B. carinata in agricultural systems of Uruguay: challenges and opportunities from a weed management perspective

8th Carinata Biomaterials Summit 2021

Alejandro García - INIA Uruguay
Plant protection – Weed science
magarcia@inia.org.uy

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Outline of the presentation

- Potential challenges for *B. Carinata adoption regarding* winter weed problems in Uruguay
  - Dicots
  - Comments on *Lolium multiflorum*

- Collaborative research INIA – Nuseed that contributes to tackle these problems
  - Work on Dicamba tolerance (2019 and 2020)
  - Work on IMI lines (2021 - on going)

Potential challenges for *B. Carinata* adoption

Some of the Weed problems in Uruguayan agriculture during winter

Stellaria media (chickweed)


Bowlesia incana (hoary bowlesia)


Conyza spp. / C. sumatrensis (fleabane) and C. bonariensis (hairy fleabane)



Stachys arvensis (staggerweed)


Coronopus didymus (lesser swinecress)


Rapistrum rugosum (Turnipweed)

Ammi spp. (bishop's weed and toothpickweed)


Wild radishes (Raphanus sativus, R. raphanistrum)


Herbicide options:
Trifluralin
Clopyralid

Pictures from Agro Slide Bank
http://asb.com.ar/

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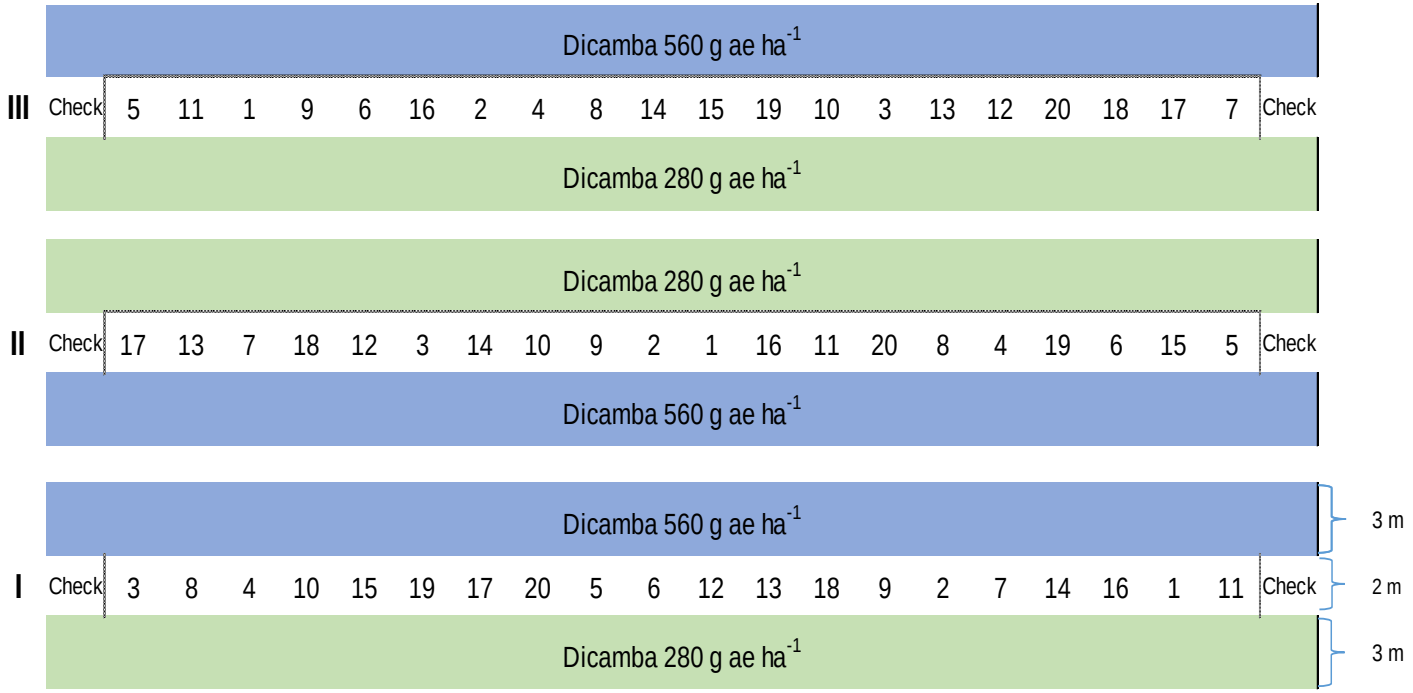
Dicamba Tolerance 2019

