

HELPING FARMERS GROW MORE WITH LESS

**Latest trends in sustainable water management,
a key priority in the future of global agriculture**

SAI Platform Conference 24th April 2017, Kempinski hotel, Beijing

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AGENDA

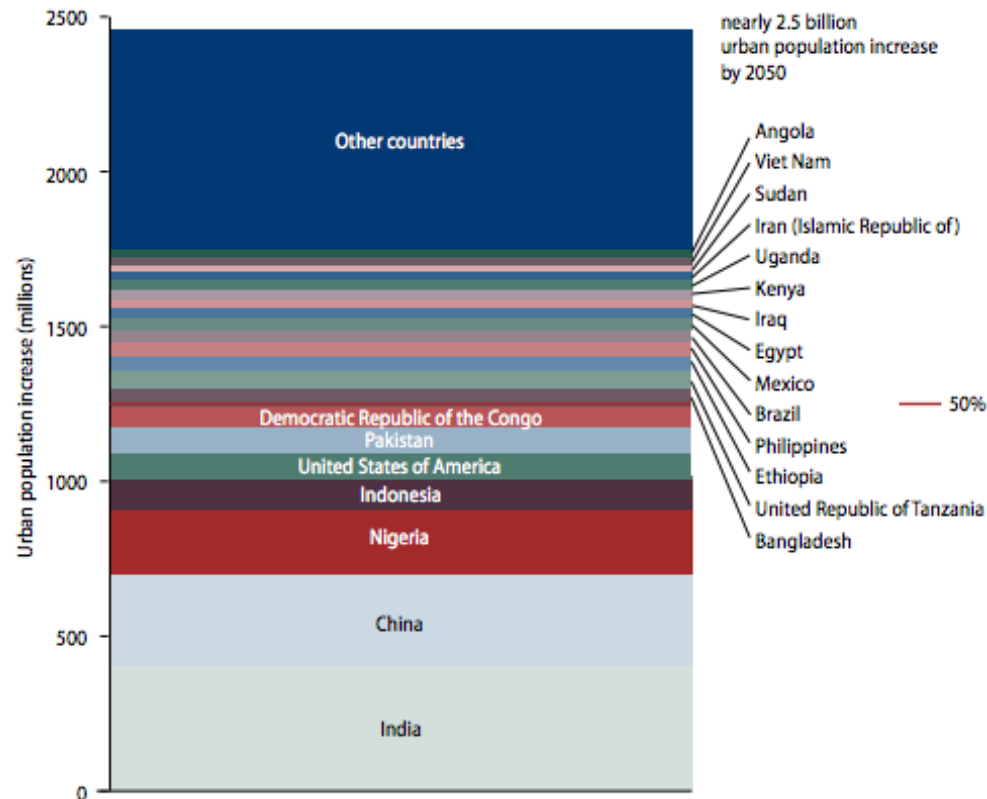
- **Global Challenges: Urbanization, Water & Food**
- About Netafim
- Technology & Innovation: Drip Irrigation
- Possible Future Solutions – From our R&D
- Best Practice: Sugarcane
- Summary



FEEDING THE WORLD'S RAPIDLY GROWING URBAN POPULATION

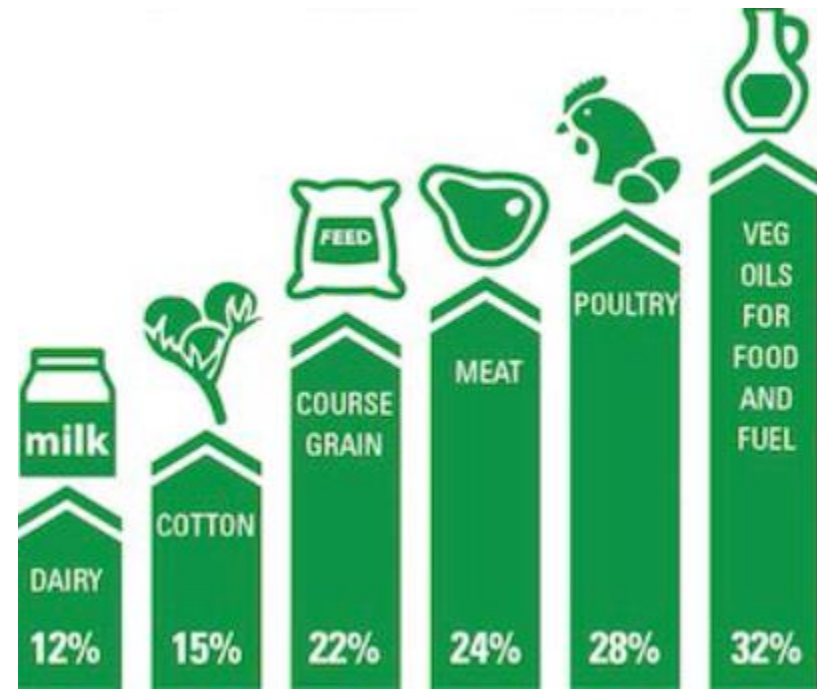
DISTRIBUTION OF URBAN POPULATIONS BY COUNTRY: 2014-2050

