



**Subsurface drip irrigation is could be a game-changer for agriculture**

# Why SDI

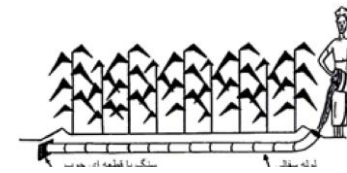
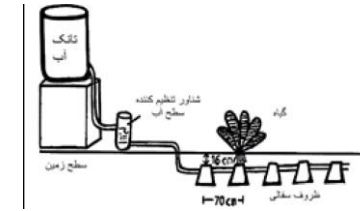
*Have you ever seen Return of  
investments during one year – it is SDI!*





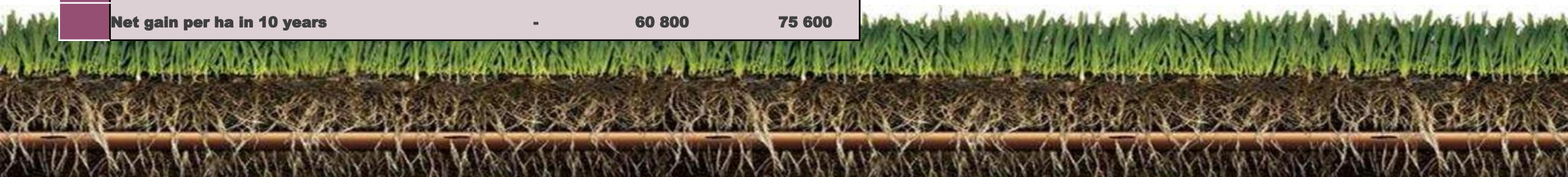
# HISTORY

- Appeared several thousand years ago
- Comeback – since 1959 in USA
- Broad use – with beginning of production of integrated drippers with Rootguard technology
- Precision farming will speed up this process



# Tomatoes on DI, SDI and Puls irrigation

№	Name of expenses, tomato growing	DI	SDI	Puls irrigation
		EUR	EUR	EUR
	Investments in irrigation system	1 200	3 500	5 000
	To DI	-	2 300	3 800
1	Seeds	400	400	400
2	Seedlings	1 350	1 350	1 350
3	Irrigation	350	90	90
4	Water**	1 250	1 000	900
5	Fertilizers	1 400	1 100	900
6	Pesticides	1 400	1 200	1 200
7	Soil tillage, spraying	400	350	350
8	Fuel	110	90	90
9	Labor	250	200	200
10	Transport	200	260	270
11	Land rent	300	300	300
12	Harvesting	320	460	500
	Total	7 430	6 800	6 550
	Yield	102	148	160
	Production cost EUR/t	73	46	41
	Price/t	110	115	115
	Revenue	11 220	17 020	18 400
	EBIDA	3 790	10 220	11 850
	Benefit vs DI	-	6 430	8 060
	Payback period, years	-	0,4	0,47
	Net gain per ha in 10 years	-	60 800	75 600





# ADVANTAGIES OF SDI, EXAMPLE

## **Azienda Agricola Cascina Bandiasso, hazelnuts, Alessandria, Italia.**

- Beginning of harvesting on a 4<sup>th</sup> year instead of 8<sup>th</sup> on DI.
- Yield increase 20-40 % .
- 30% less of empty shells .
- Quality premium
- Extra investments in irrigation only 300 EUR/ha





# ADVANTAGES OF SDI, EXAMPLE

## 56 ha of walnuts in Izmail, Ukraine.

- Beginning of harvesting on a 4<sup>th</sup> year instead of 7<sup>th</sup> on DI.
- Less maintenance costs .
- Better caliber of the nut.
- Easier harvesting

As result – next 90 ha also irrigated by SDI





# ADVANTAGES OF SDI, EXAMPLE

## Tomatoes Izmir, Turkey.

- Yield 148 tn\ha vs 112 on DI.

