VISCA
VINEYARDS INTEGRATED SMART CLIMATE APPLICATION

U.PORTO
FACULDADE DE CIÊNCIAS
UNIVERSIDADE DO PORTO

IRTA
RECERCA I TECNOLOGIA AGROALIMENTÀRIES

SYMINGTON

VISCA Final conference

15th December 2020

Key results and round table with end-users

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WP4
Researcher
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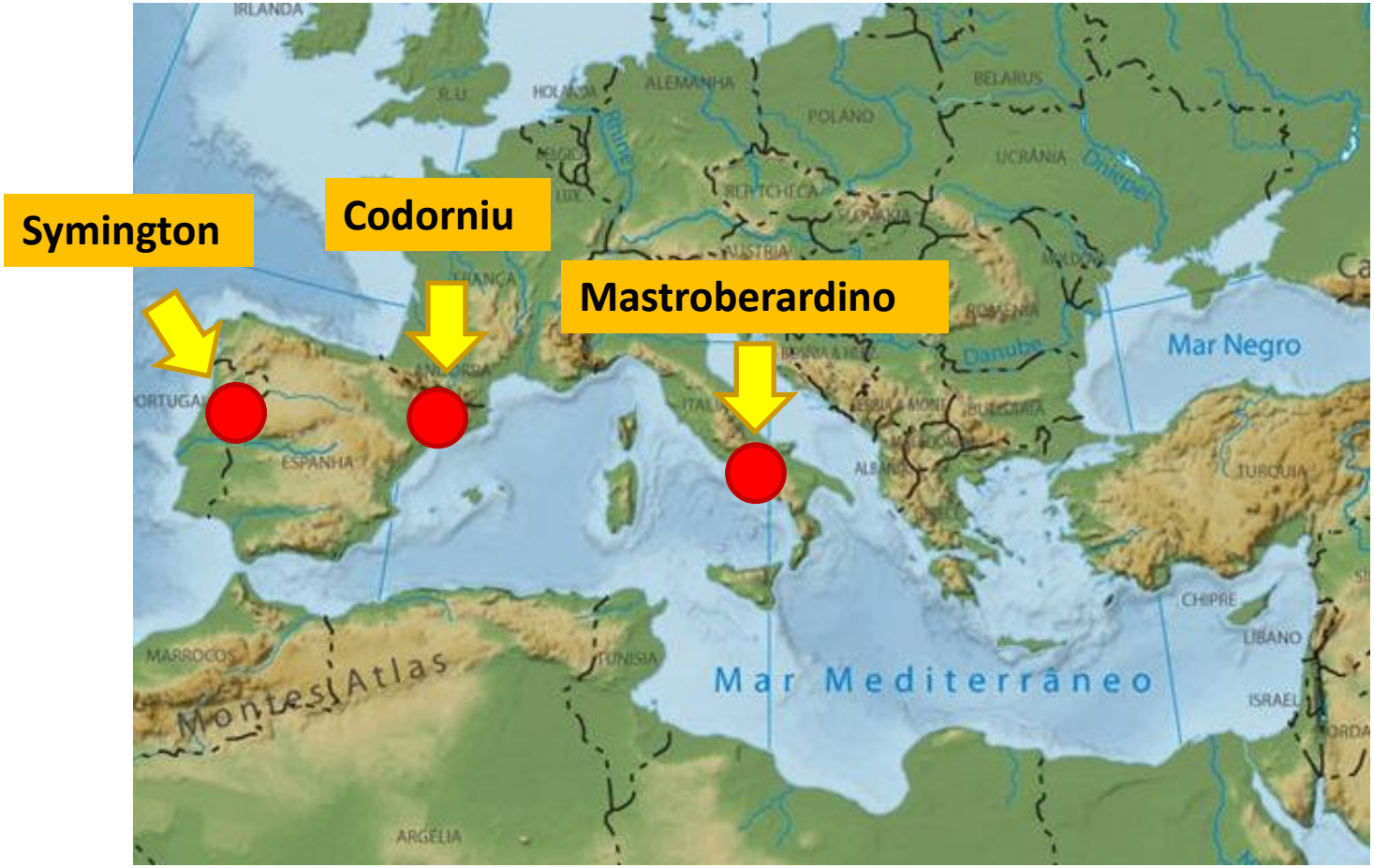
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730253.

Pilot plot locations



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Main objectives of Pilot Plots

Test of different agronomic techniques to cope with climate change negative effects

Test of DSS

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Main objectives of Pilot Plots

Test of different agronomic techniques to cope with climate change negative effects