- Urban population growth will be concentrated in a handful of countries
- By 2025, China, India, and Nigeria are expected to account for 37% of the estimated 2.5 billion people living in urban settlements
- Urban areas in India are expected to grow by 404 million people, by 292 million people in China, and by 212 million people in Nigeria.



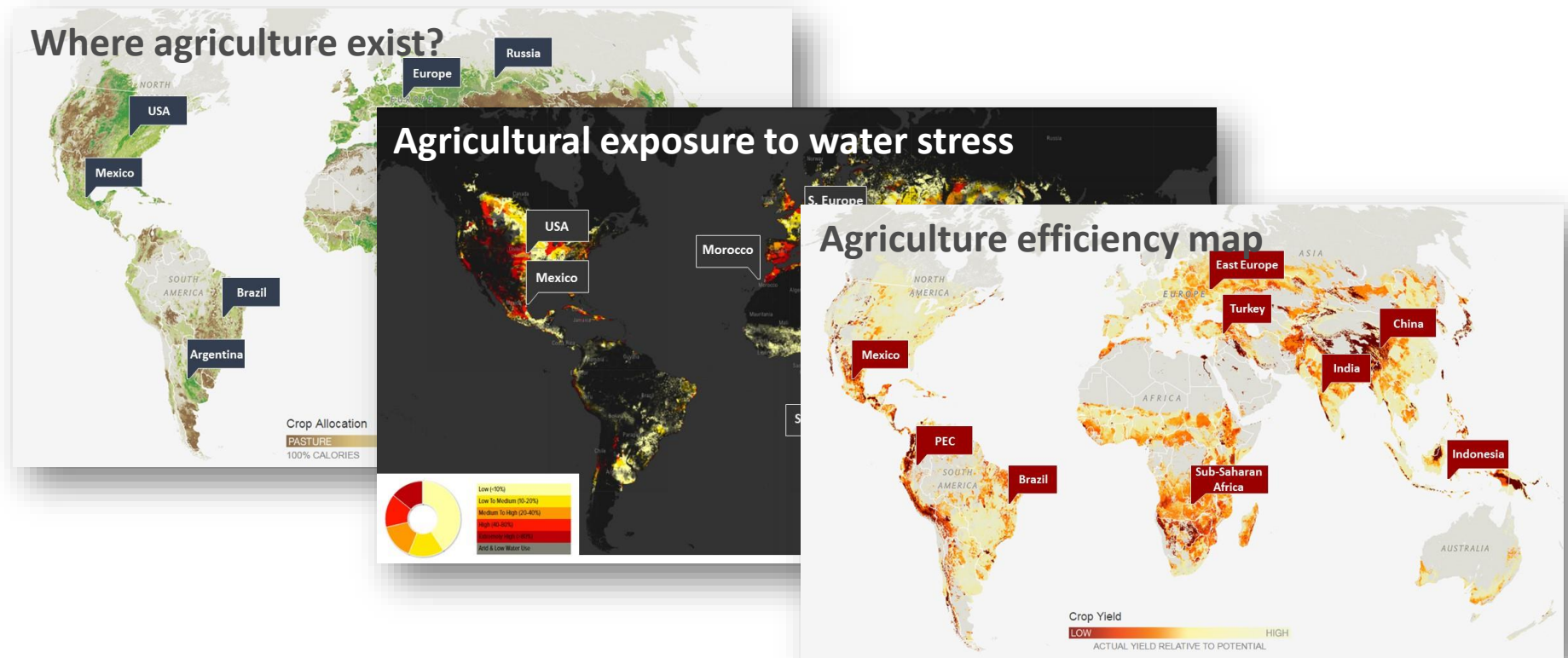
FOOD DEMAND IN DEVELOPING COUNTRIES: 2013-2022

