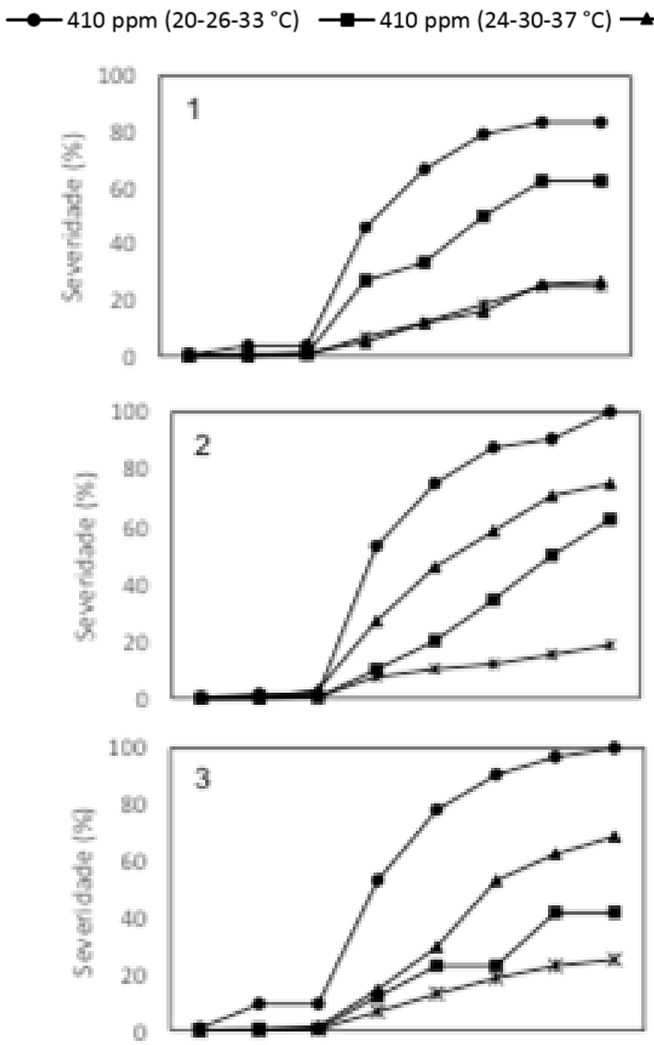
How are the impacts on plant diseases being assessed?

Modelin



Experimentation

Powdery mildew - *Oidium* sp Melon



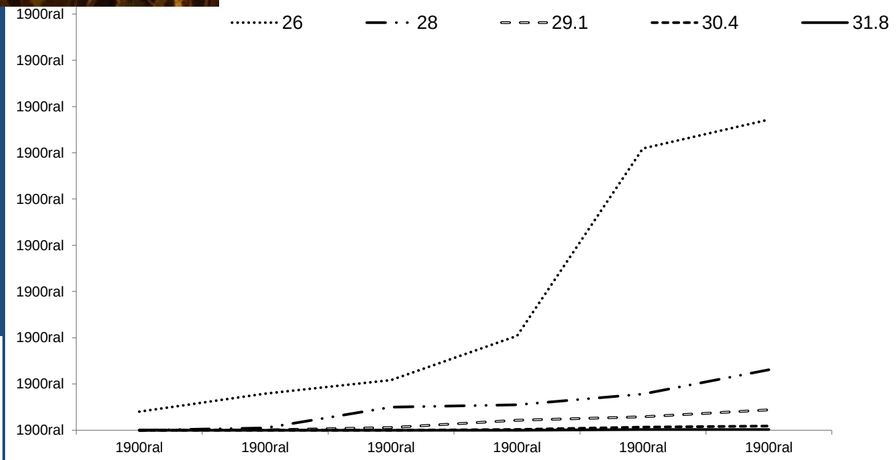
Cultivares: 1. Araguaia, 2. Eldorado, 3.Gold (Araújo, 2019).

