

Explaining environmental influence on isoflavone accumulation in soybean cotyledons and embryo axis

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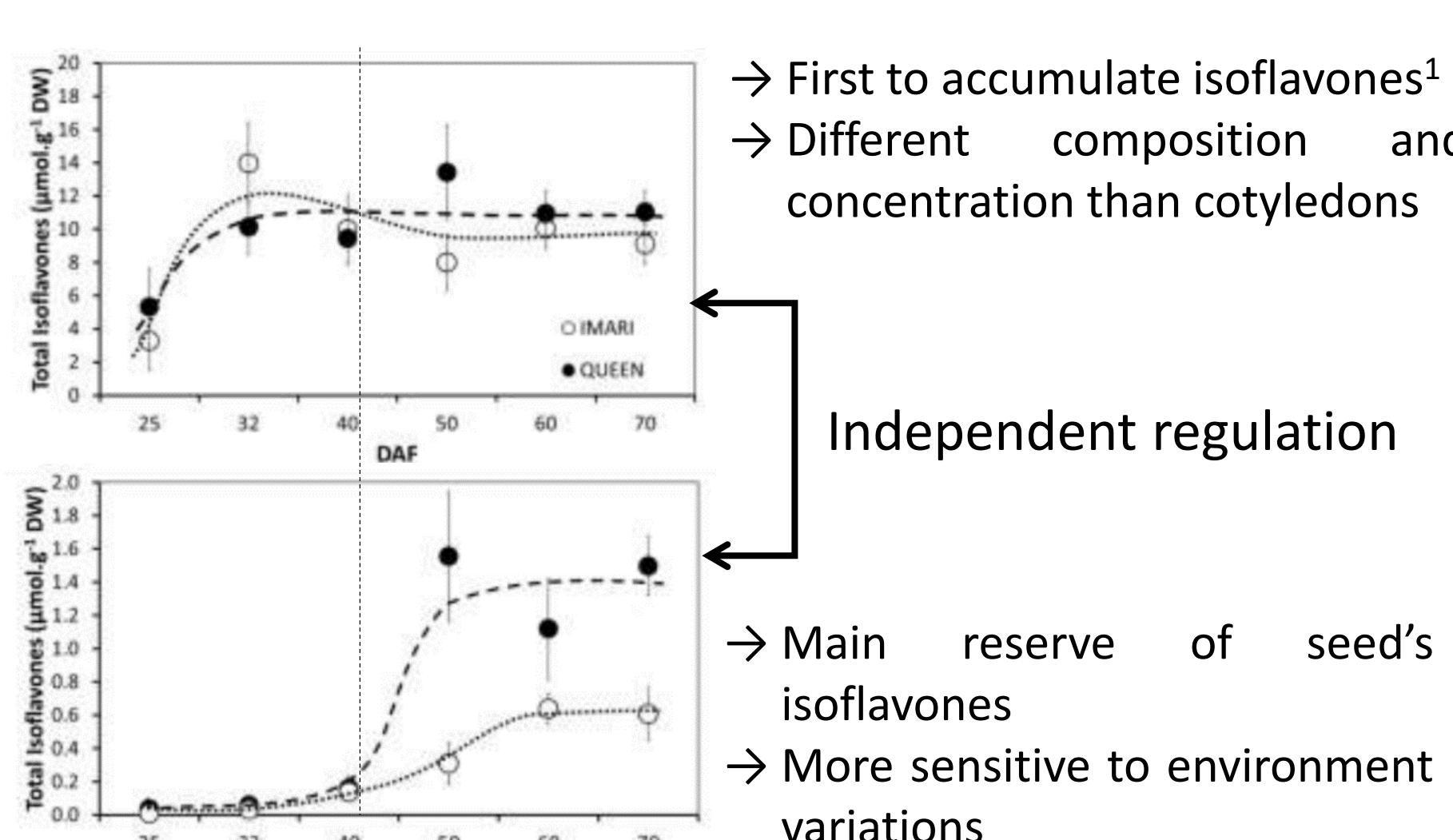
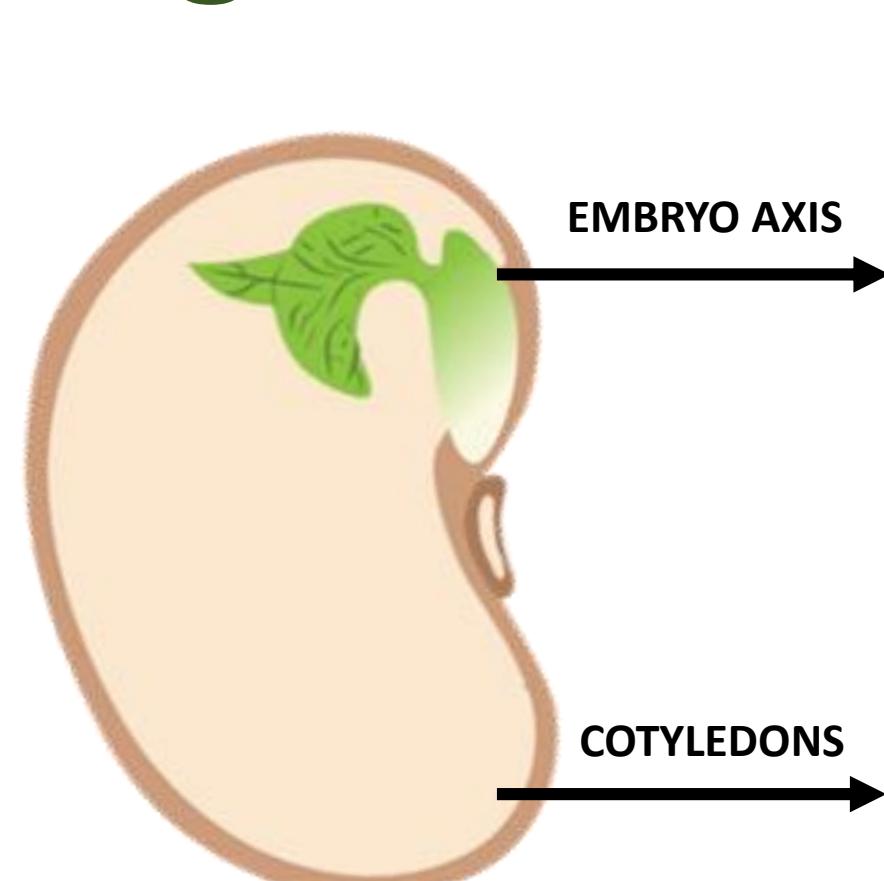
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Background