Twenty *B. carinata* genotypes
Two doses of Dicamba: 280 and 560 g ae ha^{-1}

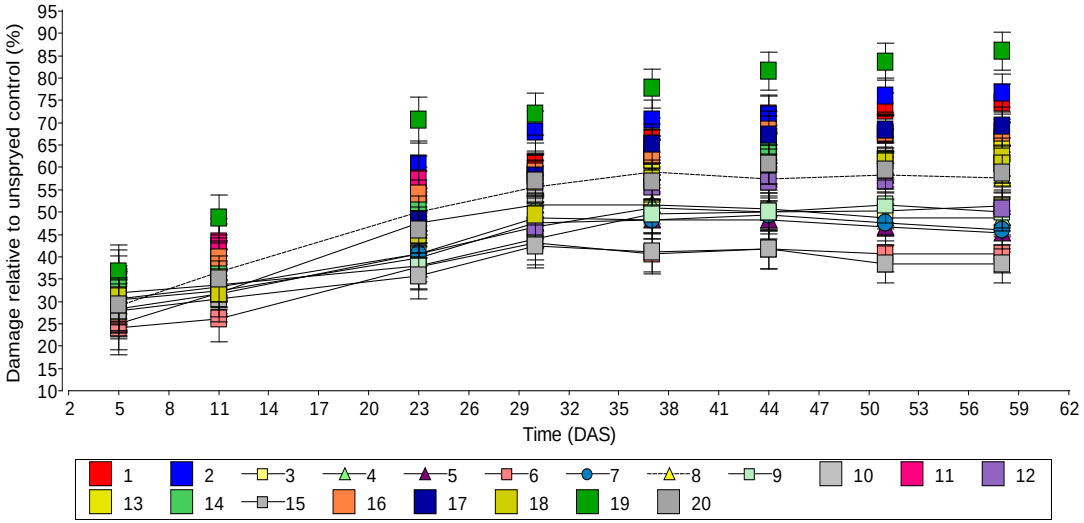
Measurements:

- Plant population
- NDVI
- Visual assessment of damage
- Plant height
- Shoot biomass
- Grain Yield
- TKW



Dicamba Tolerance 2019

- Visual assessment of damage (560 g ae ha^{-1})



- NDVI (difference with unsprayed treatment)

