20th International Sunflower Conference
20-23 June 2022 Novi Sad, Serbia
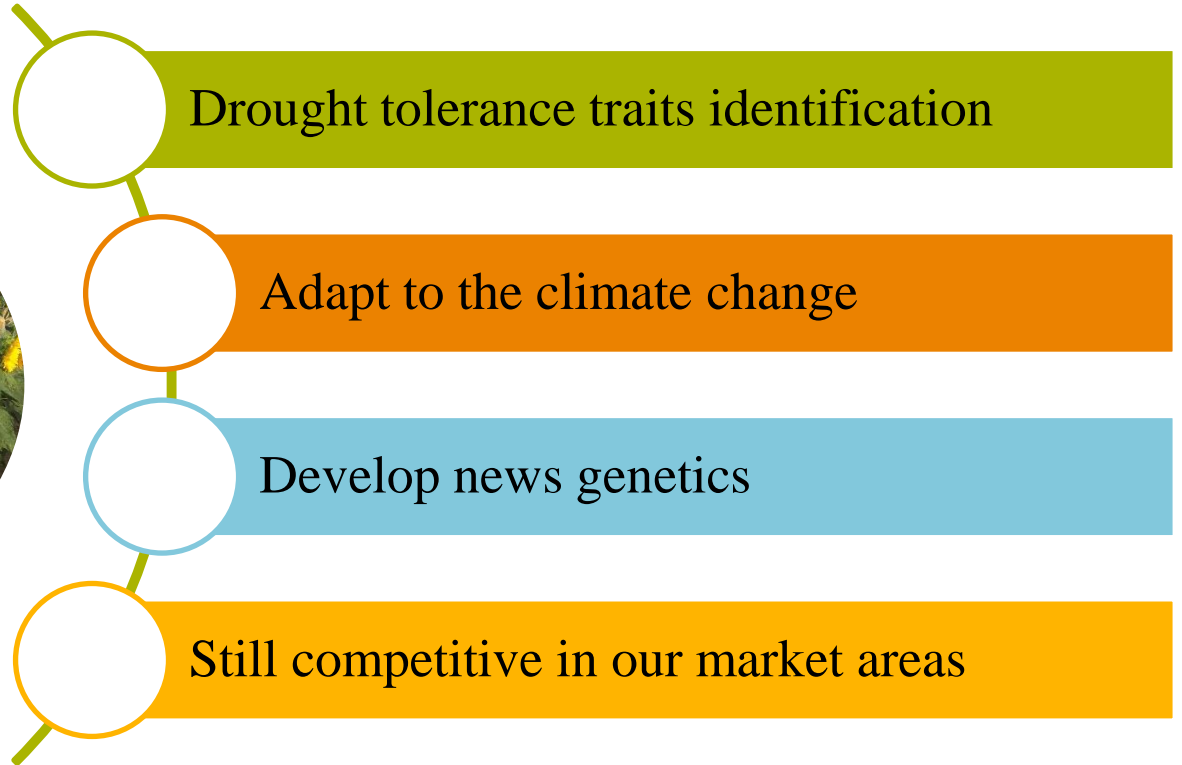
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Sunflower drought QTLs discovery in semi-controlled conditions

21st of June 2022

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Introduction – Objective

Drought tolerance traits identification

Adapt to the climate change

Develop news genetics

Still competitive in our market areas

➜ Identification of additional yield and flowering QTL under drought conditions

ISC 2022
20th International Sunflower Conference, Novi Sad

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Materials and Methods – Plant materials