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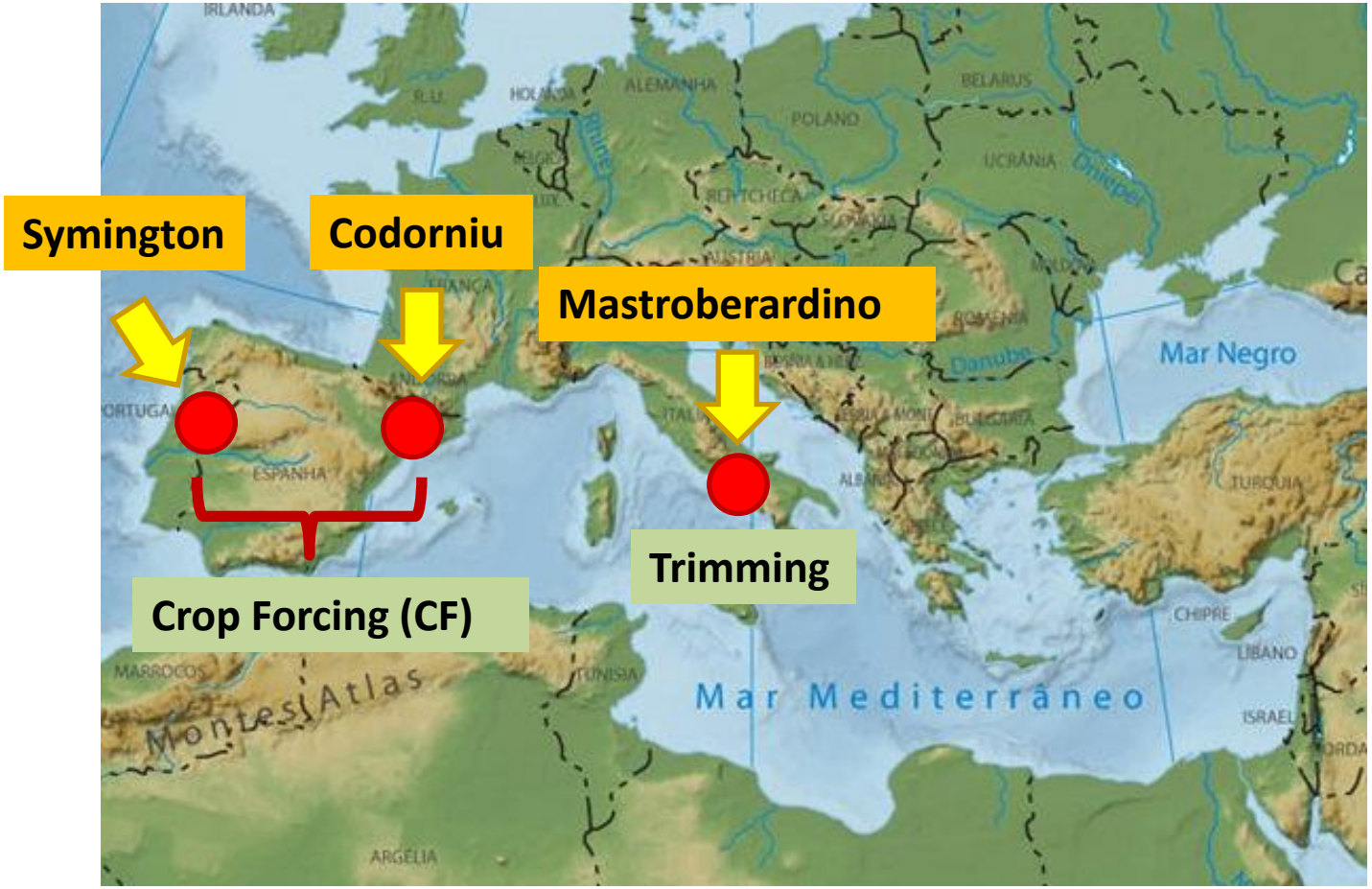
Tested techniques



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CROP FORCING (CF)

Biomass sampling during CF at Raimat (Spain, 2019)

Crop Forcing at Quinta do Ataide (Portugal, 2019)

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CROP FORCING (CF)

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CROP FORCING (CF)

Comparing different Crop Forcing Treatments

(06/07/2017)

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CROP FORCING (CF)

Control Tempranillo

CF I Tempranillo

CFII Tempranillo

CFIII Tempranillo

Control Chardonnay

CFI Chardonnay

CFII Chardonnay

CFIII Chardonnay

04/08/2017

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Results

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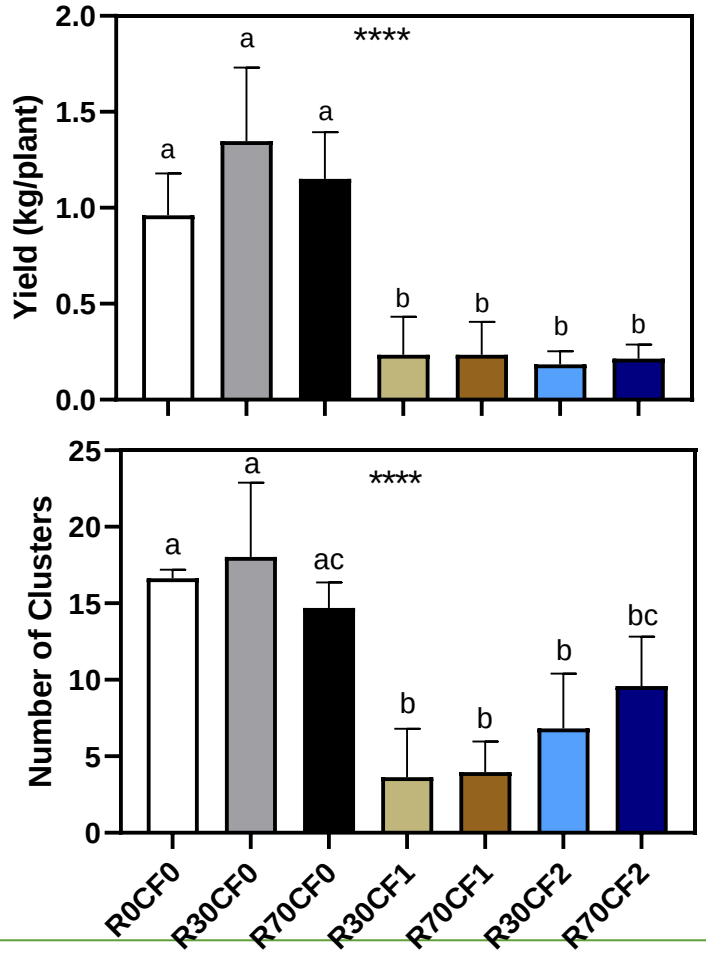
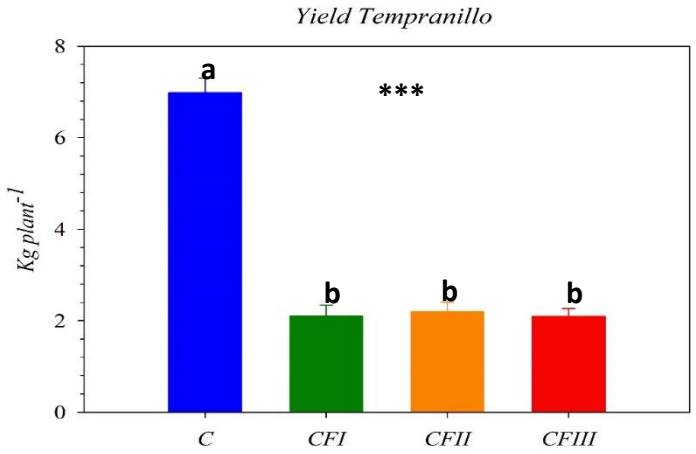
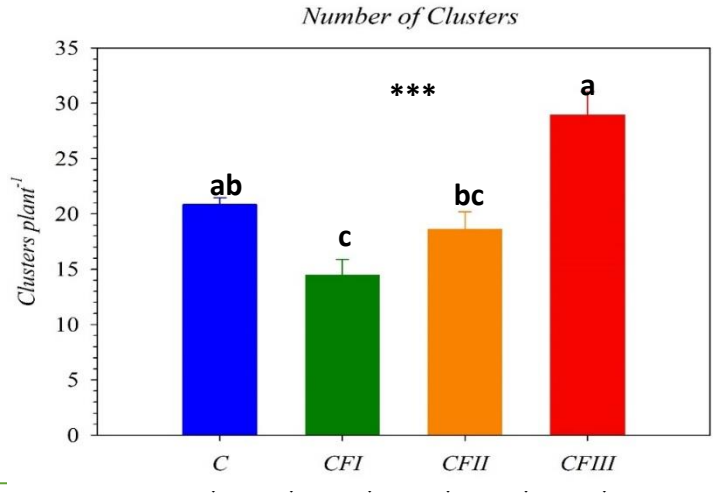
Yield components







