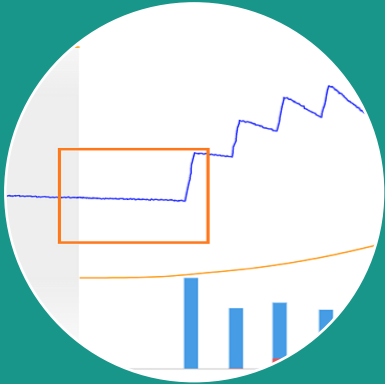


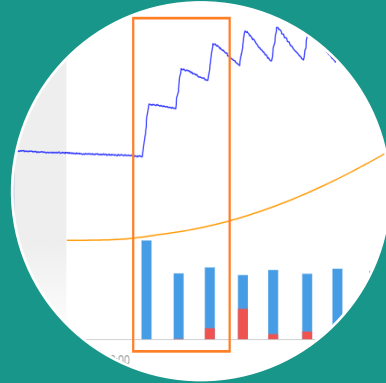


# Irrigation Strategy



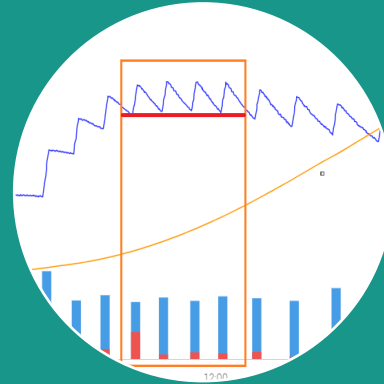
## 1º Stage

- From sun Rise
- To first irrigation
- When lost -1 / -2% weight
- Or 2 hours



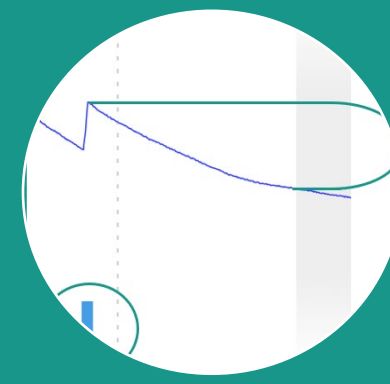
## 2º Stage

- From first irrigation
- Until 2-3<sup>rd</sup> irrigation
- Find weight % from last day irrigation
- Cycle of 100-250 j/cm<sup>2</sup>
- Irrigate based radsum



## 3º Stage

- After reach the water content level.
- 100-250 J/cm<sup>2</sup> between irrigations.
- Until last irrigation
- Maintain EWA
- EC sum: 2,5-4,0
- Security condition -2% / -3%



## 4º Stage

- Last irrigation
- 2-3h before the sunset



*\* This defined values are theoretical, can be changed during the trial based on day by day observation.*