- There is a positive correlation between income wealth and changing diets
- In China alone, food demand for animal protein is expected to increase by 37% for meat, 44% for eggs, and 55% for milk
- Many of these developing countries, including China, are not expected to meet this growing food, **feed**, fiber, and fuel demand through domestic production



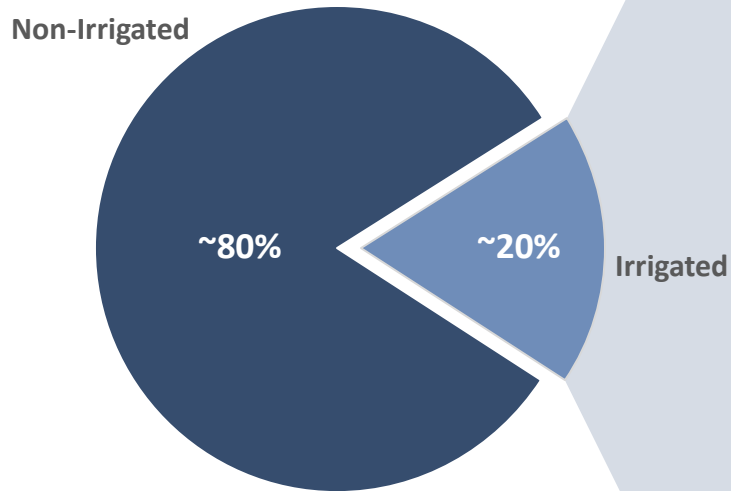
INNOVATION AND TECHNOLOGIES ARE REQUIRED TO FEED THE FAST-GROWING URBAN POPULATION

Analyzing the need for smart irrigation:

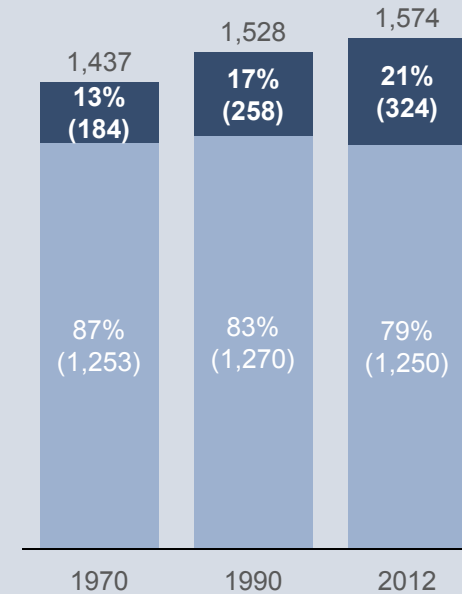


Only 20% of the arable land is irrigated, mostly inefficiently

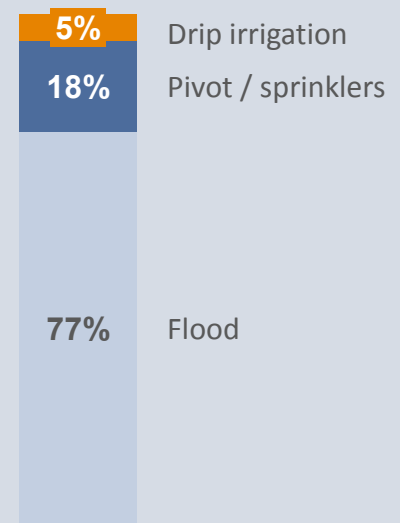
Only about 20% of the global arable land is irrigated



Area equipped for Irrigation out of total arable land (M Ha)



Estimated irrigated area by type (%)



■ Area equipped for irrigation
■ Area not equipped for irrigation

Note:

Out of the total area equipped for irrigation only ~85% is actually irrigated

Only 21% of the total cultivated land has infrastructure for irrigation
Actual irrigated area is mostly inefficient and using flood/surface irrigation

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NETAFIM – 50+ YEARS OF SHAPING THE FUTURE OF AGRICULTURE

Founded in 1965 by Farmers for Farmers

In the desert area of kibbutz Hatzerim, which suffered from a severe lack of water, introducing Drip Irrigation to the world



The Largest Irrigation Company in the world

Leading the Drip Irrigation revolution,
Offering end-to-end smart irrigation
solutions