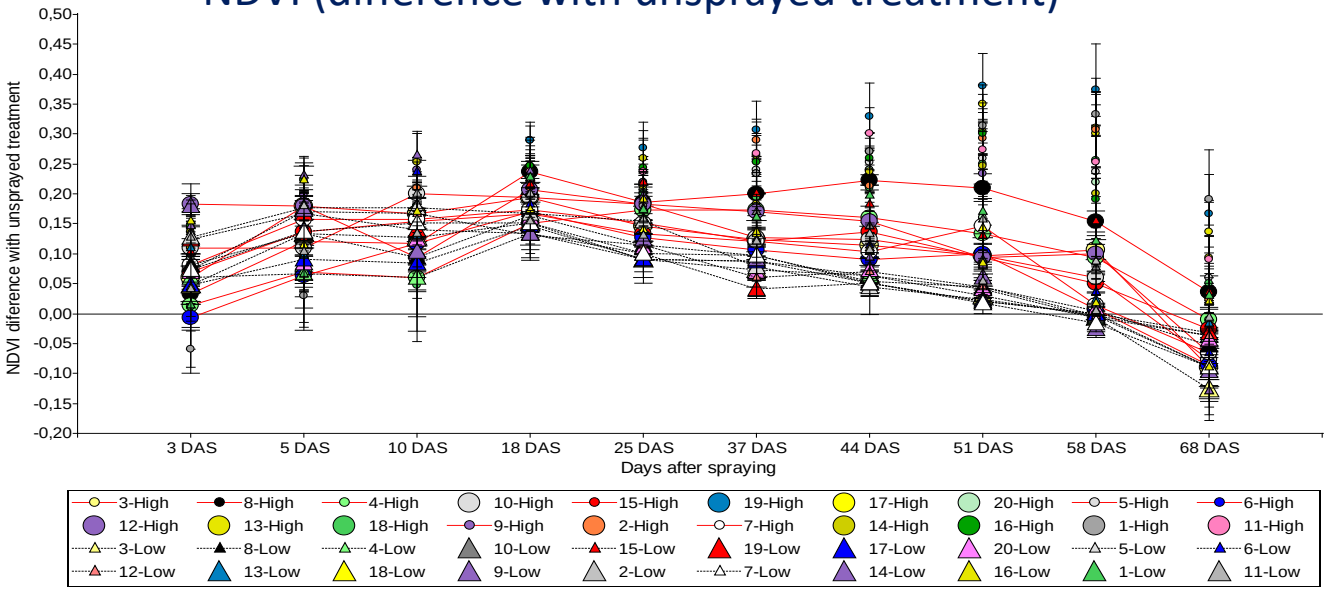


Table 15. Genotypes sprayed with 560 g ae ha^{-1} of dicamba and ranked for each variable studied from most to less tolerant.

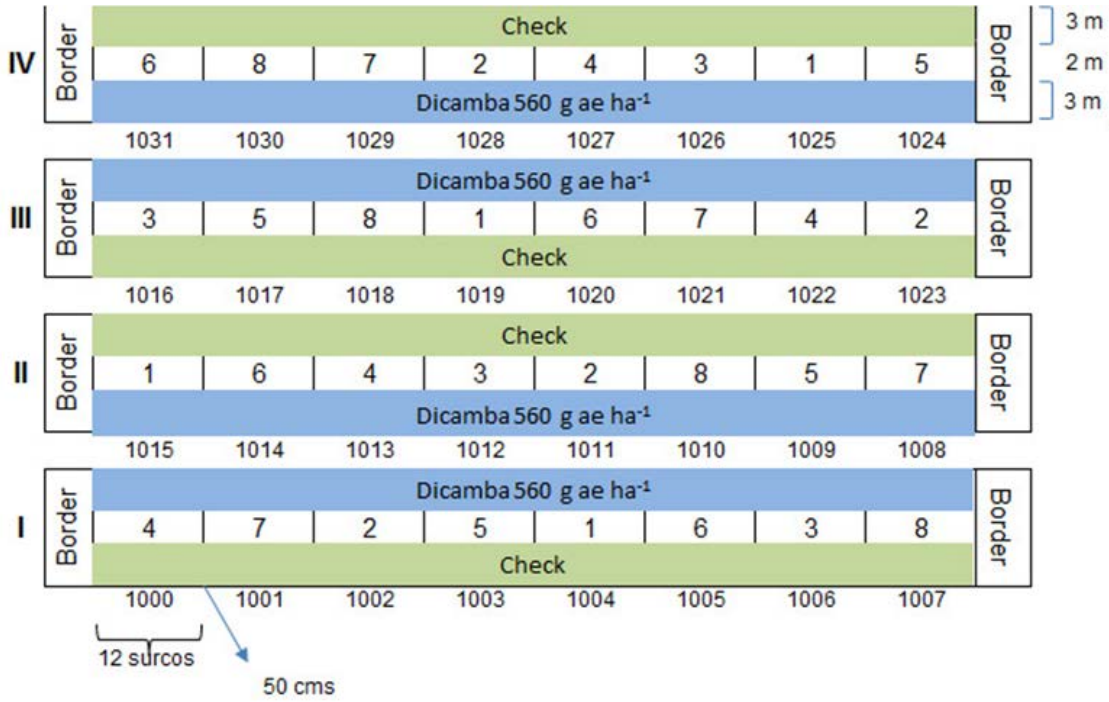
Ranking (most to less tolerant)	Visual damage 58 DAS	Delta NDVI 58 DAS	Relative height	Relative biomass	Relative grain yield
	----------Genotypes----------				
1	15	6	6	15	7
2	6	7	12	4	15
3	5	15	14	6	4
4	7	5	7	7	5
5	3	4	15	3	3
6	4	12	3	5	6
7	9	9	20	9	9
8	12	3	4	11	20