# When to start the irrigation

When the plants can absorb the irrigation → Transpiration

✓ Save money avoiding inefficient irrigations

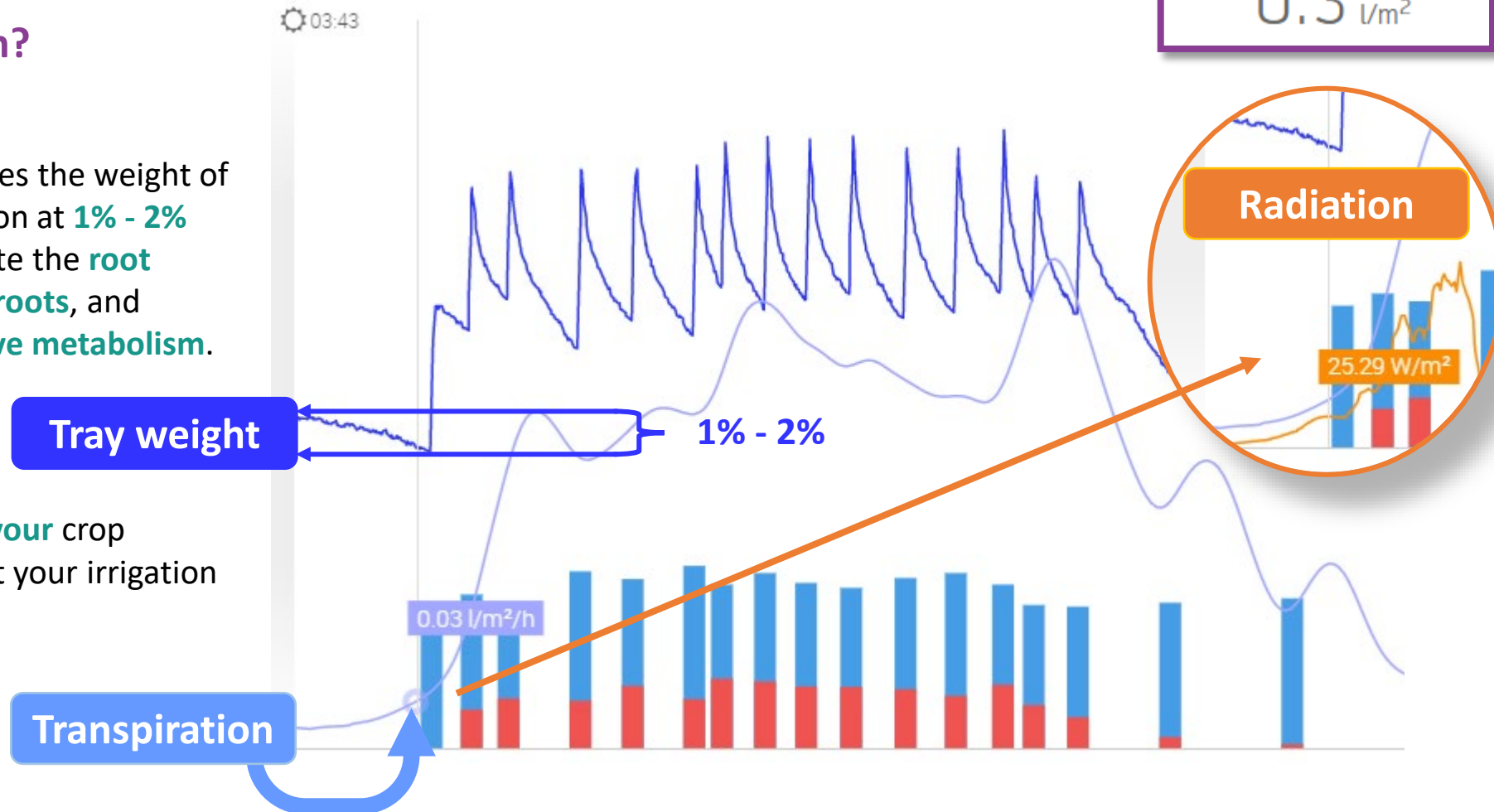
evaporated water

0.3 l/m<sup>2</sup>

## ¿How to detect transpiration?

✓ **Transpiration** at first  
 The effect of transpiration reduces the weight of the tray, starting the first irrigation at **1% - 2%** weight loss from sun rise promote the **root system** development, **healthier roots**, and modifies the plant into **generative metabolism**.

✓ **Trutina** algorithms  
 Know how the **transpiration of your** crop changes along the day and adapt your irrigation strategy. (Data on **L/m<sup>2</sup>/h**)

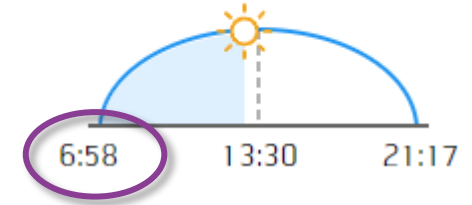




# Weight lost from sun rise to first irrigation

## 1º Stage First Irrigation

The optimum range is between when **transpiration** starts and **ABA** production.