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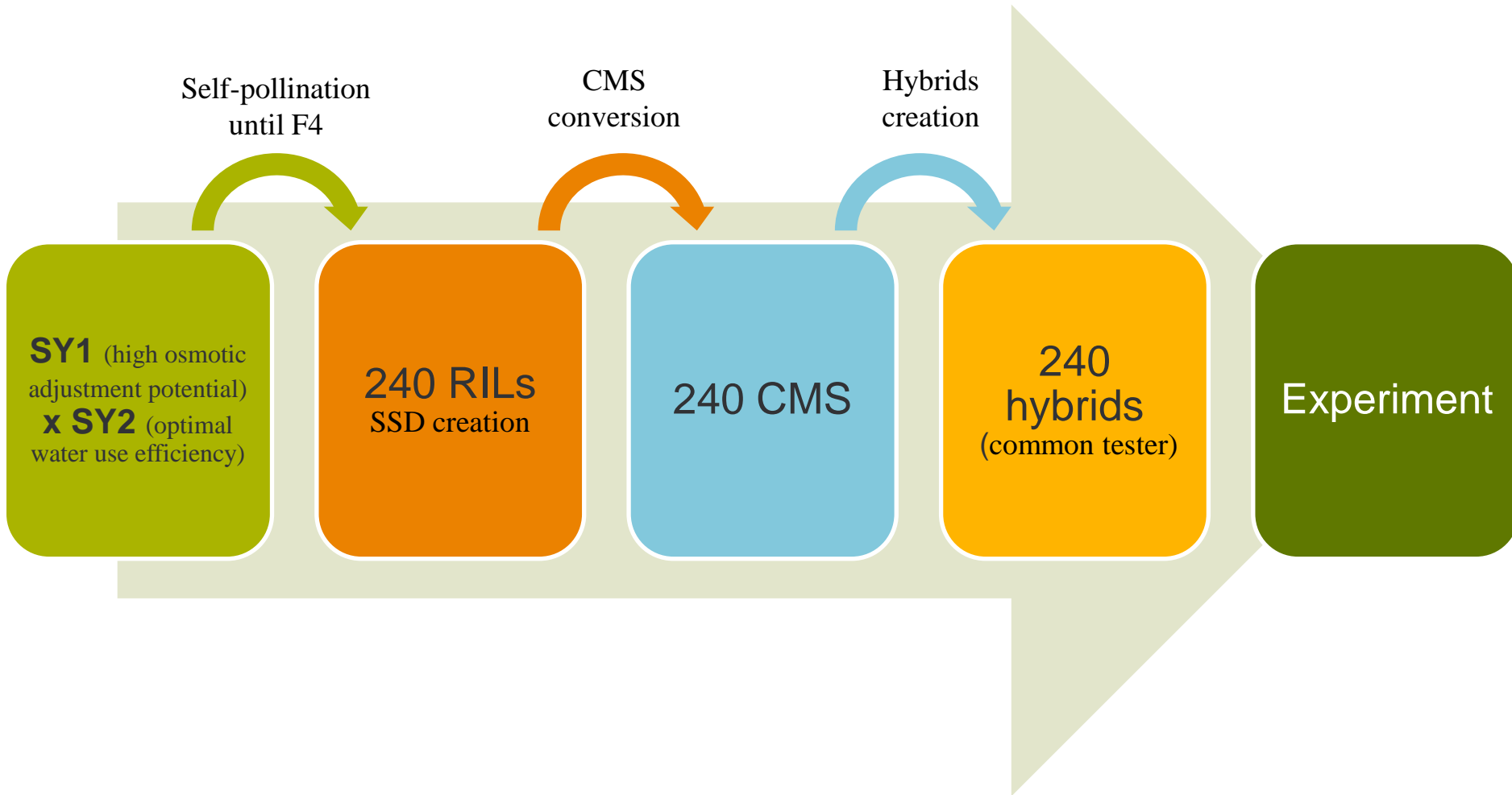
Materials and Methods – Experiment and traits measurements

Chile, Graneros

Well-watering

240 plots x 4 repetitions, RCB

➔ watering management

Water stressed

240 plots x 4 repetitions, RCB

➔ irrigation was stopped 10 days before flowering

Phenotypic data ➔ yield in kilograms per plot flowering date

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Materials and Methods – Statistical and QTL analysis

1 Data adjustement

2 BLUP extraction

Phenotypic variance

Fixed effects	Random effects	Interaction effects	Residual

Genetic variance
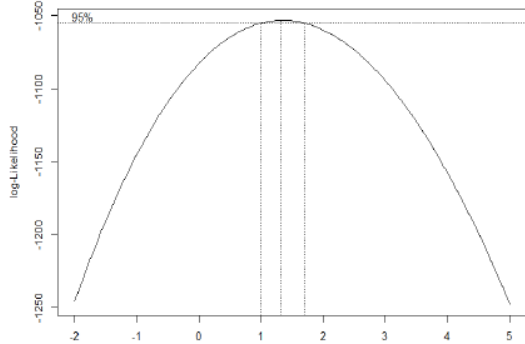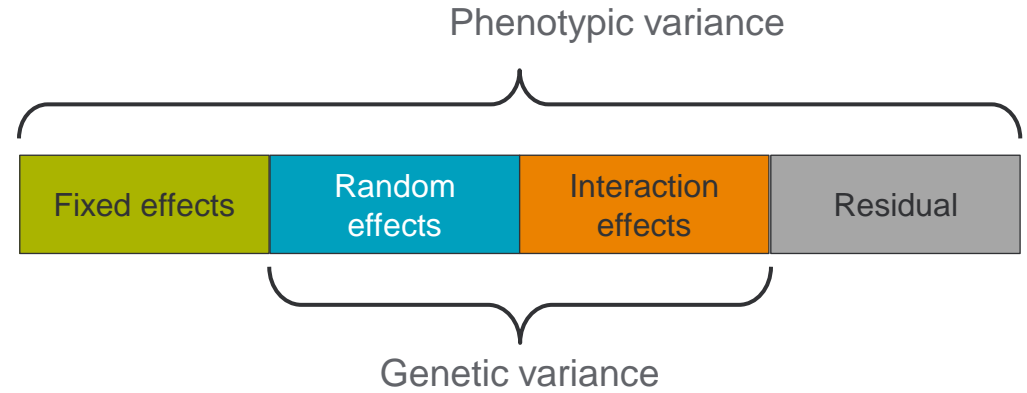
3 QTL discovery SIM
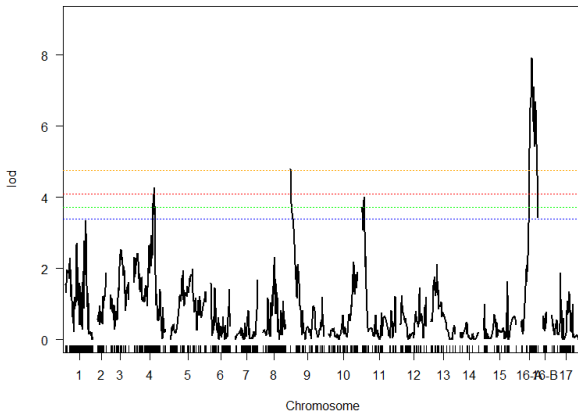
4 QTL discovery CIM