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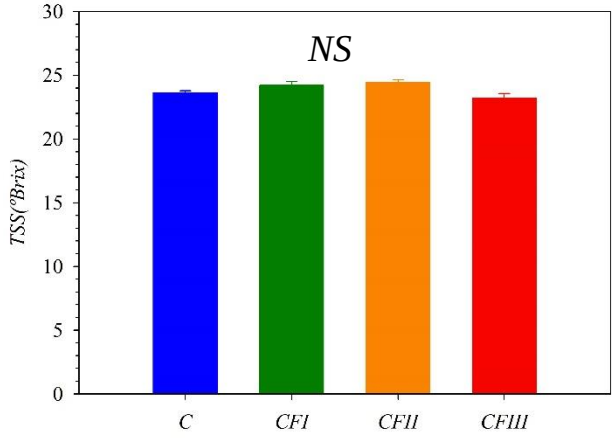
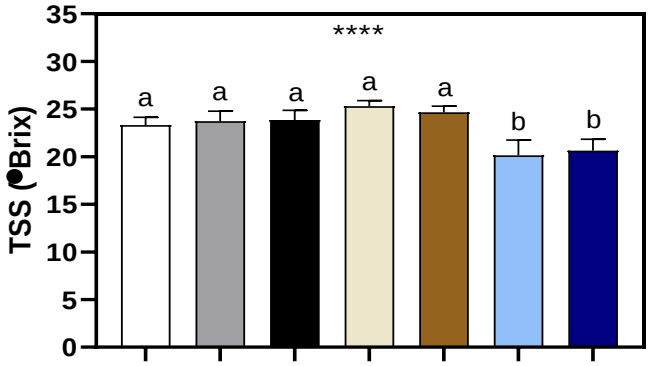
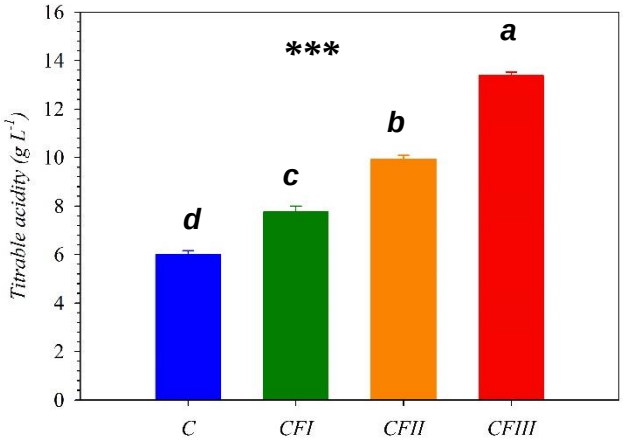
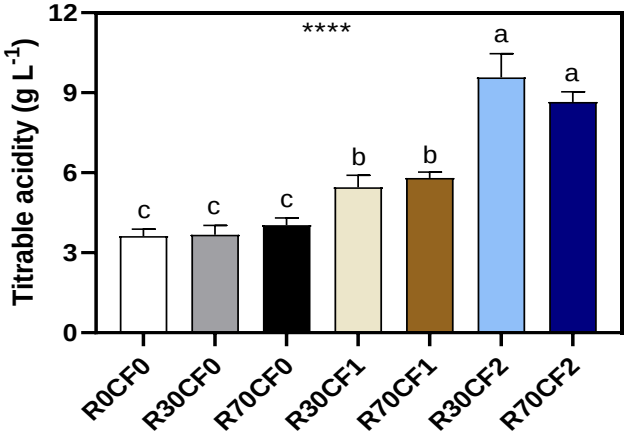
QUALITY









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EXTRA RESULTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730253.

Downy Mildew

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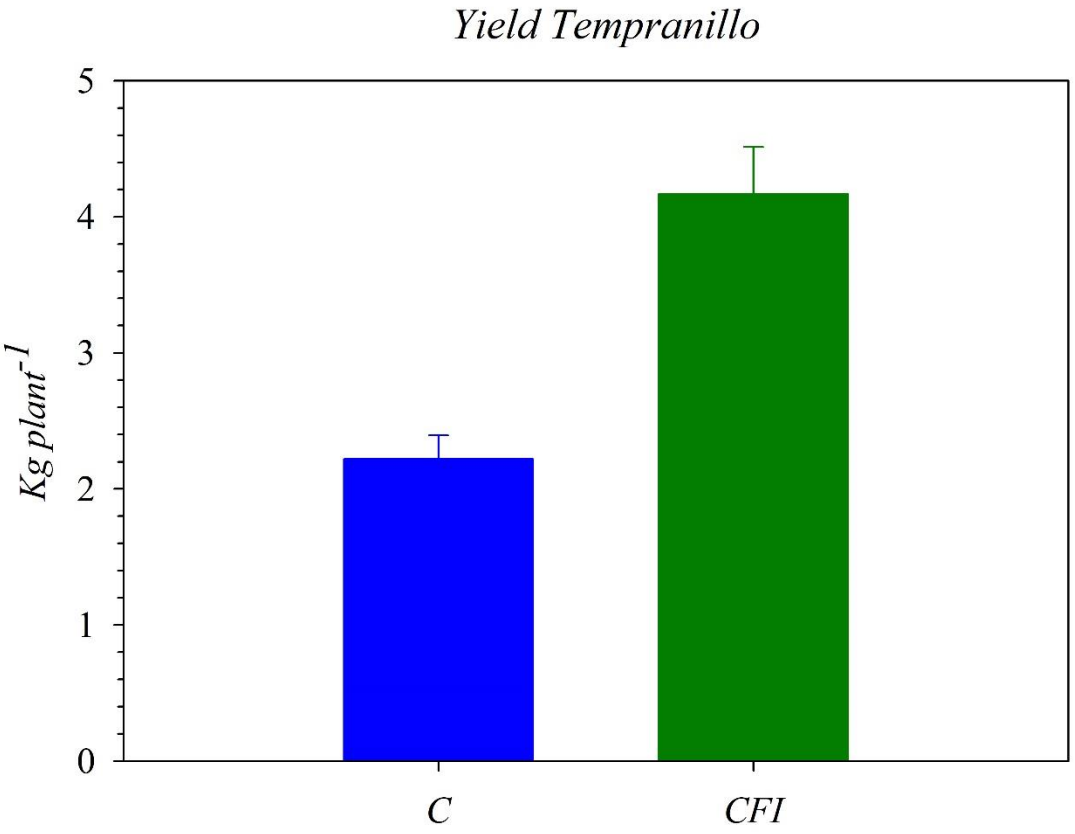
Downy Mildew