## Tomatoes 220 ha Agrofusion, Ukraine.

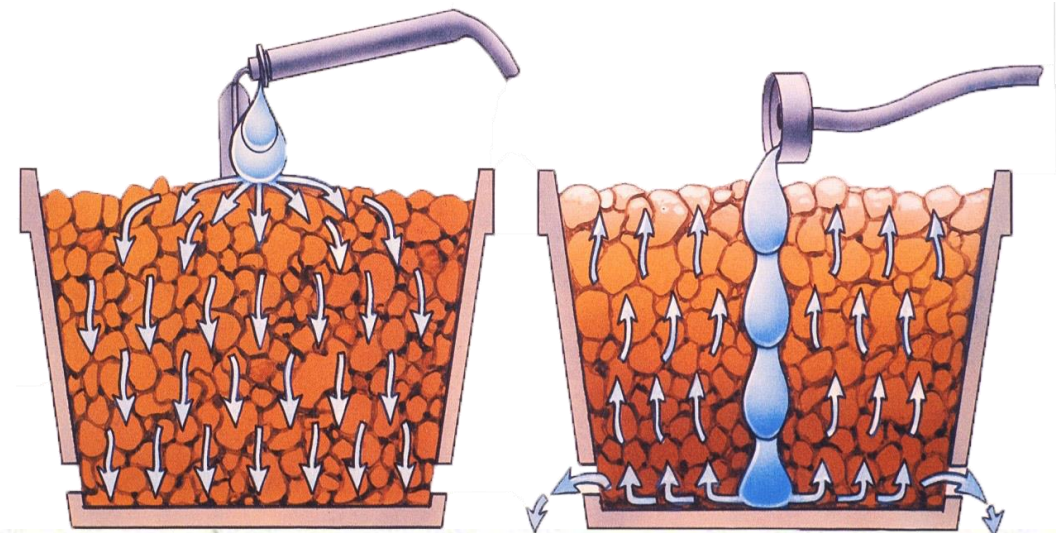
- Less disease pressure.
- Easier harvesting





# Ecological benefits of SDI and Puls irrigation

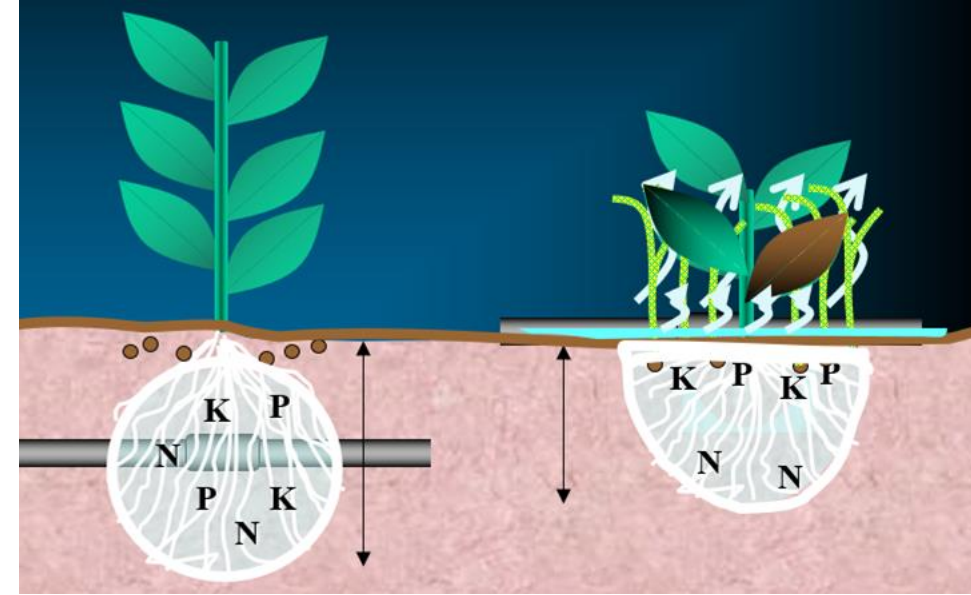
- 1) Less evaporation – fewer diseases, lower fungicide application
- 2) Dry soil – lower herbicide use
- 3) 30% and more reduction in the use of water – the most valuable resource!
- 4) Less gravity water – less nitrates in the ground water. Around 50% reduction in the use of nitrogen fertilizers
- 5) In the Puls irrigation – almost zero washing out of nitrates and chemicals
- 6) Higher quality of the produce – lower waste
- 7) Less water pumping, less electricity or diesel used – lower air pollution and carbon footprint