Dicamba Tolerance 2020

Eight *B. carinata* genotypes
One doses of Dicamba: 560 g ae ha^{-1}

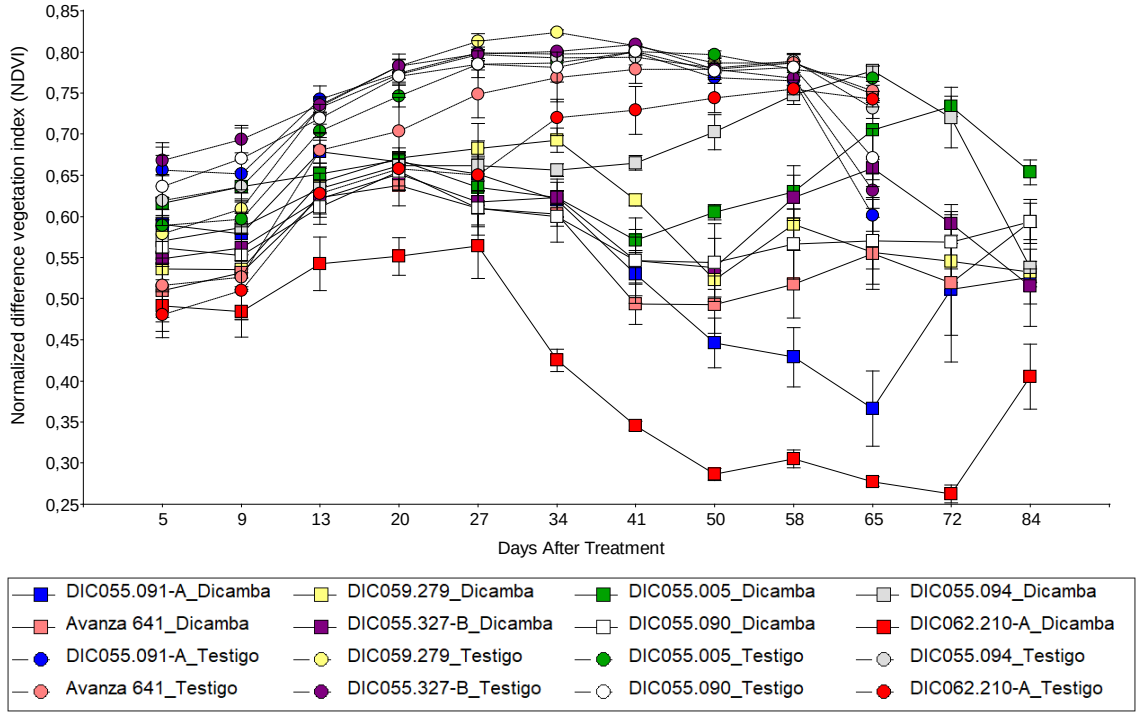
Measurements:

- Plant population
- NDVI
- Visual assessment of damage
- Plant height
- Shoot biomass
- Grain Yield
- TKW