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CROP FORCING

Re-start the grapevine phenology after a catastrophic crop failure

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Questions for Codorniu and Symington

- **Why did you decided to implement this technique?**
- **Did you know the technique before starting the VISCA project?**
- **Do you think that it would be suitable for your conditions?**

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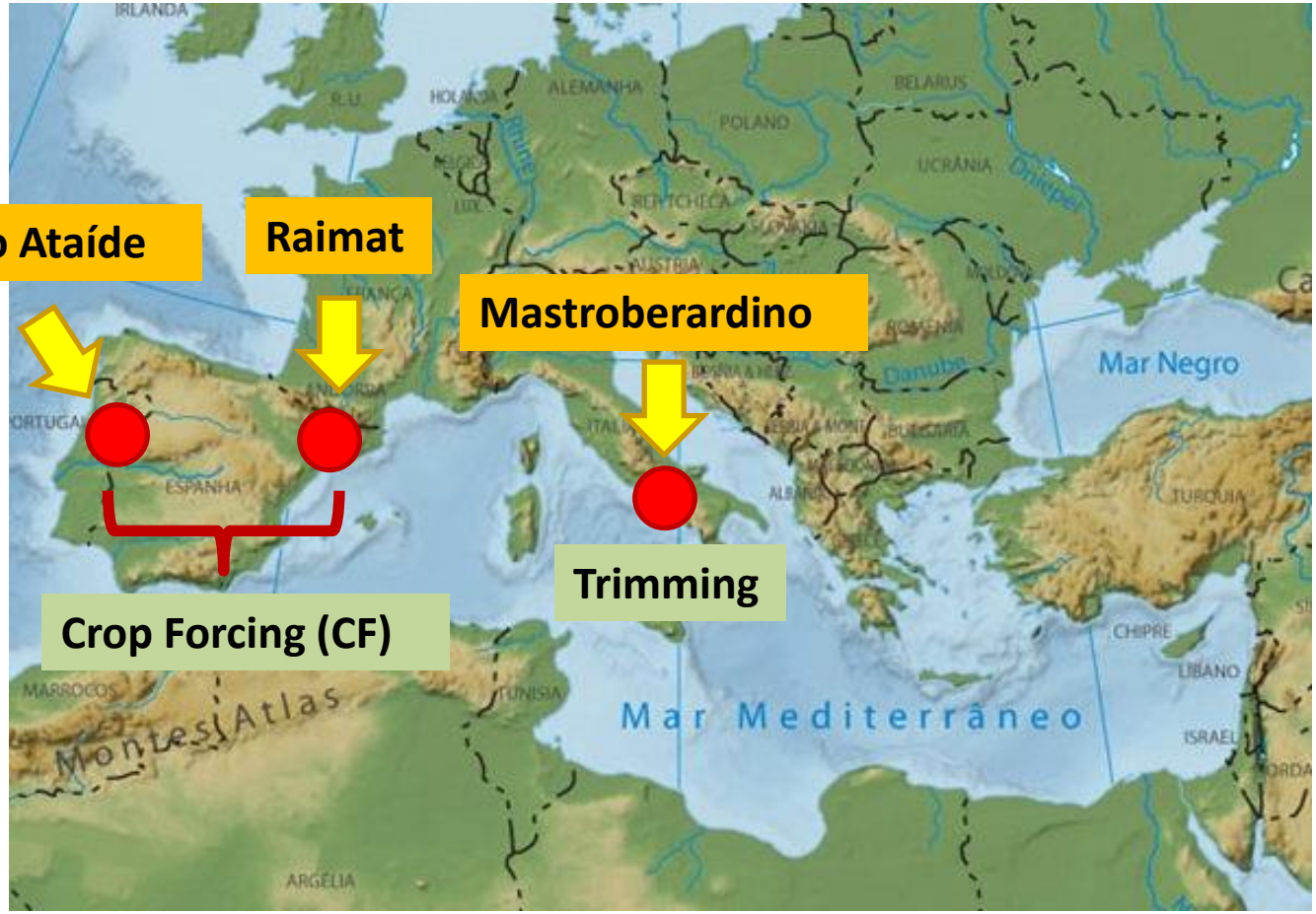
Tested techniques