# ADVANTAGES OF SDI

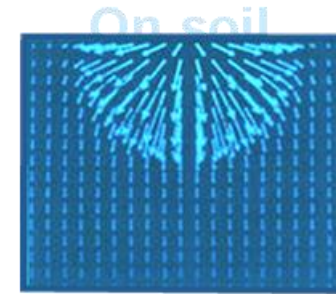
- ✓ Water saving up to 30%
- ✓ Fertilizers are placed directly to the root zone, saving up to 20%
- ✓ Yield increase up to 30%
- ✓ Quality of produce is higher
- ✓ Disease pressure much lower
- ✓ Weed pressure less
- ✓ Minimum impact of external factors: solar radiation, damage by birds and animals
- ✓ Less maintenance costs (up to 60%)
- ✓ Wastewater reuse





# ADVANTAGES OF SDI

- ✓ Same amount of water make 46% more of wetting of soil
- ✓ Root development much better
- ✓ Soil aeration much better
- ✓ Better efficacy of melioarative injections





# Week points of SDI or why it not always work propelly

The high cost of a mistake:

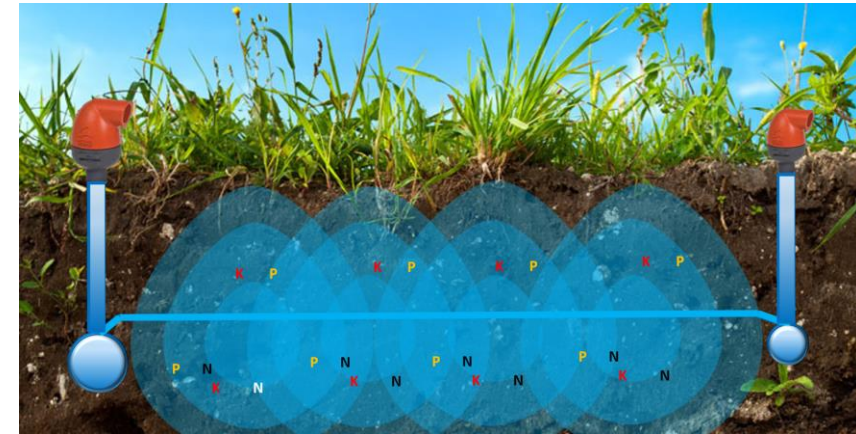
- Careful study of the source data
- A deeper approach to system design
- Attention to every detail
- Careful selection of proven equipment
- Integration with all agronomical issues, like crop rotation, soil tillage, fertigation





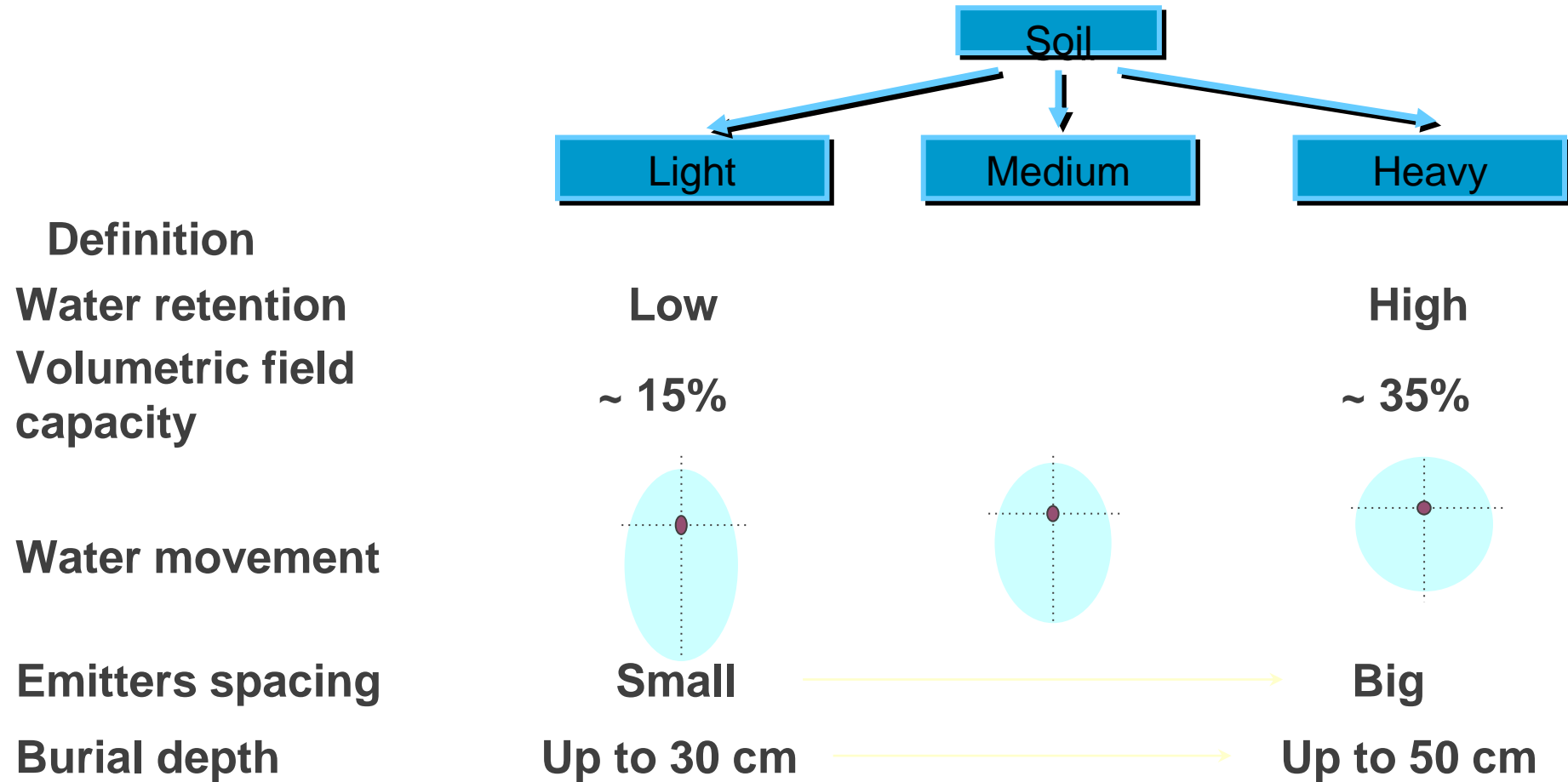
# A deeper approach to system design means