### Objectives

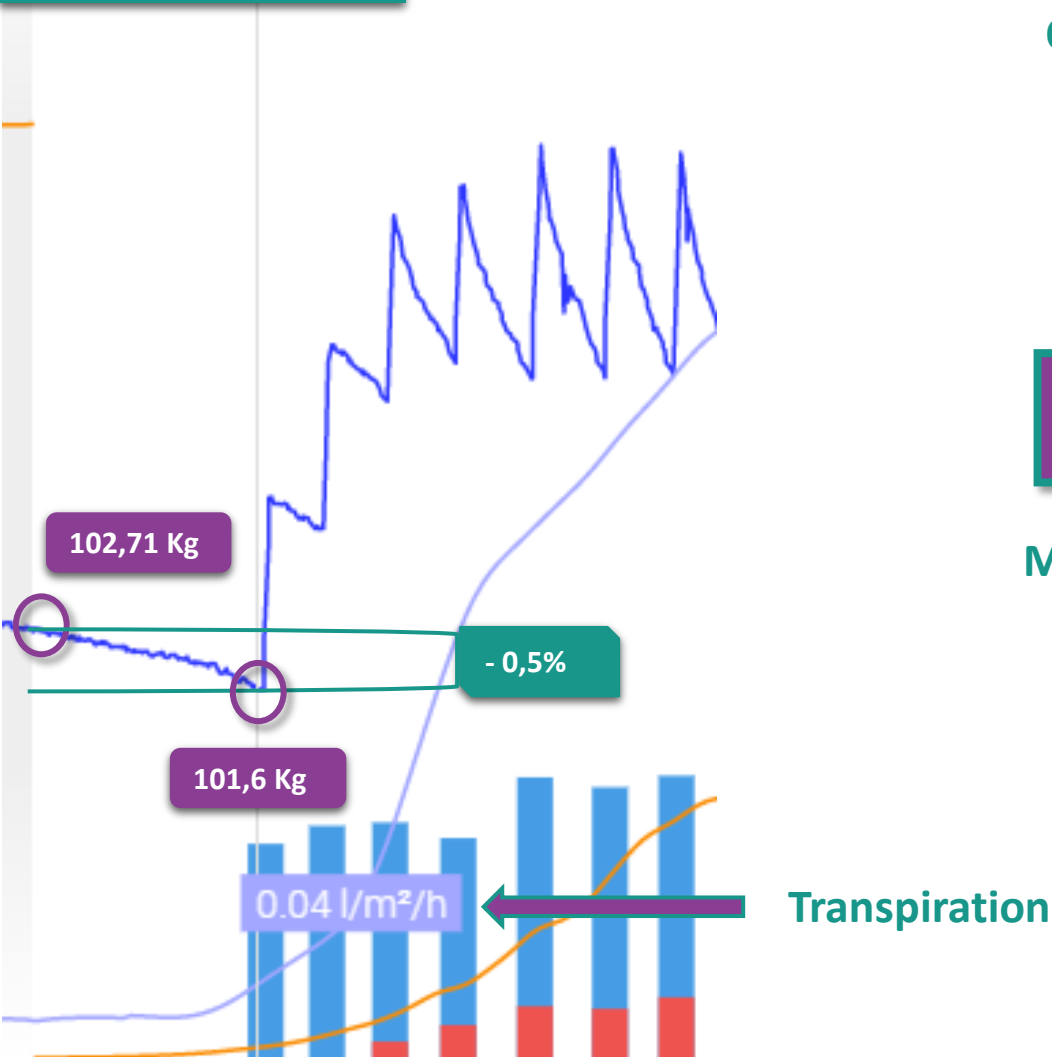
- ✓ Force the plants to produce new root development
- ✓ Promote the absorption of nutrients and healthy roots
- ✓ Balance the crop between Vegetative/Generative

### Strategy

From sun rise (6:58 am) irrigate once the weight lost of the tray downs -1%

### Metabolism effects of weight differences from sun rise to first irrigation

- ✓ Balance the metabolism of your crop with your irrigation strategy



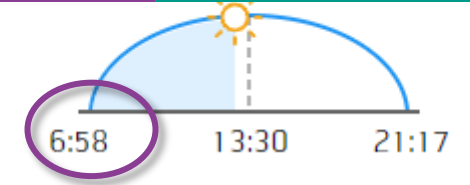
Vegetative	Neutral	Generative	Strong Generative
- 0%	- 0,5%	- 1%	> - 1,5%
- 0,5%	- 1%	- 1,5%	