Netafim in China

- General Manager: David Zeng
- About 150 employees, including Ningxia factory employees.
- Main office in Shanghai, Beijing and Guangzhou with region-based service teams
- Four regional sales managers:
 - Northeast Region
 - Northwest
 - Southwest China
 - Southern China
- Plant in Yinchuan, Ningxia province



Netafim in China



NX Baofeng Gouqi berry, 867 ha (NW)



BJ Vegetable, 45 ha. (East)



SX Taibai Strawberry 66 ha. (NW)



SX Haisheng Apple, 2667 ha. (NW)



SD Bulagu Vineyard, 38 ha. (East)



IM potato, 667 ha. (NW)

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DRIP IRRIGATION

IRRIGATE THE PLANT, NOT THE SOIL

- Optimizes moisture and aeration conditions
- Ensures precise quantities of water and nutrients directly to root zone
- Reduces release of gases to atmosphere due to imprecise fertilizer usage
- Increases yields and enhances productivity per unit of soil and water
- Modular design fits smallholder plots
- NUTRIGATION™



THE COMPETING TECHNOLOGY: FLOOD IRRIGATION

- Water source depletion and contamination, excessive use of chemicals
- Greenhouse gases emitted to the environment, thereby boosting a warming trend



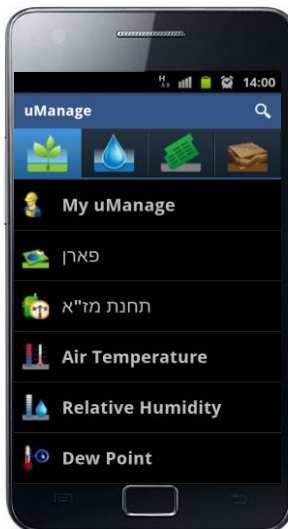
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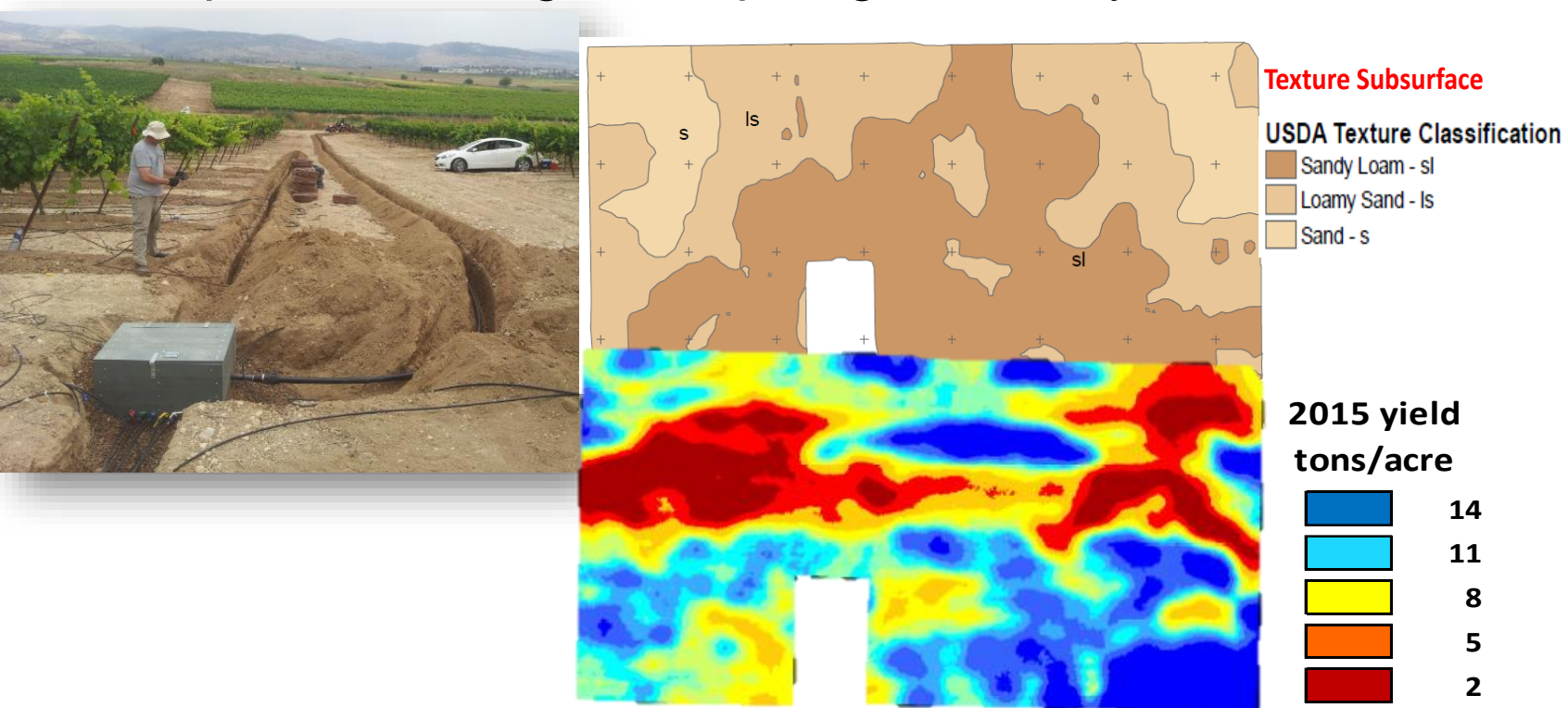
FROM OUR R&D WORKTABLE