Dicamba Tolerance 2020

- NDVI



- Visual assessment of damage

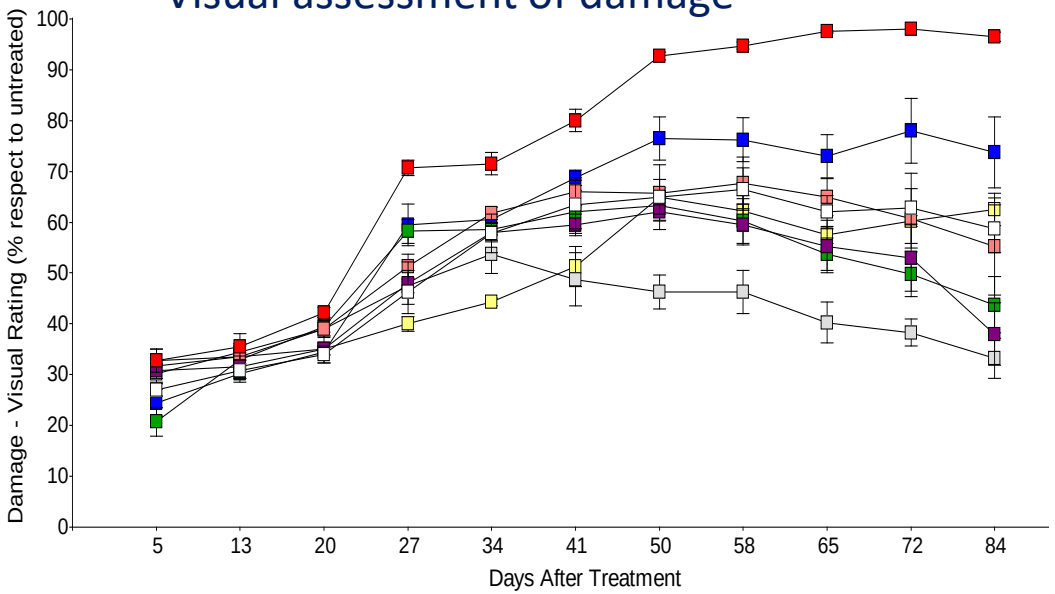


Table 12. Grain yield of eight genotypes of *Brassica carinata* either unsprayed or treated with 560 g ae ha^{-1} of dicamba

Genotype	Treatment	GrainYield					
		- Kg ha^{-1} -					
Avanza 641	Untreated	4846	A				
DIC055.005	Untreated	4562	A				
DIC055.091-A	Untreated	4460	A				
DIC055.094	Untreated	4116	A	B			
DIC059.279	Untreated	4018	A	B			
DIC055.090	Untreated	3346		B	C		
DIC055.005	Dicamba	3332		B	C		
DIC055.327-B	Untreated	3316		B	C		
DIC062.210-A	Untreated	3012			C	D	
DIC055.094	Dicamba	2954			C	D	
DIC055.327-B	Dicamba	2888			C	D	
Avanza 641	Dicamba	2152				D	E
DIC055.091-A	Dicamba	1897					E
DIC055.090	Dicamba	1639					E
DIC059.279	Dicamba	1600					E
DIC062.210-A	Dicamba	255					F

Means followed by the same letter are not statistically different according to Fischer´s LSD (α = 5%).

Assesment 72 days after spraying

DIC062.210-A

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Assesment 72 days after spraying