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TRIMMING

T0 (no trimming) | **T30 (30% of LA removed)** | **T50 (75% of LA removed)**

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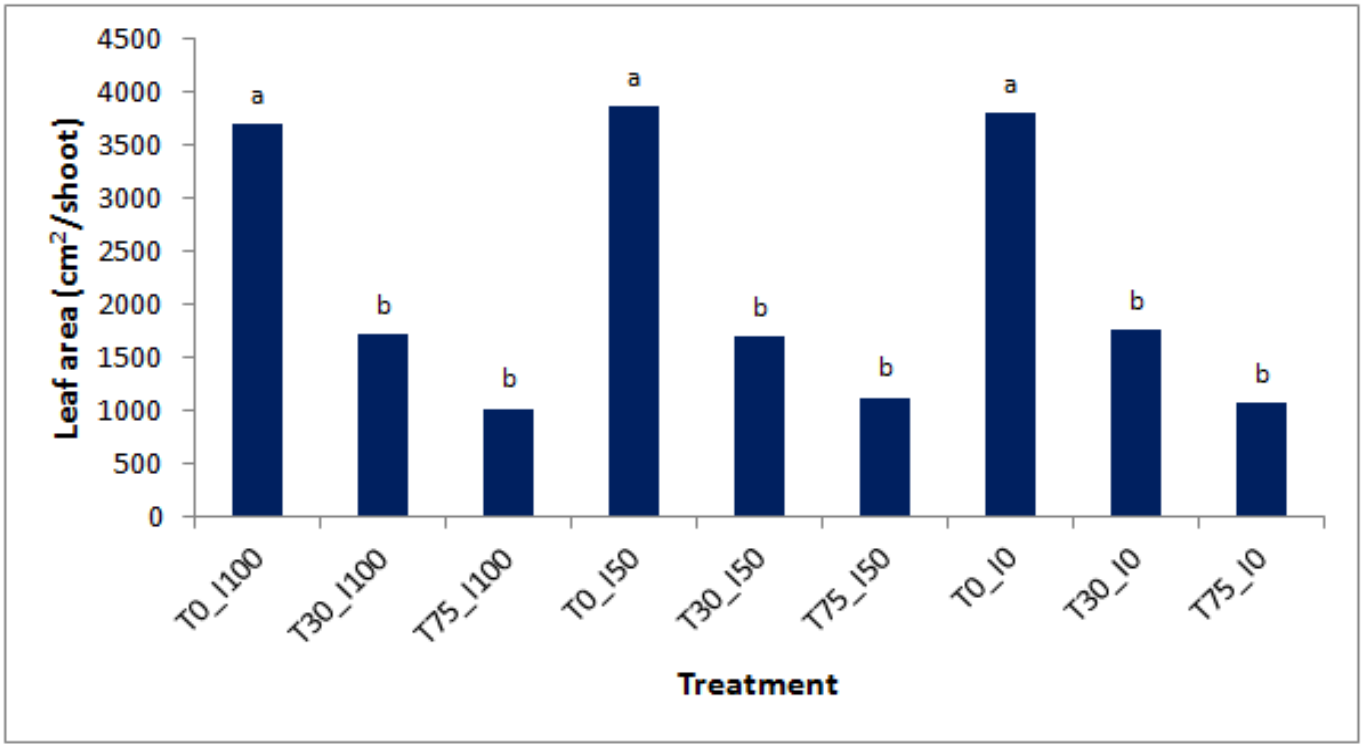
Mastroberardino - Results



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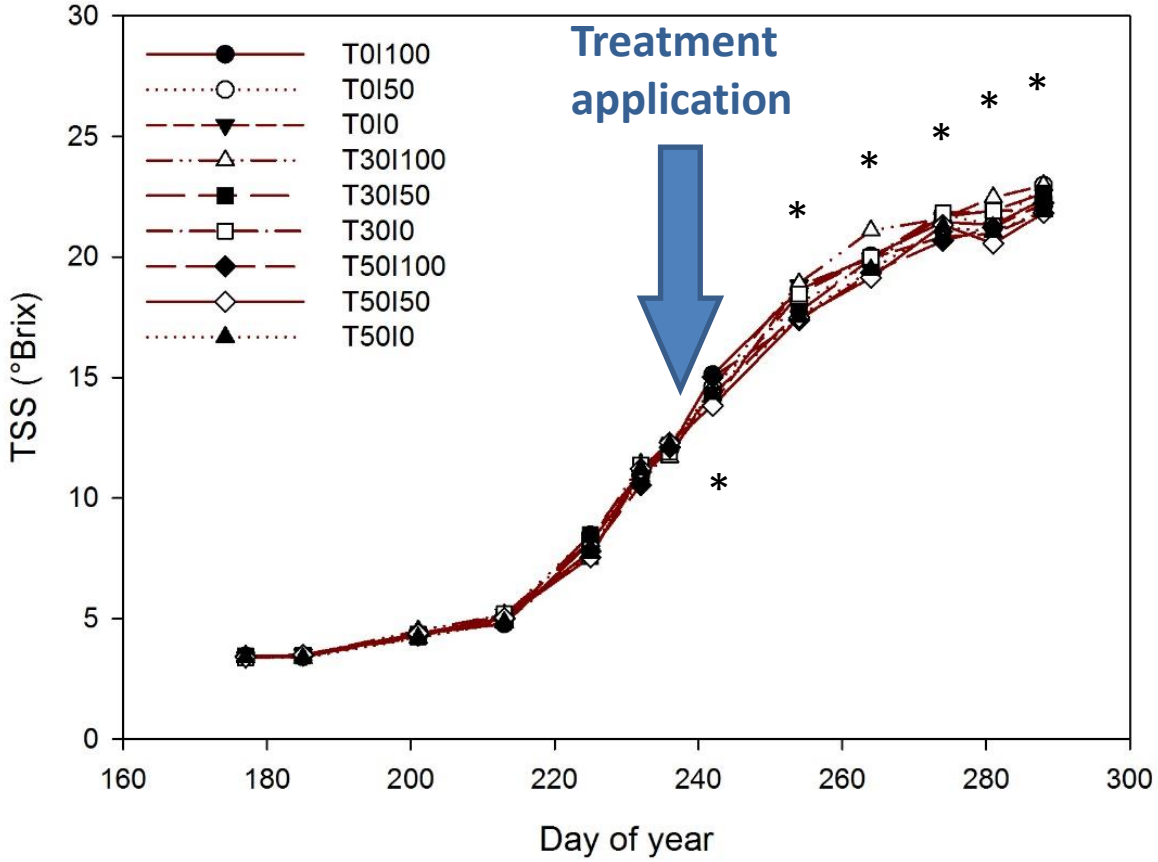
Mastroberardino - Results