- ✓ Granulometric analysis of the soil
- ✓ Distance between rows of the crop
- ✓ Field topography
- ✓ Water source analysis
- ✓ Crop rotation



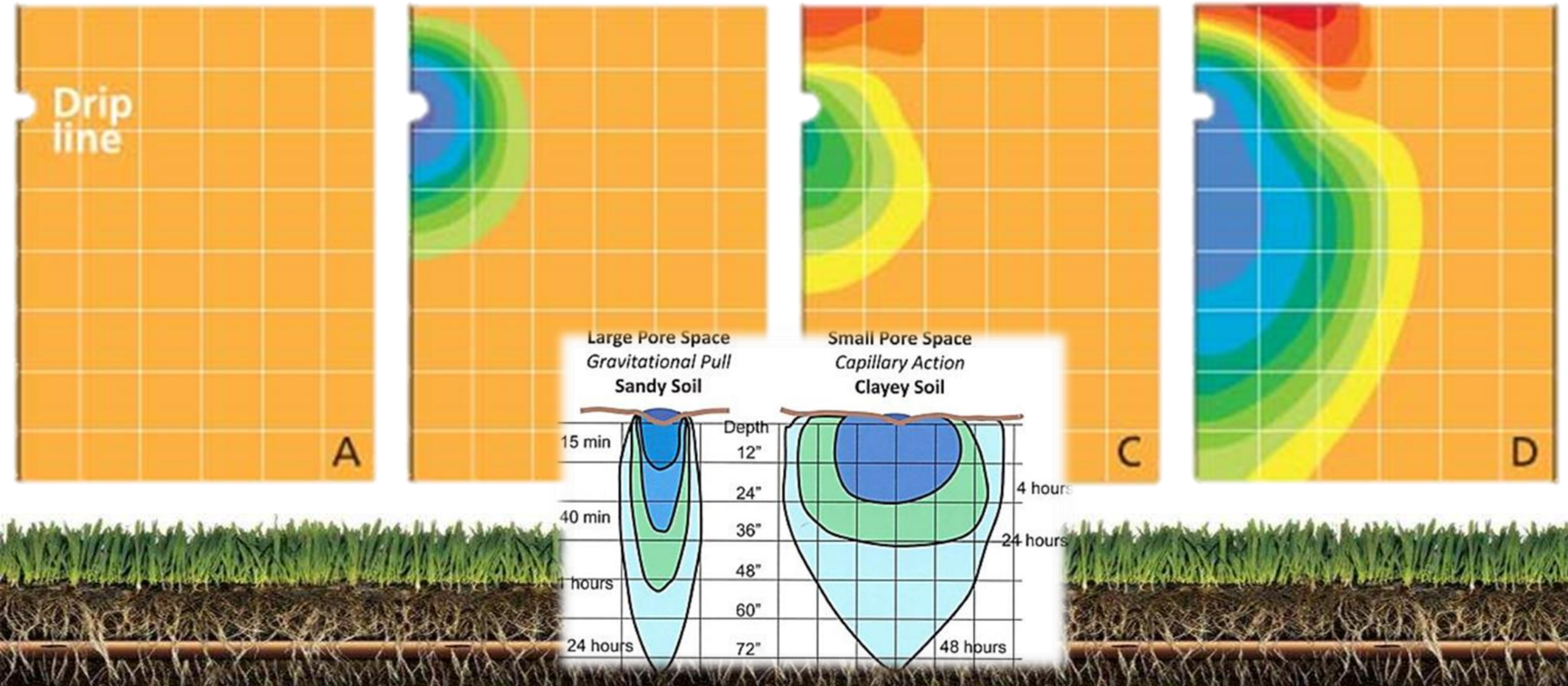


# Specific of SDI





# Specific of SDI





# Specific of SDI

For the prevention of root intrusion