Increasing: temperature X CO_2

- Reduces seveverity
- Reduces sporulation
- Increase incubation period
- High susceptibility brazilian cultivars

Climatic favorability for the grapevine downy mildew

Increased latente period
5 to 9 days



Grapevine downy mildew *(Plasmopara viticola*) progress according to days after inoculation and temperatures

Angelotti et al., 2017

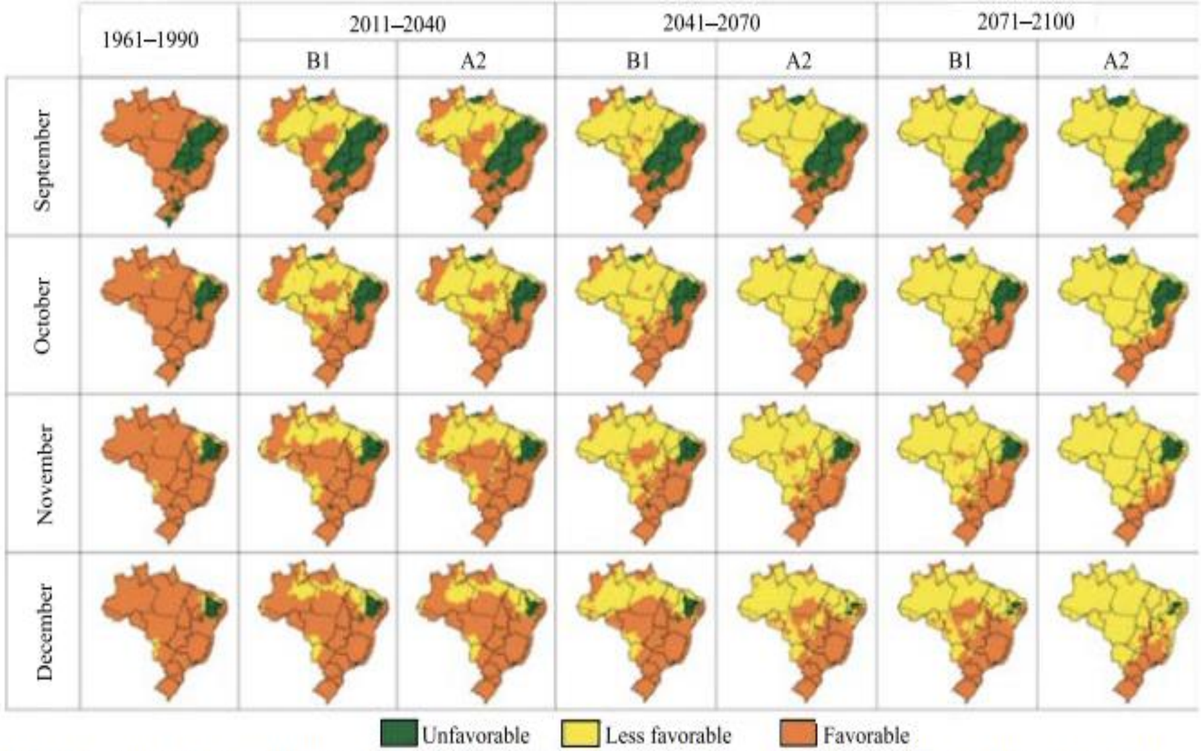
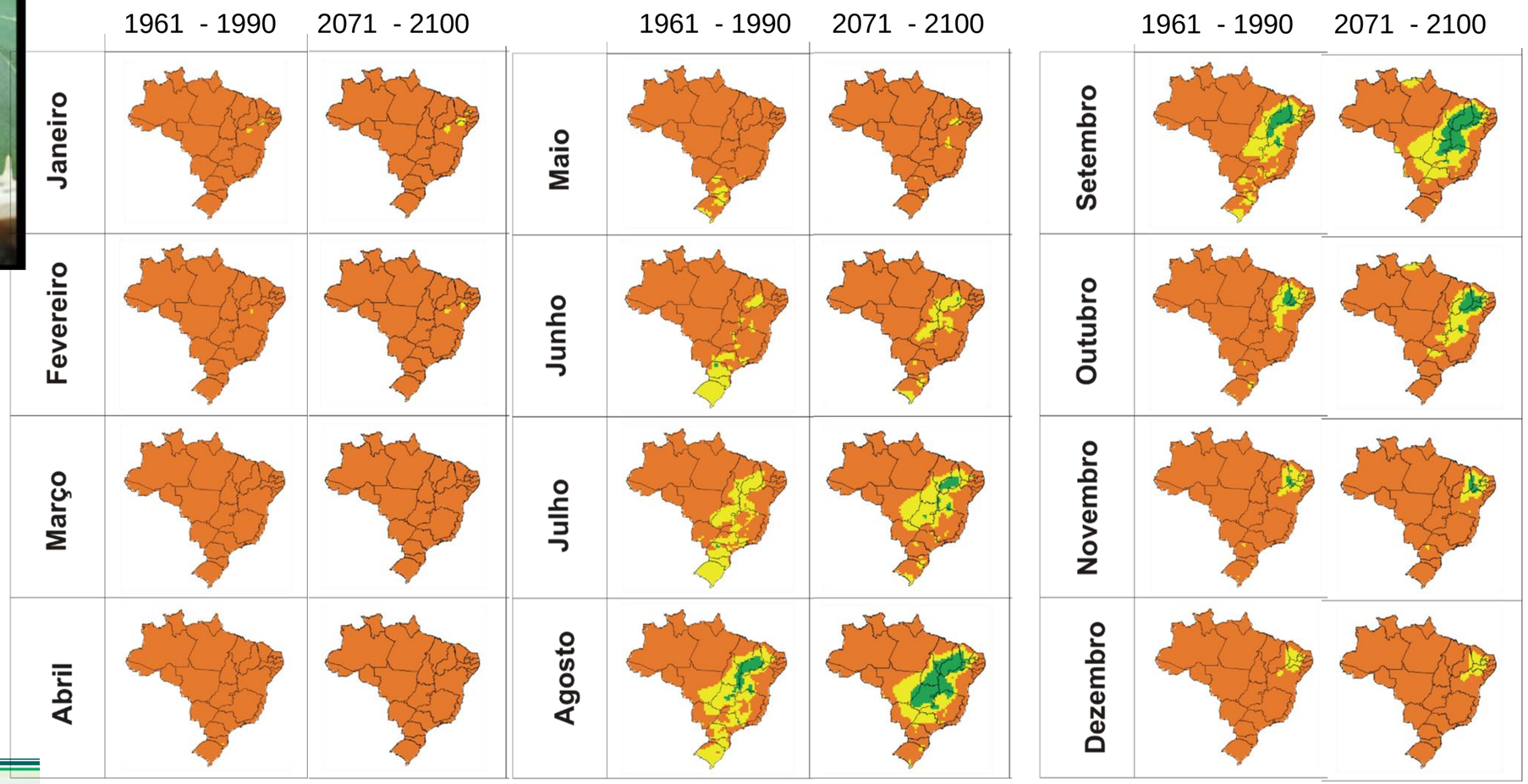