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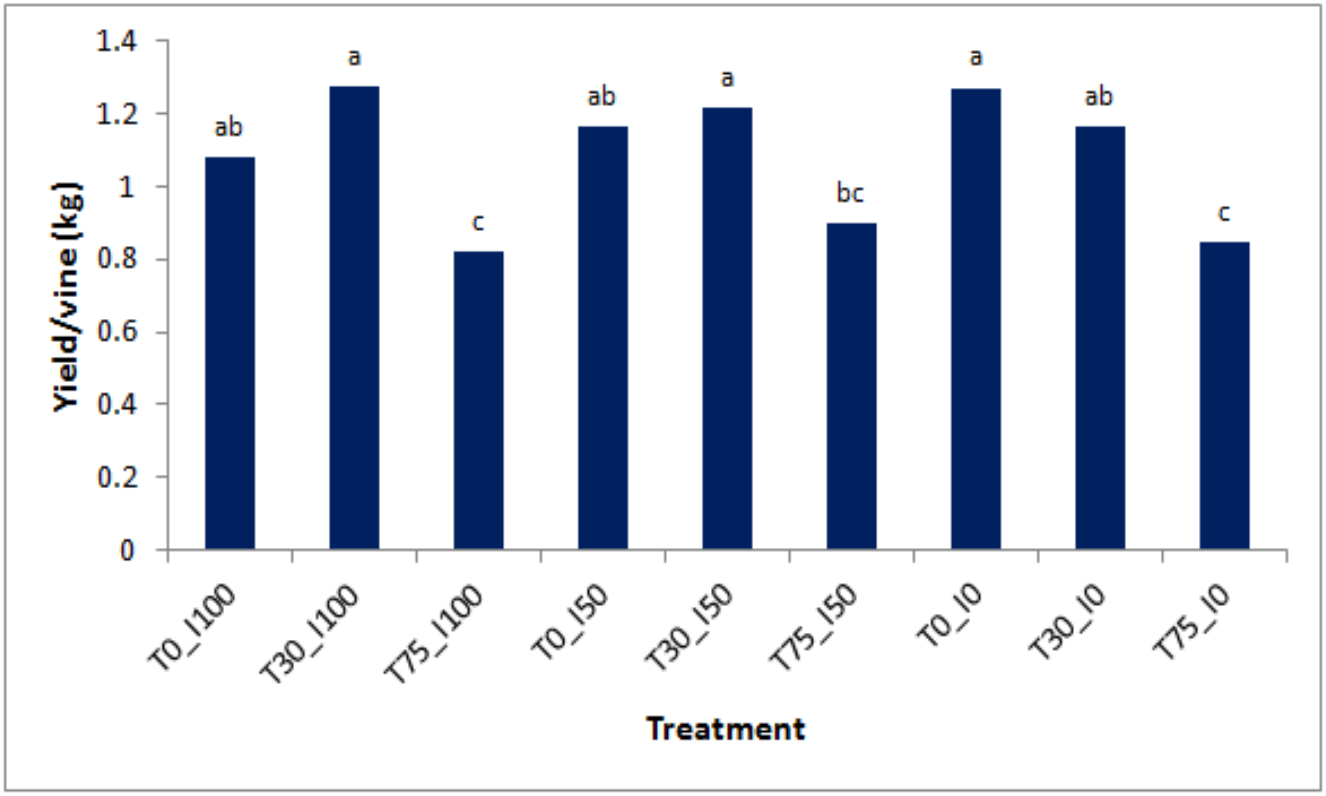
Mastroberardino - Results



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Question for Mastroberardino

- **Why did you decided to implement this technique?**
- **Did you know the technique before starting the VISCA project?**
- **After this Do you think that it would be suitable for your conditions?**

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Main objectives of Pilot Plots

DSS Evaluation

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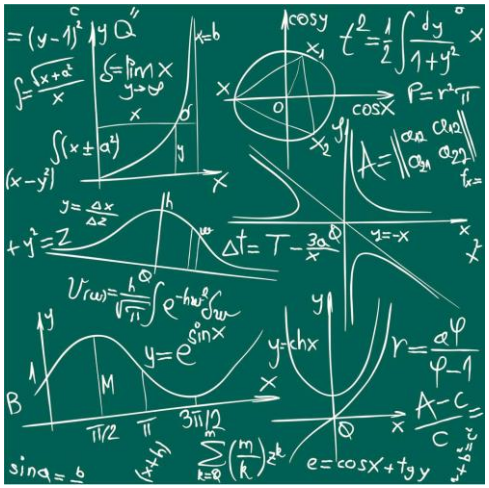
VISCA DSS

Weather forecasts

Crop data

Real weather



Predictions

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Decision Tree

DSS Widget	Month/Season of the Effect *	Event	Effect	Action	Time of taking the Action (months/weeks/days in advance) **	Action taken if forecast is NOT AVAILABLE or no skill (Business as Usual scenario)	Target	Expected impacts if forecast is correct	Expected impact if forecast is incorrect	Expected impact if there is no forecast (no skill or Business as Usual scenario)
Seasonal	Jun - Jul - Aug	Higher rainfall than normal	High Vigour	Leaf removal Pay close attention to short/mid term precipitation forecast	May	None or light leaf removal	Sugar content	Higher sugar content	Higher sugar content	Lower sugar content
							Acidity (Ph)	Lower acidity	Higher acidity	Higher acidity
							Yield (m3)	Higher Yield	NO DIRECT IMPACT	Higher Yield
							Labour cost (manpower, products, equipment, etc)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Diseases impact			Higher probability of diseases
Seasonal / Phenology	Mar-Apr	Lower temperature than normal Delayed Budbreak	Delayed Budbreak	Delay prunning	Nov - Dec- Jan	Average pruning timing Pruning young vineyards as frost prevention	Sugar content	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Acidity (Ph)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Yield (m3)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Labour cost (manpower, products, equipment, etc)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Diseases impact			
Seasonal	Jun - Jul - Aug	Lower temperature than normal Delayed Budbreak	Ripening delayed	Crop thining	May	No crop thinning	Sugar content	Higher sugar content	Lower sugar content	Lower sugar content
							Acidity (Ph)	UNKOWN IMPACT	UNKOWN IMPACT	Higher acidity
							Yield (m3)	UNKOWN IMPACT	Higher Yield	NO DIRECT IMPACT
							Labour cost (manpower, products, equipment, etc)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Diseases impact			
Seasonal / Phenology	Mar	Higher temperature than normal Early Budbreak	Early budbreak Frost risk damage	Check Phenology Forecasts to confirm; If true advance/boost prunning	Nov - Dec- Jan	Delay pruning	Sugar content	Higher sugar content	Lower sugar content	Lower sugar content
							Acidity (Ph)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Yield (m3)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Labour cost (manpower, products, equipment, etc)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Diseases impact			
Seasonal	Jun - Jul - Aug	Higher temperatures than normal	Water stress, faster ripening, sunburst	Light shoot thining. No leaf removal	May	Normal shoot thining and leave removal Pay Attention to short/mid temperature forecast	Sugar content	Higher sugar content	Lower sugar content	Lower sugar content
							Acidity (Ph)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Yield (m3)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Labour cost (manpower, products, equipment, etc)	Saving costs	Overspending	Overspending
							Diseases impact			
Seasonal	Jun - Jul - Aug	Higher temperatures than normal	Yield below normal (except if irrigation exists)	Buying more grapes	Apr - May	No buying extra grapes	Sugar content	Higher sugar content	Lower sugar content	Lower sugar content
							Acidity (Ph)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT
							Yield (m3)	Higher Yield	Lower Yield	Lower Yield
							Labour cost (manpower, products, equipment, etc)	Saving costs	Overspending	Overspending
							Diseases impact			
		Lower precipitation	Yield below normal	If buying grapes, contract more hectares			Sugar content	Higher sugar content	Lower sugar content	Lower sugar content
							Acidity (Ph)	NO DIRECT IMPACT	NO DIRECT IMPACT	NO DIRECT IMPACT