# Weight increase from first irrigation to last day %

2º Stage Refilling

Find the % of weigh from the **last irrigation** from last day

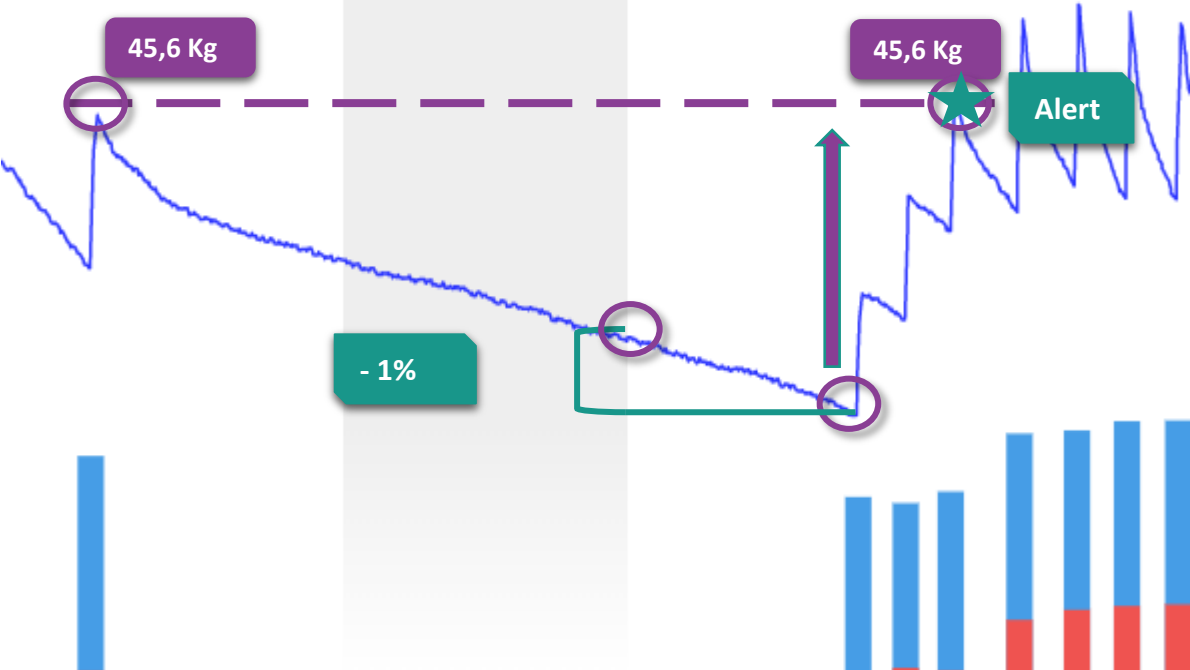


## Irrigations

1. -1% weight loss from sun rise irrigate based on min waiting time icm Joule
2. 15-30 min delay, irrigate based on min waiting time icm Joule
3. (Optional) 15-30 min delay, irrigate based on min waiting time icm Joule

23:36

03:39



**Strategy**  
Irrigate 2 -3 times until find the value of % weight on the last irrigation from the previous day.

**Condition:**  
If the % weight from last irrigation of last day is reached on 2º irrigation start next step

Programing example:

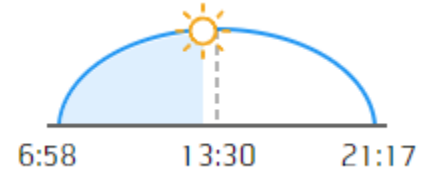
Irrigation	Step	Weight %	From	To	When	Duration
1º	1	45,6 Kg	Sun rise (6:58)	1º irrigation	45,14 Kg (-1%)	Based on min waiting time icm Joule
2º	2	-	1º Irrigation	2º Irrigation	15-30 min delay	Based on min waiting time icm Joule
3º	2	-	2º Irrigation	3º Irrigation	15-30 min delay	Based on min waiting time icm Joule