Figure 4. Climatic favorability for the grapevine downy mildew (*Plasmopara viticola*) in Brazil from September to December for the climate normal (1961–1990) and future climates (2011–2040, 2041–2070, and 2071–2100) in the B1 and

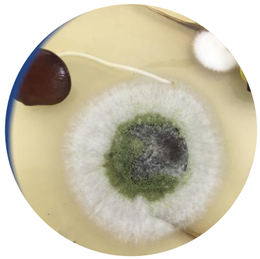
Future outlook on the geographic distribution of bacterial canker - *Xanthomonas campestris* pv. *vitícola*



Angelotti et al., 2017

Angelotti et al., 2017

Seeds native plants of the Caatinga



Angico

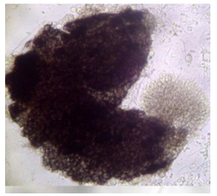
Anadenanthera colubrina (Vell.) Brenan

Macrophomina sp.

30 e 35 ºC

Aroeira

Astronium urundeuva

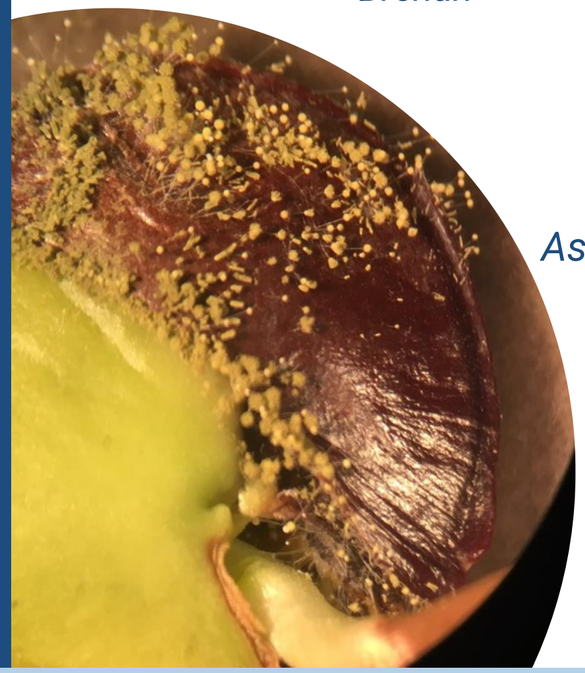


Phomopsis sp

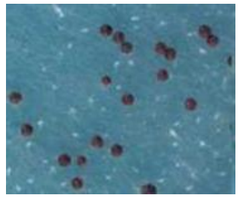
Alternaria sp.