DIC055.094

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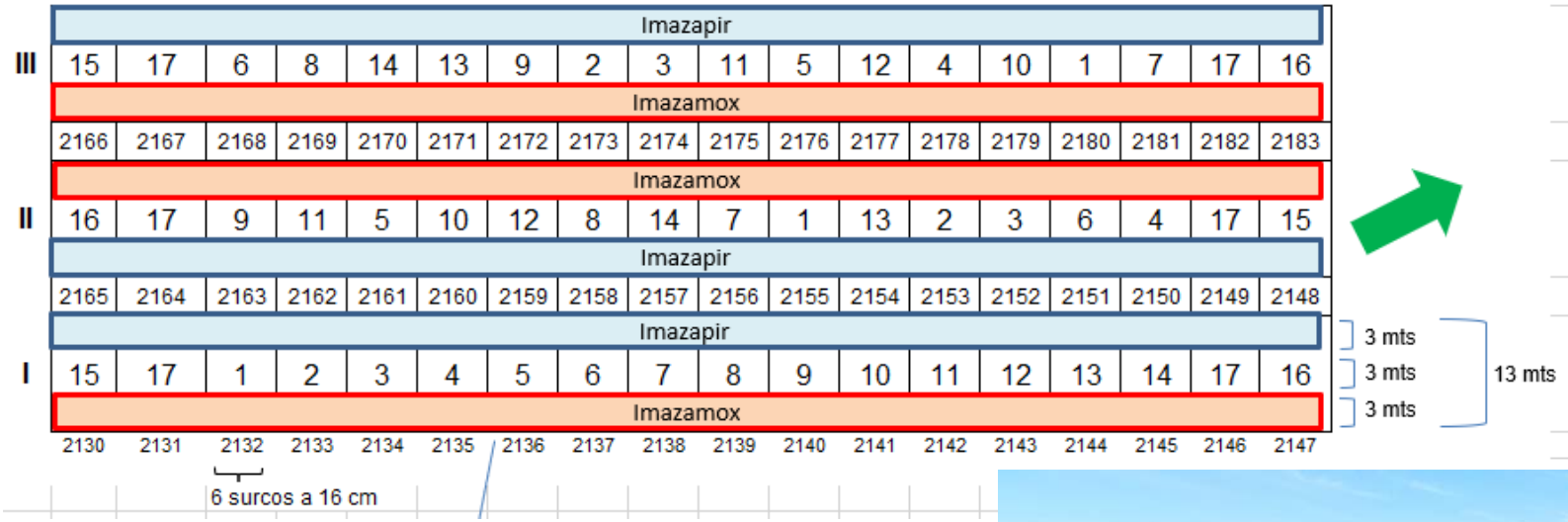
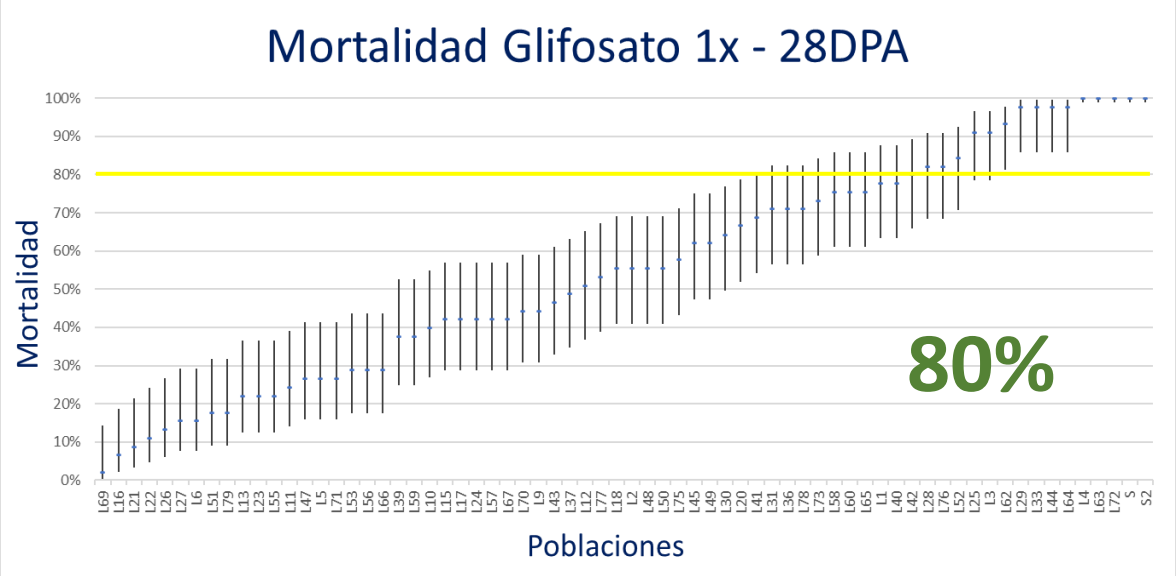
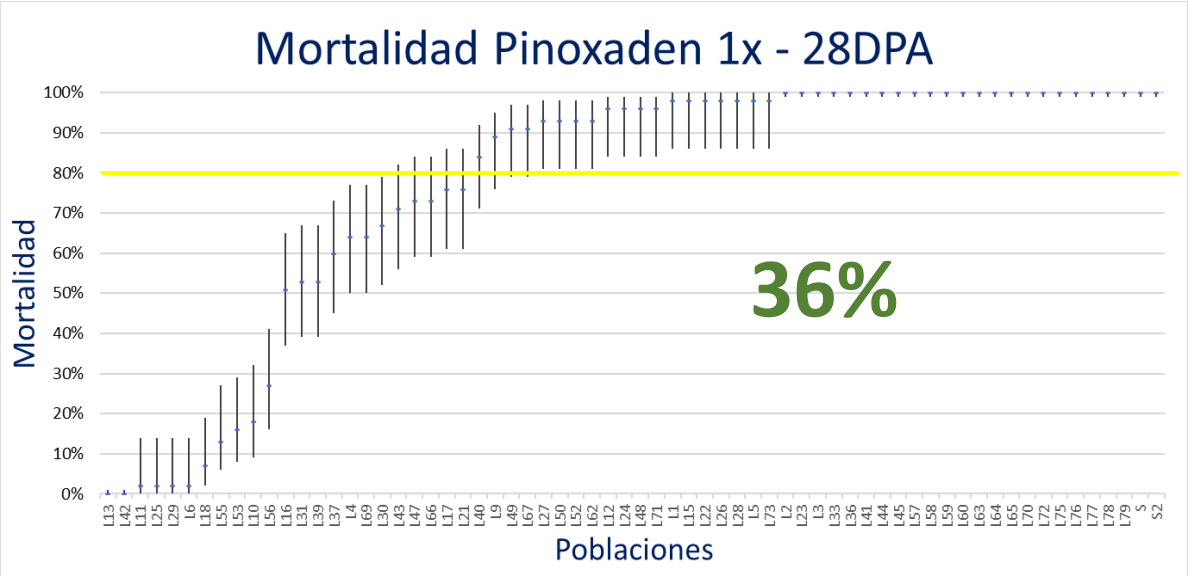
B. Carinata IMI lines