# From 3<sup>rd</sup> Irrigation until sun zenith

3<sup>o</sup> Stage  
Water &  
EC control

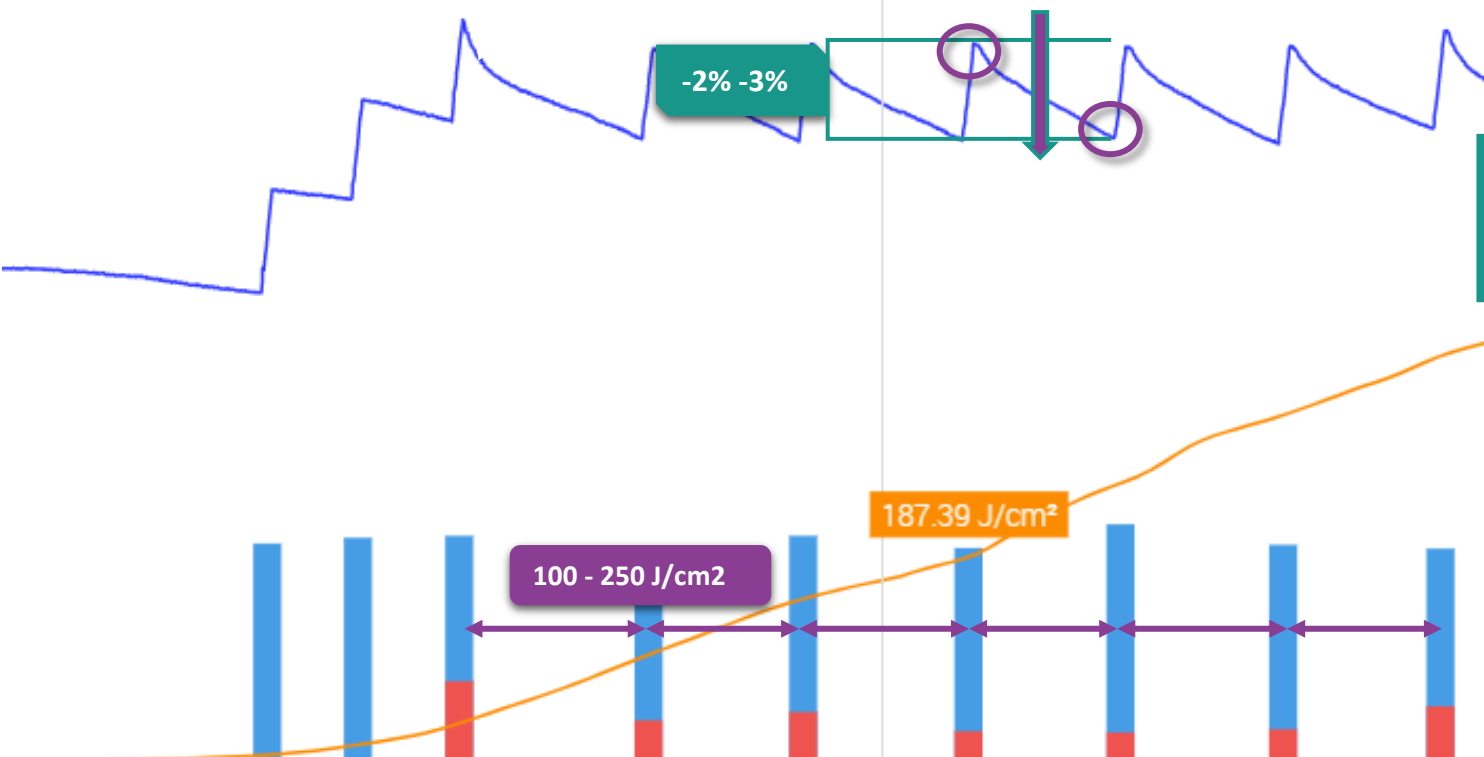
The optimum is to maintain **EWA stable** and control the **EC** with drain



**Strategy**  
From stage 2<sup>o</sup> to last irrigation irrigate based on radiation each **150-200 J/cm2**

## Objectives

- ✓ Maintain the water content
- ✓ Facilitate the nutrient absorption during the hot period of the day.