Curvularia sp.

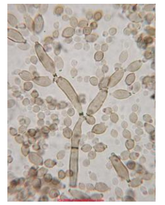
30 ºC



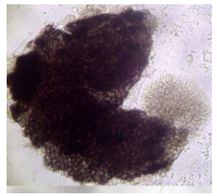
Pereiro



Sclerotium sp.



Cladosporium sp.

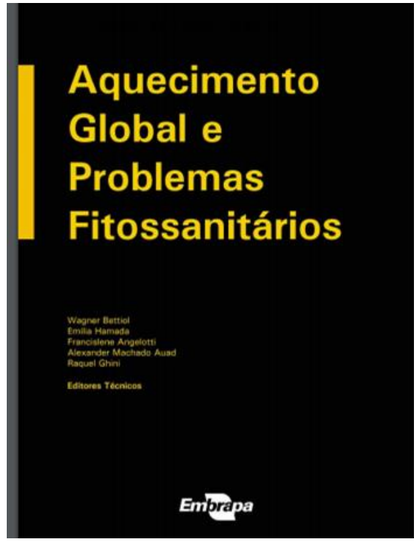


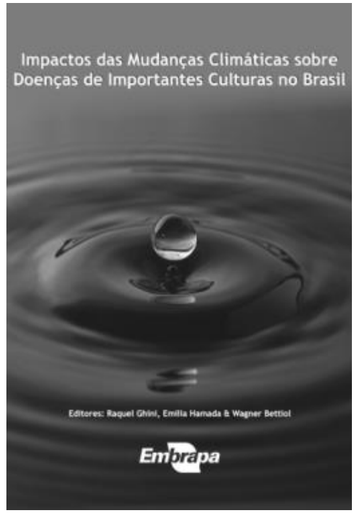
Phomopsis sp.

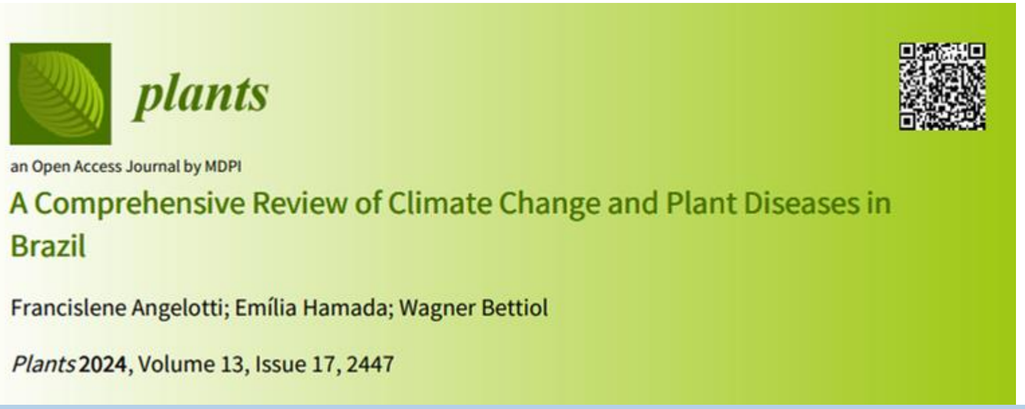
20 ºC

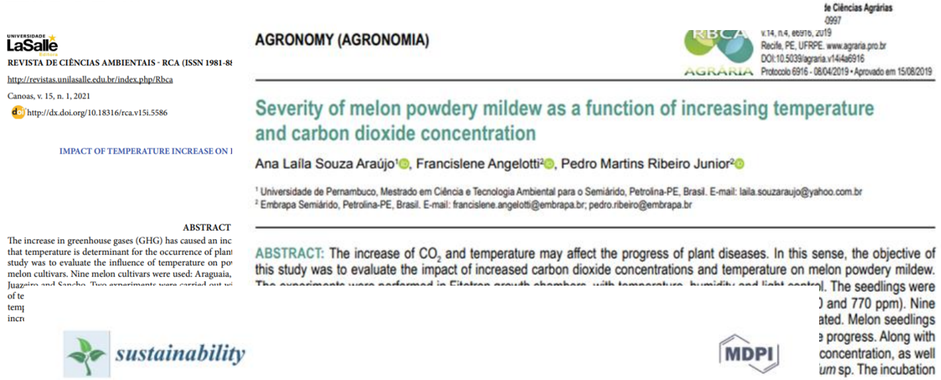
Strategic actions to tackle the impacts of climate change on crop protection systems