- VRDI (variable rate drip irrigation)
- CMT (Crop Management Technology)
- SDI (Subsurface Drip Irrigation) in rice and more
- Reuse of wastewater in drip irrigation, including application of dairy manure via SDI in California



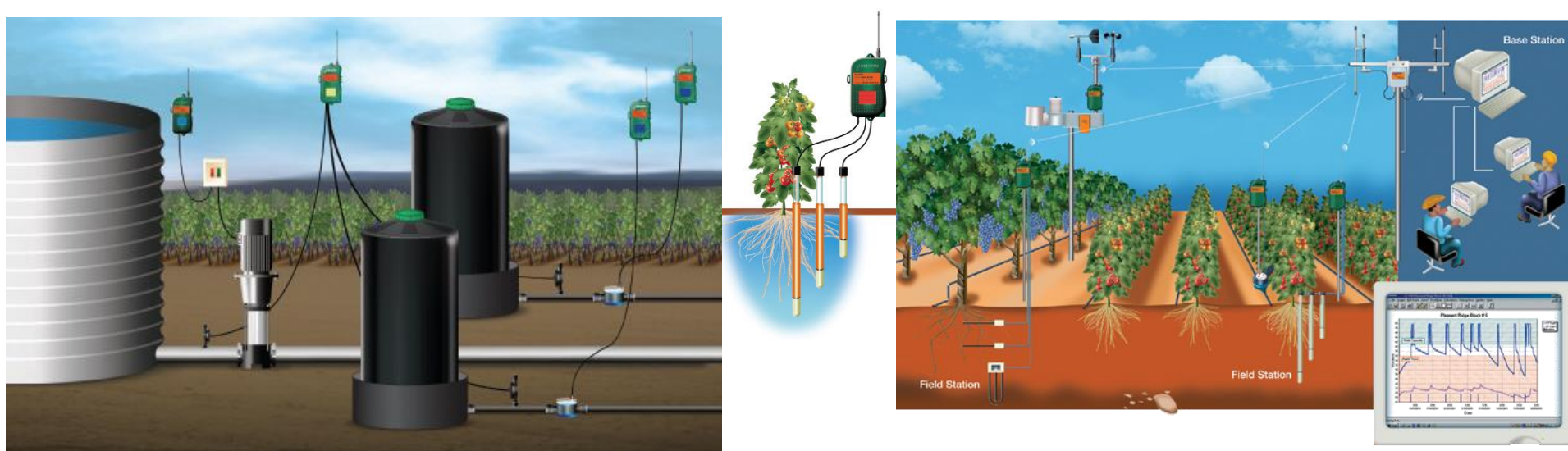
VRDI (VARIABLE RATE DRIP IRRIGATION)

- Gallo Winery of California and Netafim are collaborating in the development of this new technology
- Farming Irregular fields results in uneven yields. Some areas get lower yields
- Using VRDI, backed with remote monitoring, satellites and drones, results in reducing irregularity, increasing yield by 17% (in wine grapes) and reducing water consumption by 20%, compared with regular drip irrigated vineyards.