**Security Condition:**  
If the % weight from last irrigation goes under 2- 3% start next irrigation



- ✓ Trutina will add an extra irrigation in order to avoid under irrigation when the weight between the irrigations drops below 2%-3%

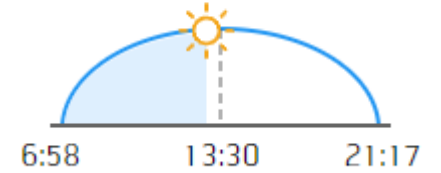


# Last irrigation

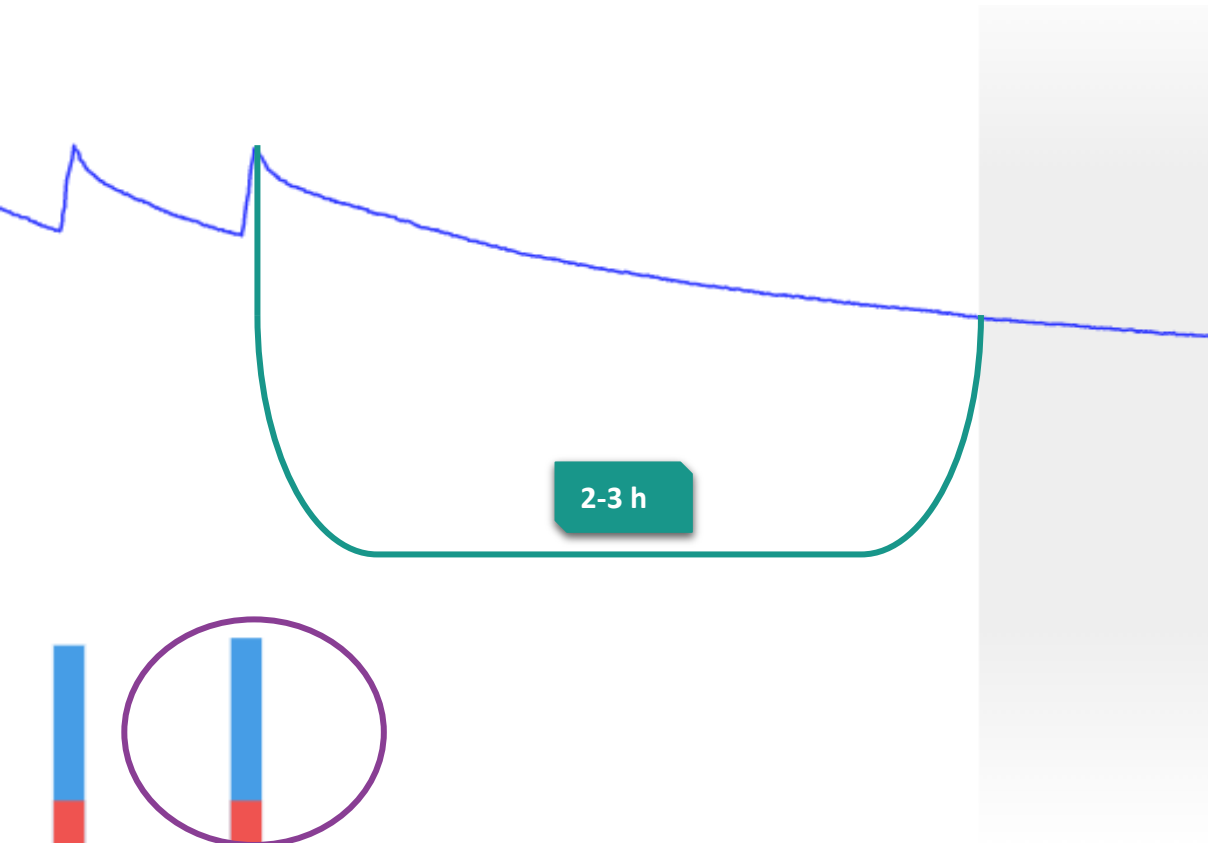
4<sup>o</sup> Stage  
Last irrigation



Promote *Vegetative/Generative* development



**Strategy**  
From last irrigation to sun set there must be 2-3 h.



## Objectives

- ✓ Reducing the water flow in the substrate helps to the root systems to absorb microelements more easily

*Is the time of the sunset changing day by day in your irrigation machine?*

## Development in relation to weight drop from last irrigation to sun set

Vegetative	Neutral	Generative	Strong Generative
0%	- 1%	- 1,5%	> 2%
- 1%	- 1,5%	- 2%	