should be used Rootguard technology or low volume injections of herbicides





# Specific of SDI

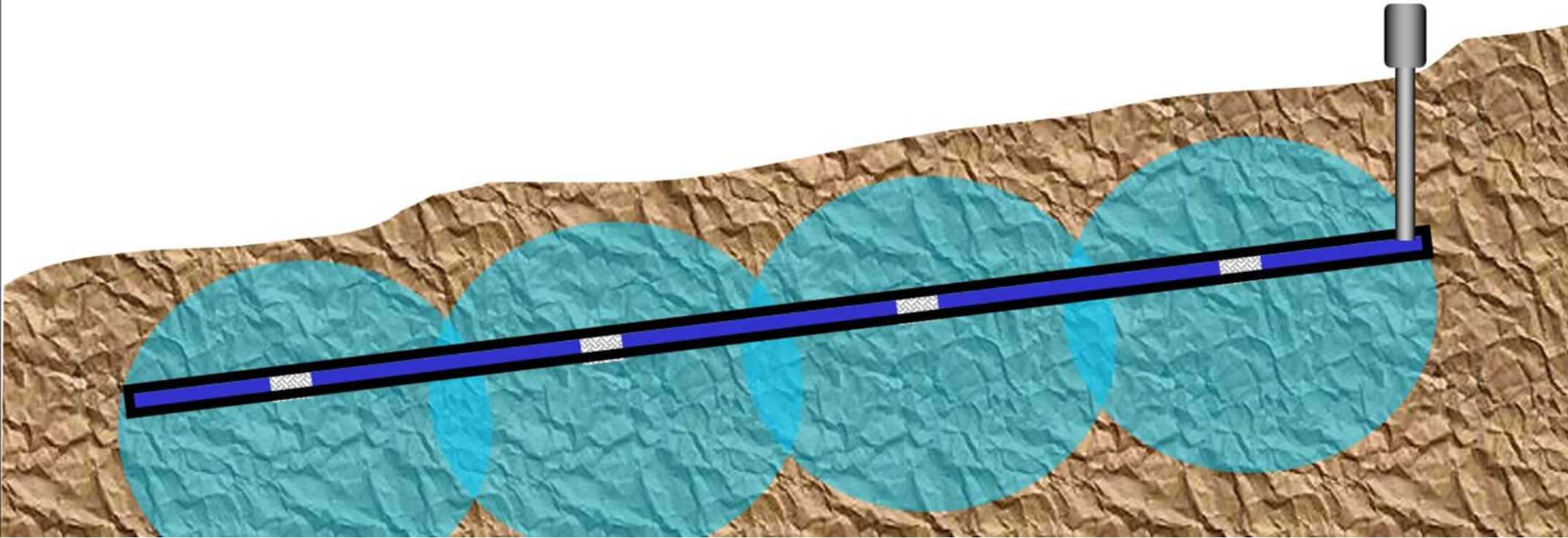
## Emitter with antisiphon features





# Specific of SDI

Installation of vacuum-air relief valves in high places





**Thank you for attantion!**