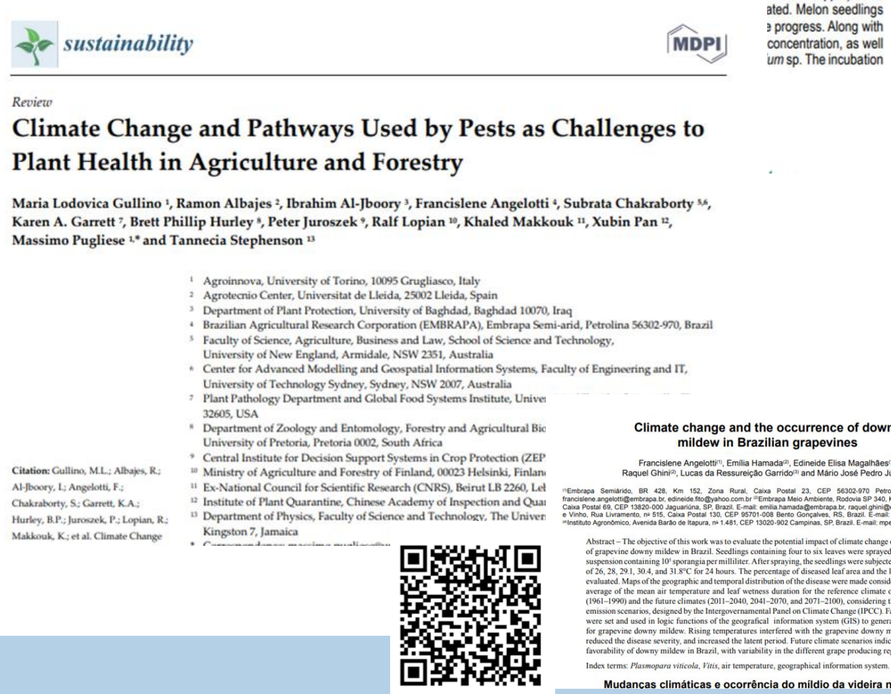
Books and papers



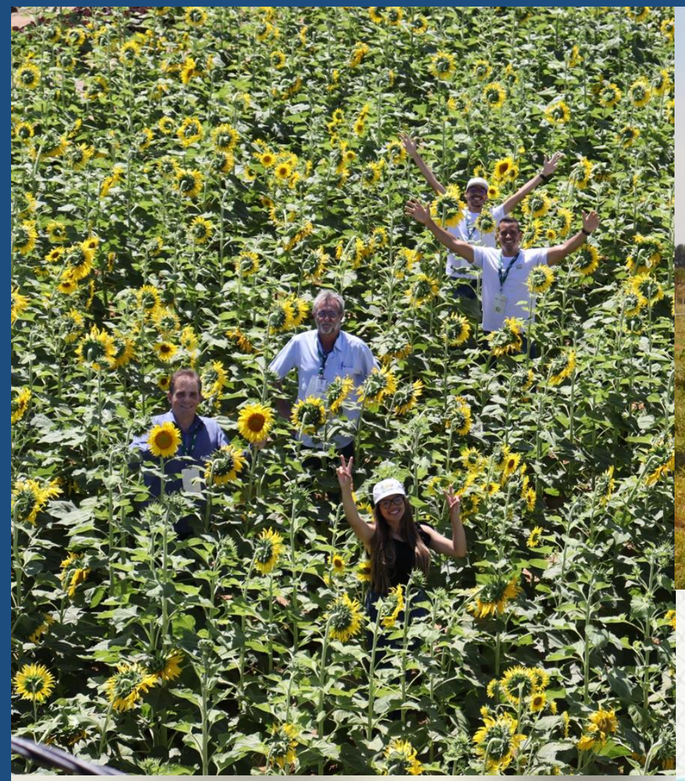








Team




PROJETO CLIMAPEST
EXPERIMENTO "FACE"
("FREE-AIR CARBON DIOXIDE ENRICHMENT")

Obrigada!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