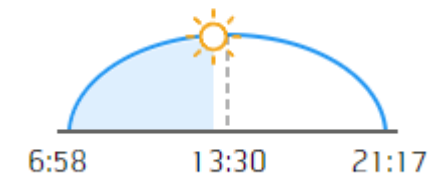


# Standard Irrigation Strategy

## Strategy

This is a standard irrigation strategy, for maximize the yield production its mandatory to do modifications day by day to adjust:

- ❖ Drainage at the end of the day
- ❖ Weight % difference between last and first irrigation



05:42

21:25

Same % as last irrigation from last day

If goes under -2% / -3% start next irrigation

-1% / -2%

100-250 J/cm<sup>2</sup>

2-3 h

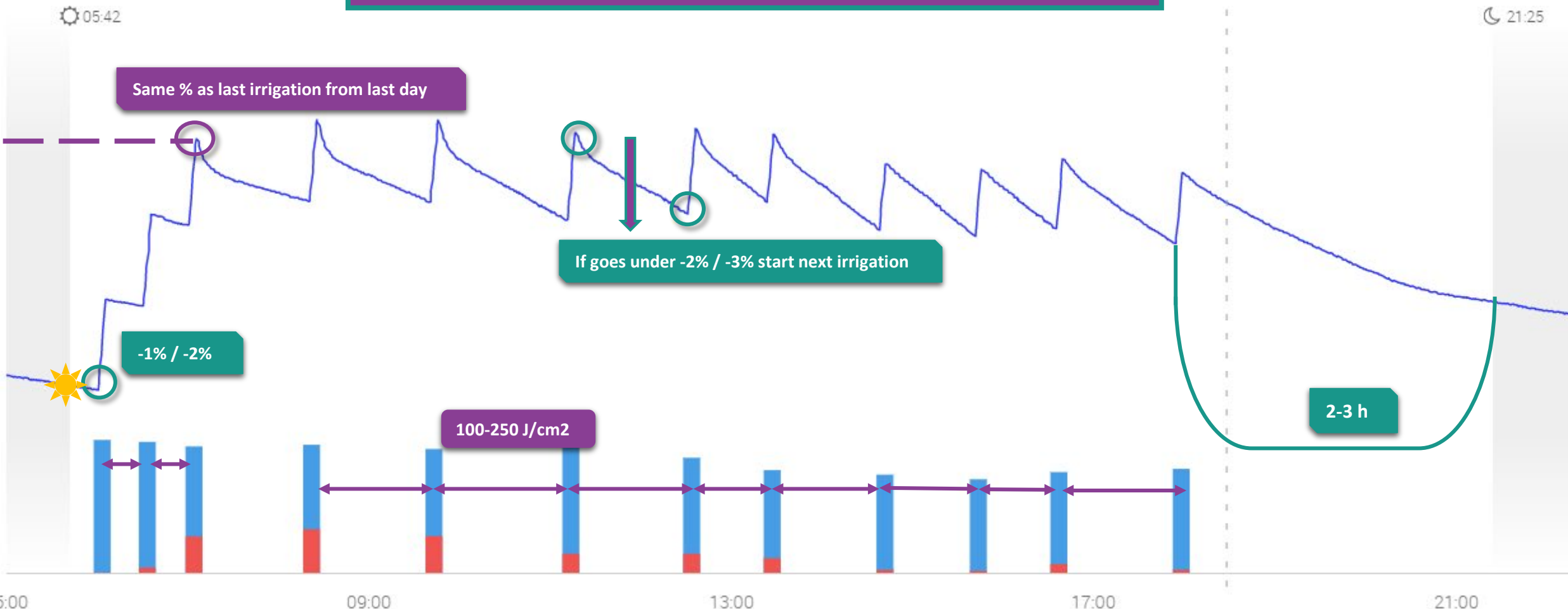
5:00

09:00

13:00

17:00

21:00





# Weight % loss from last to first irrigation

## Objectives

- ✓ **Development control** with the weight difference
- ✓ Stear the plants into **Vegetative/Generative**
- ✓ From last irrigation to sunset the water on the bag should go down slowly for absorbtion of **macro elements**.

## Development effects from weight drop