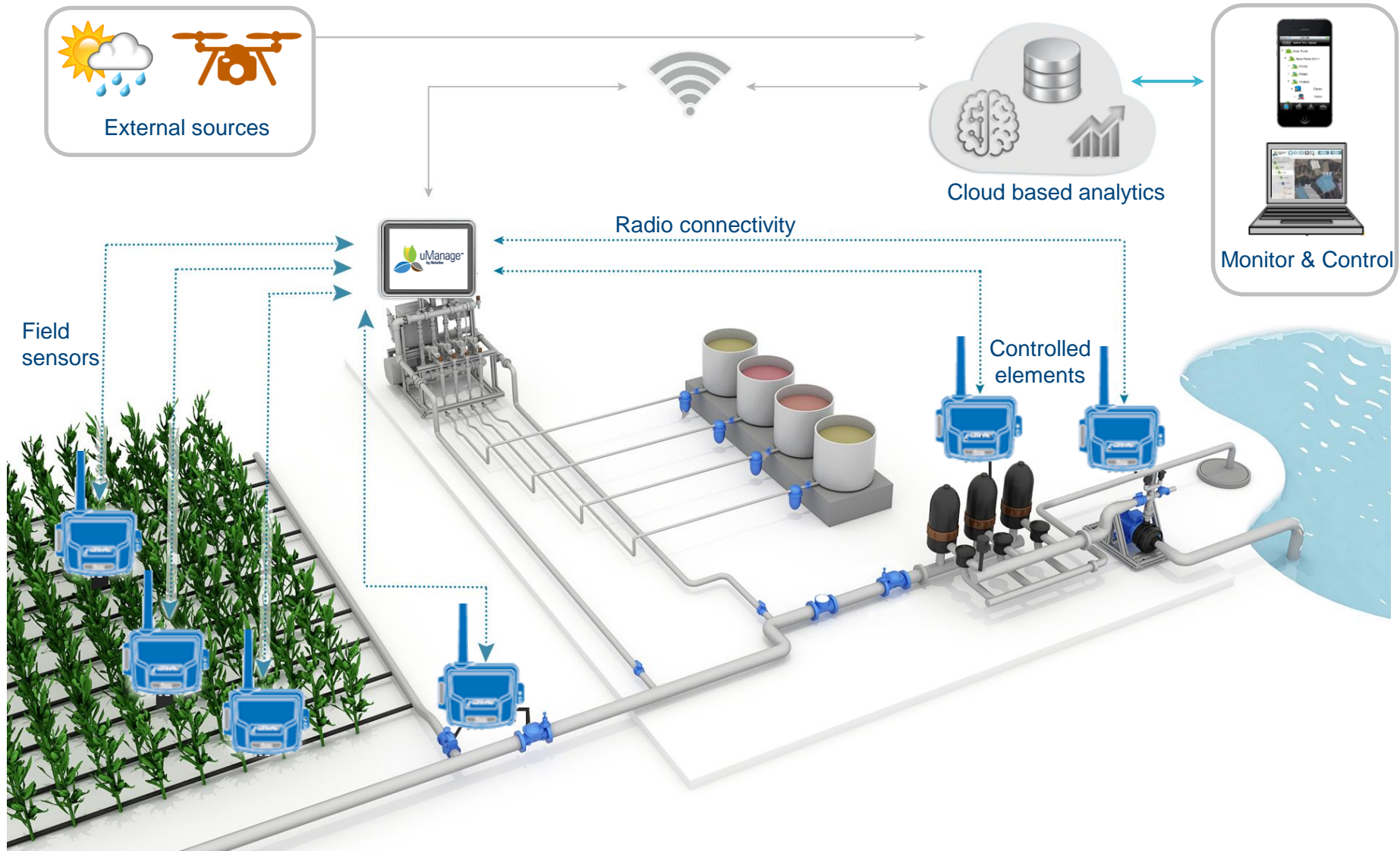


CMT (CROP MANAGEMENT TECHNOLOGY)

- A computerized decision support system for improved crop management.
- Enables the grower to track production from planting time to arrival on the supermarket shelf
- Integration of intelligent planning, managerial and maintenance practices to reach the best irrigation and fertigation processes
- Valuable, real-time field data result in solutions that benefit farmers, letting them better control and manage their crops
- A platform for management, water savings and increased yields



AUTOMATED IRRIGATION SYSTEM ON DEMAND



SDI (SUBSURFACE DRIP IRRIGATION) IN RICE (And other commodity crops...)