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Questions (All)

- **Why did you choose this branch of the decision tree?**
- **Have you ever worked with a DSS before to take decisions?**
- **How do you normally integrate weather forecasts in your decision-making process?**

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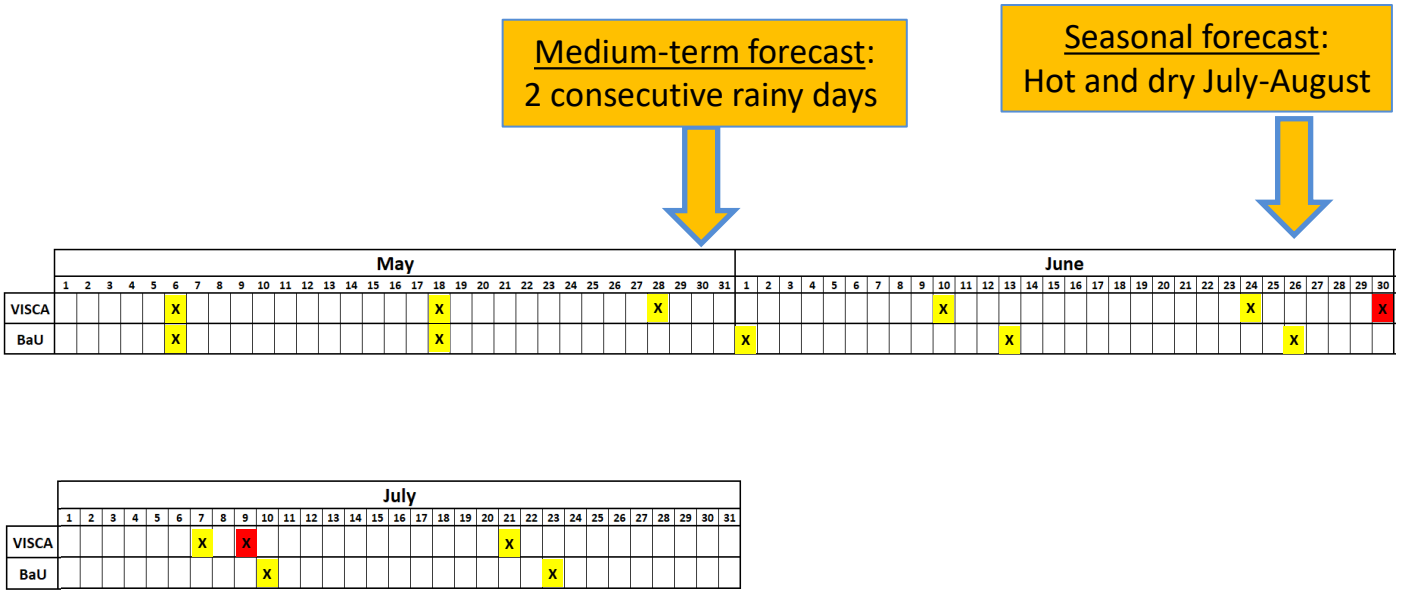
Anticipate spraying (ITALY)

- **Calendar of treatments against Downy and Powdery Mildews**



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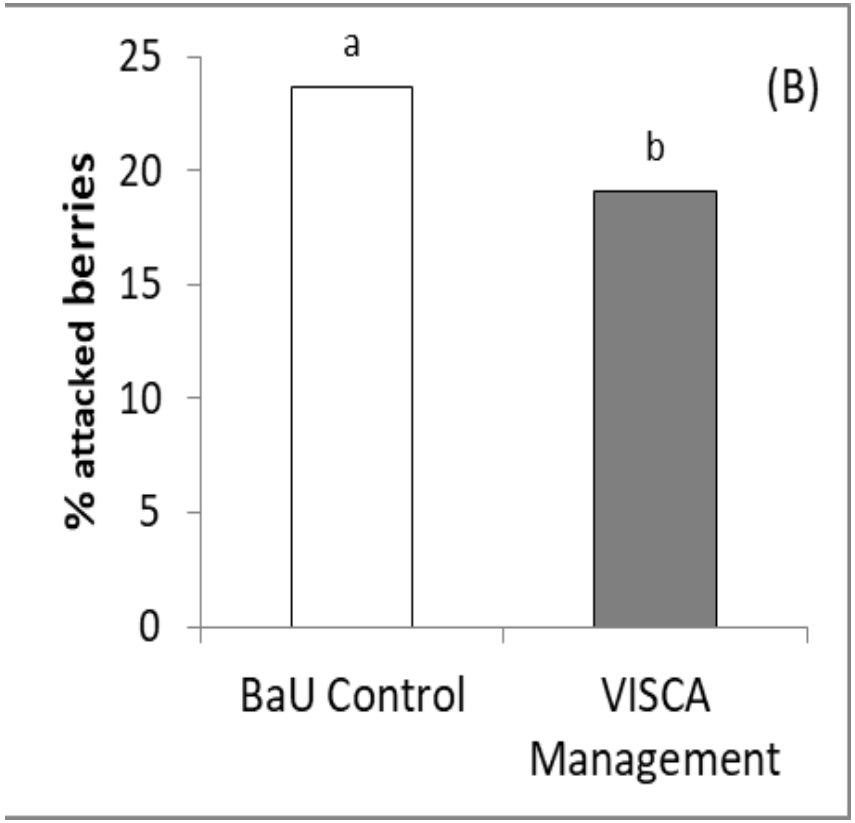
Anticipate spraying (ITALY)



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Irrigation strategies comparisons (SPAIN)

- **Compare VISCA irrigation module with business as usual (BaU) irrigation.**
  - VISCA irrigation was blind, i.e., no interaction with the tool
  - BaU is performed by a highly qualified technician. Schedules irrigation based on weekly values of stem water potential.
  - Comparison was performed on No CF and CF treatments