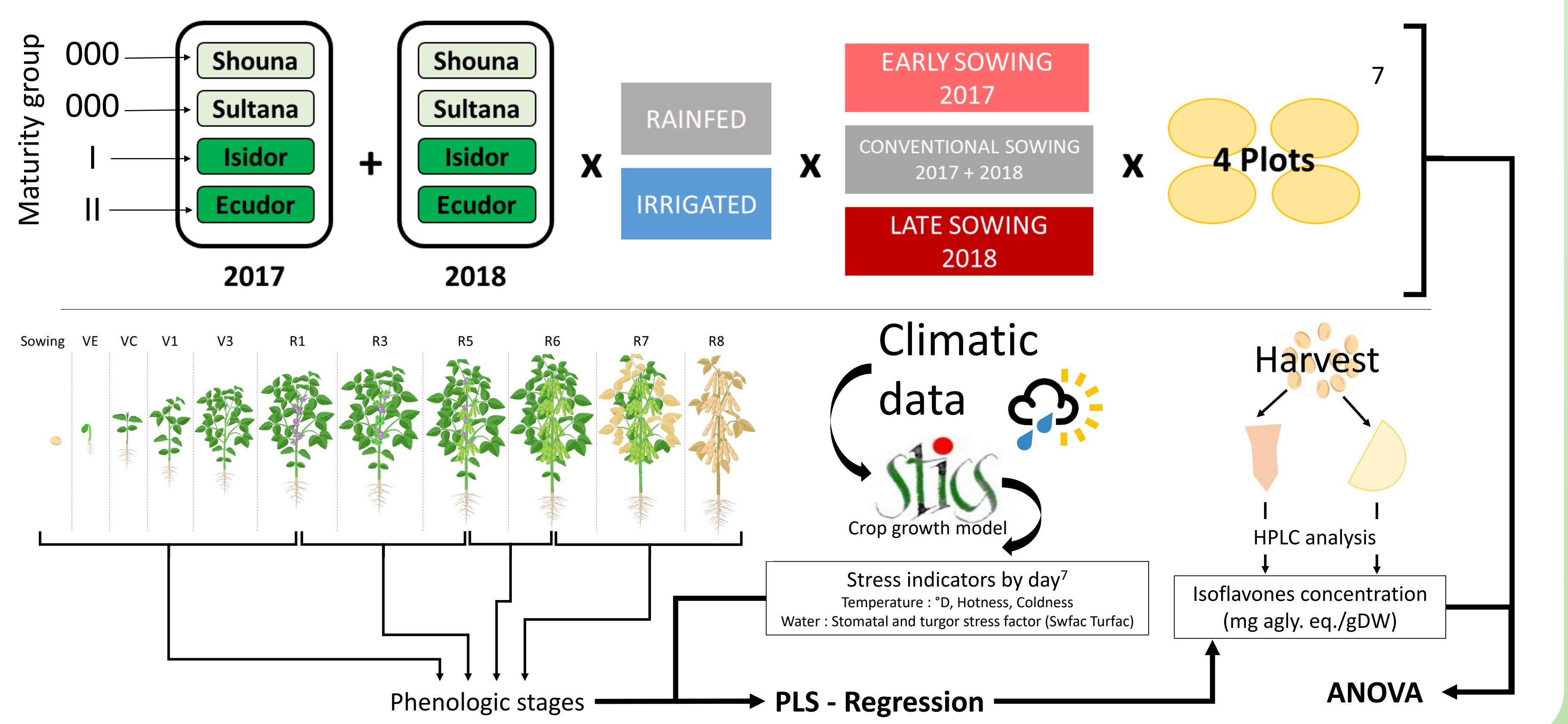
Isoflavone content can vary among **genotype** by a factor of 3². Between **growing seasons**, the content of a single genotype can treble, and between two **locations** in the same year, it can double.³