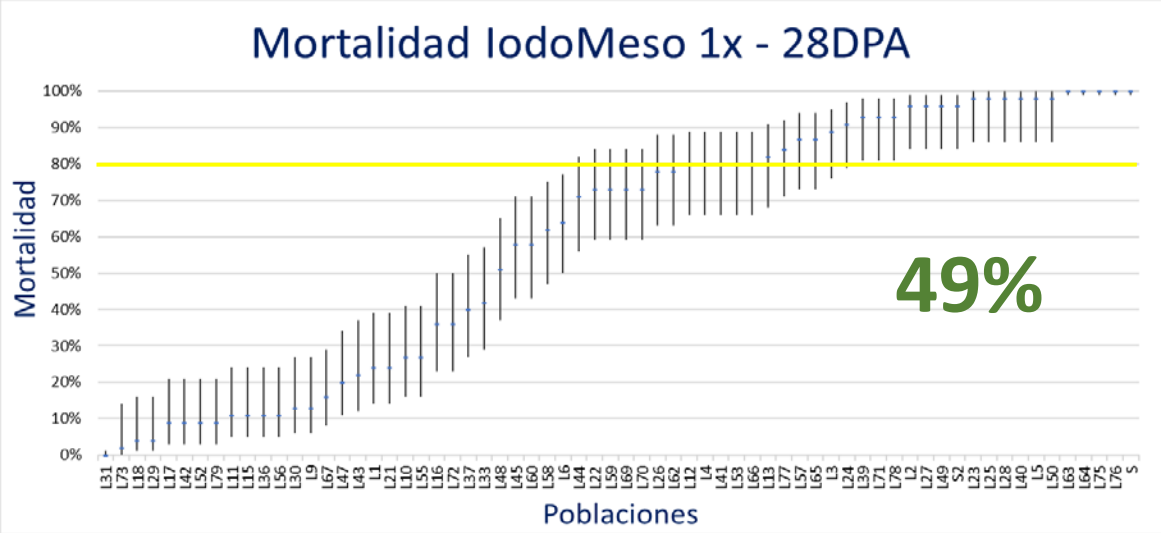


Most important weed problems in Uruguayan agriculture during winter

- Monocot
  - Herbicide resistant *Lolium multiflorum* populations







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Team:

Ximena Morales

Mauricio Cabrera

Evangelina García

Mónica García

Tiago Kaspary

Carlos Vazquez

Malezas Uruguay

@MalezasU

malezas_uruguay

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