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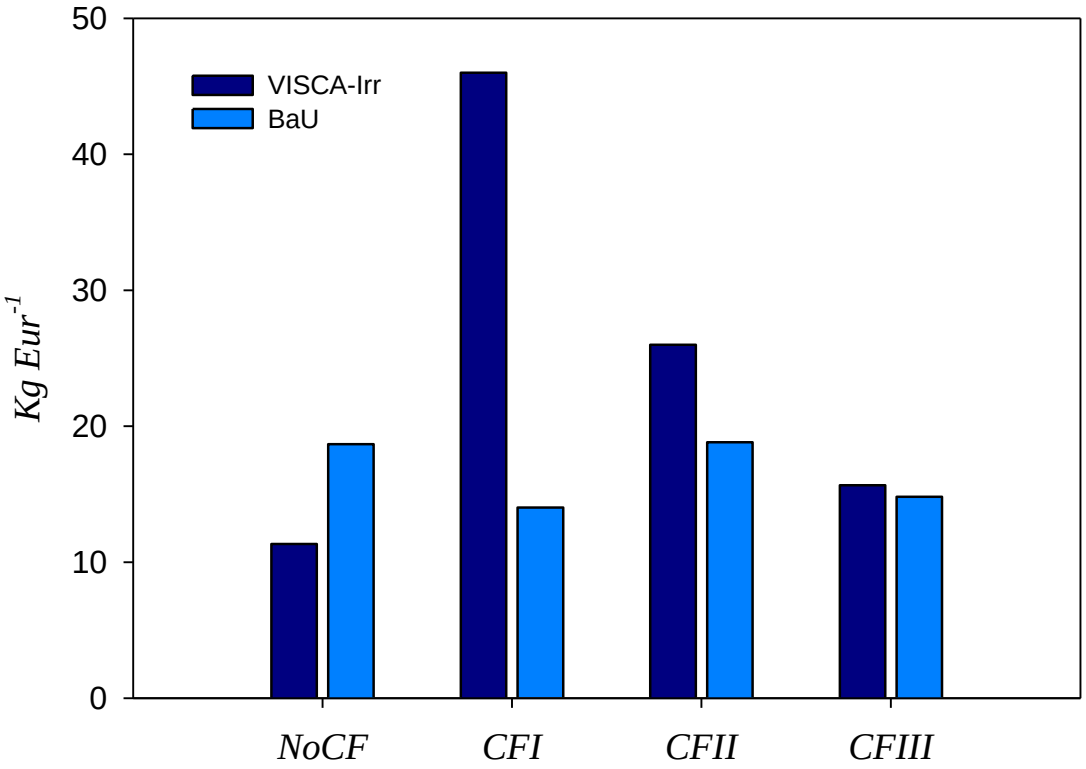
VISCA DSS Evaluation Results (SPAIN)



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VISCA Irrgation optimization (PORTUGAL)

- **Propose an optimized irrigation strategy.**
  - Reduce irrigation volume while maintaining the desired stress.
- **Used the irrigation model to compare the BaU irrigation program to an optimized irrigation schedule**.
  - Performed during the irrigation months

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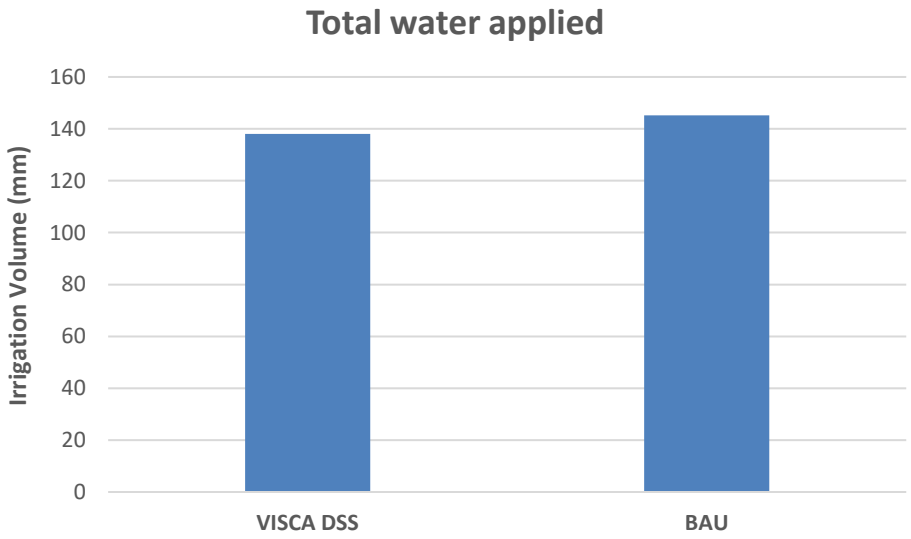
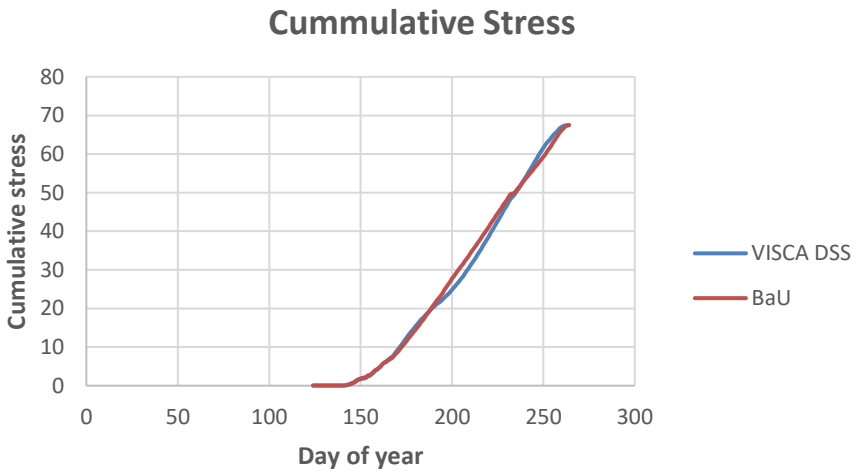
VISCA Irrigation optimization (PORTUGAL)





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Conclusions

- **VISCA DSS was efective improving the decisión making process**
- **Creates synergies between end-users' know-how and VISCA tool**
- **There is an economic benefit**

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Questions (All)

- **After the experience acquired in VISCA, are you willing to use a DSS?**
- **In your opinion, which should be the next steps?**

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VISCA

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Thank you for you Attention!

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