Environment influence

- Temperature⁴
- Water supply⁵
- Fertilization⁶ K⁺

Aims : Characterize interactions between abiotic stress and phenological phases on isoflavones content in cotyledons and embryo axis

Methods

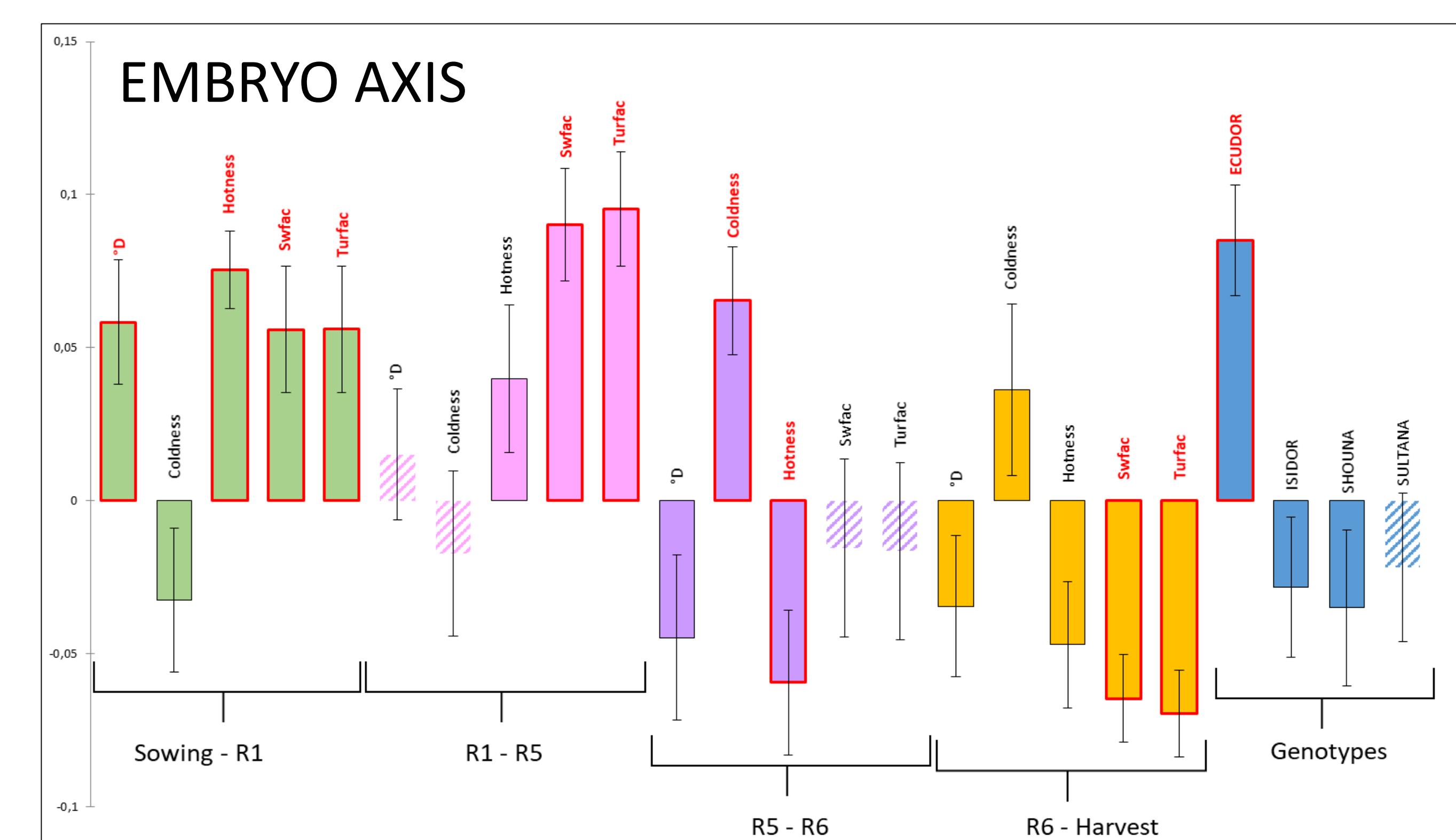
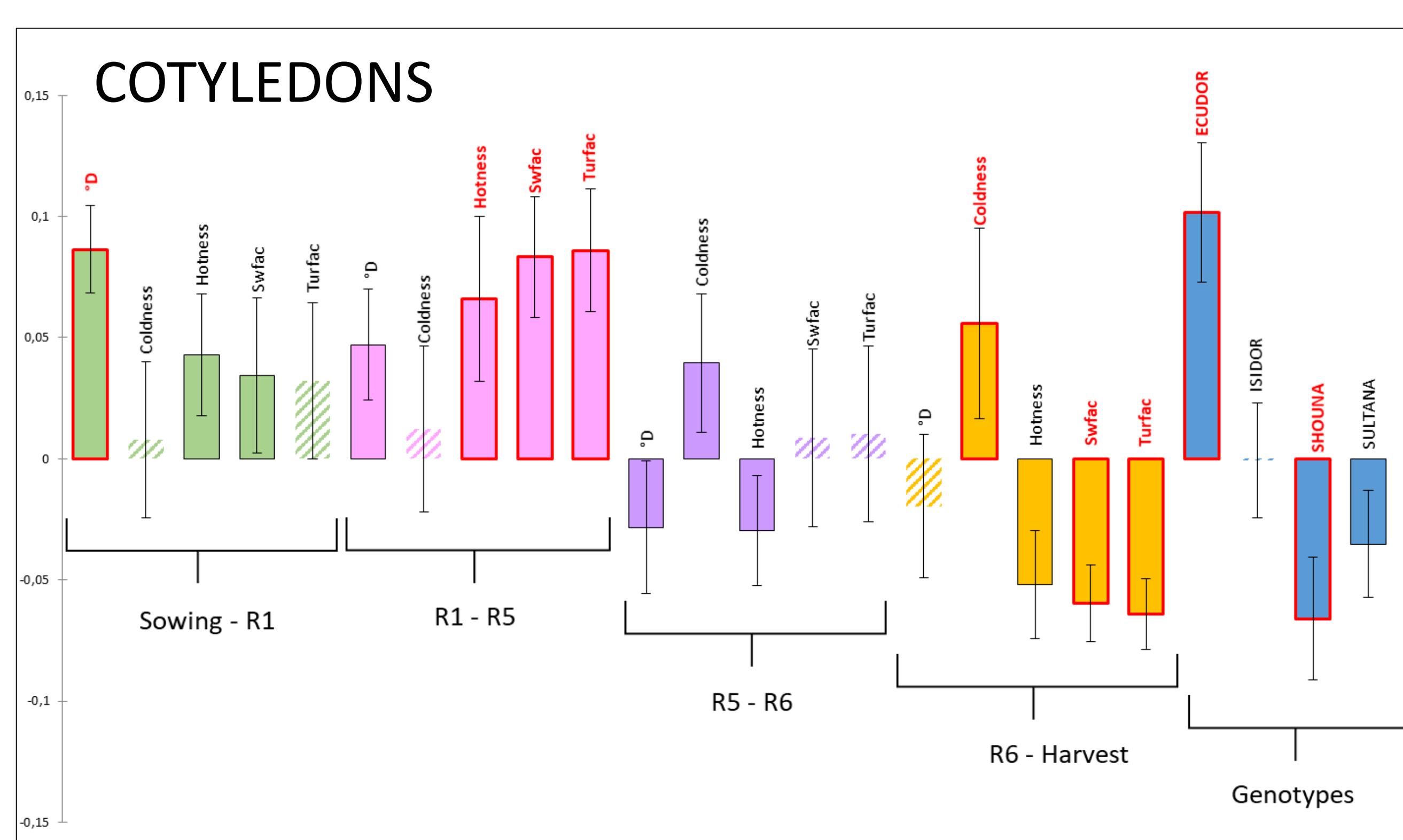


Results

ANOVA

	Cotyledon	Embryo axis
R ²	0,88	0,78
P-value by factor and interaction of factors		
1	0,05	10 ⁻¹⁰
Genotype	1,31E-35	7,84E-21
Year	1,51E-10	9,42E-10
Irrigation	8,72E-23	1,20E-02
Sowing date	2,70E-09	7,34E-19
Plot	0,71	0,47
Genotype x Year	3,95E-10	2,59E-07
Genotype x Irrigation	2,52E-06	0,19
Genotype x Sowing date	1,47E-13	1,17E-07
Irrigation x Year	1,45E-08	0,11
Irrigation x sowing date	0,01	0,04

Standardized coefficients from PLS-R model for total isoflavones content (mg agly. eq./gDW)



Conclusion : This study confirms the differences and lag between cotyledons and germplasm in isoflavone accumulation, as well as the effect of cold and irrigation on the maturation phase. It highlights the importance of the vegetative phase in this dynamics. The ecoclimatic approach provides a better description of genotype-environment interactions, and could provide a relevant approach for varietal evaluation of isoflavone content.

References

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