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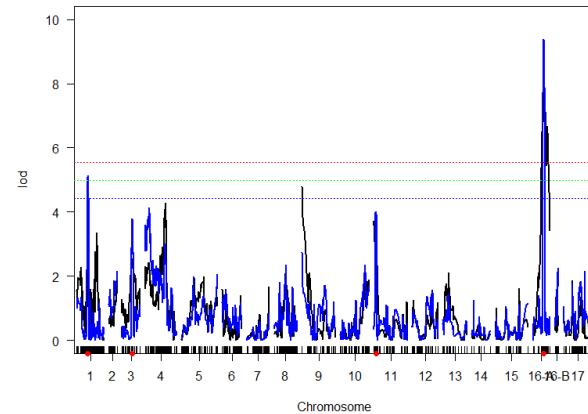
Results and Discussion
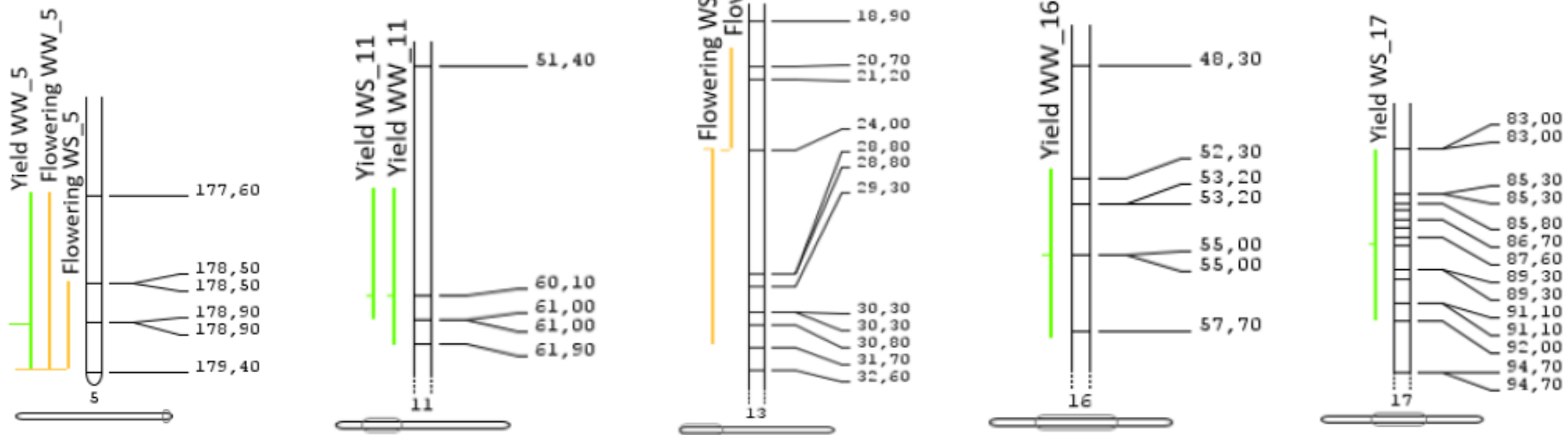
QTLs detected on well-watering condition

Trait	LG	LOD	Interval confiance (cM)
Yield WW_5	5	17,29	3,62
Flowering WW_5	5	30,7	1,81
Yield WW_11	11	4,32	6
Flowering WW_13	13	7,2	4
Yield WW_16	16	5,43	6

QTLs detected on water stressed condition

Trait	LG	LOD	Interval confiance (cM)
Flowering WS_5	5	28,23	3,38
Yield WS_11	11	4,19	4,99
Flowering WS_13	13	6,35	7,72
Yield WS_17	17	4,12	9

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Conclusion and perspectives

Adaptive QTLs linked to drought tolerance

Adaptive QTLs similar with literature

Yield QTLs highly integrated

Flowering QTLs high heritability

→ Improve sunflower breeding pipeline

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Thank you for your attention

Bringing plant potential to life

Marlène Mazas

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