- Rice is the last frontier explored with drip irrigation
- Since 2005 we study the application of SDI on rice
- We see economical, agronomical, technical, environmental and health implications
- We currently experiment with the following topics: Suitability of varieties to SDI, plant population, Water quantities and irrigation scheduling, Nutrigation, Weed and nematode control and more

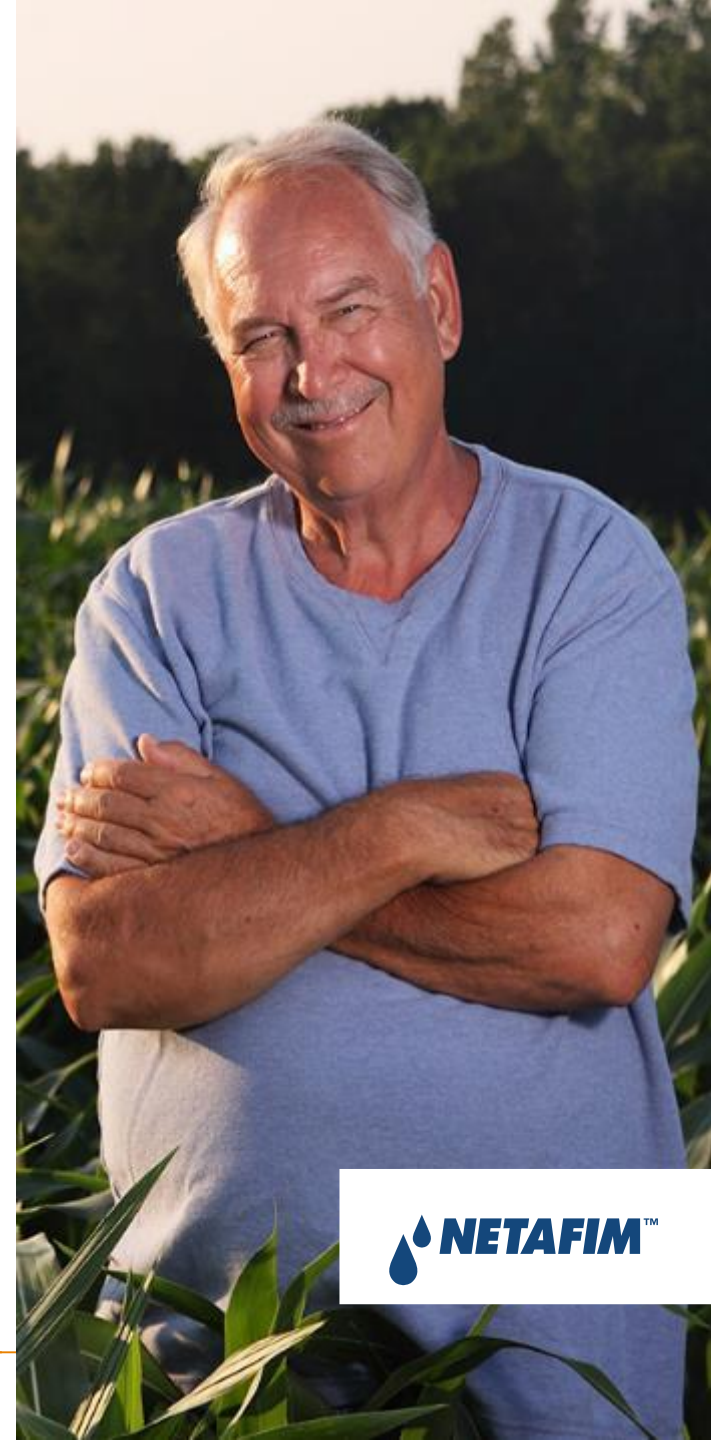


REUSE OF WASTEWATER IN DRIP IRRIGATION, INCLUDING APPLICATION OF DAIRY MANURE VIA SDI IN CALIFORNIA

- California's nearly 2 million dairy cows produce 65 billion pounds of waste each year
- The nitrates in manure can pollute water sources and pose a serious threat to water quality and the health of millions of Californians
- We developed product specifications for the successful implementation of subsurface drip irrigation (SDI) in dairy effluent applications, to irrigate feed corn on the dairy farm, creating management protocols for controlled blending of fresh and effluent water at balanced rates
- This application prevents millions of pounds of manure from polluting water sources, increases water use efficiency to address drought

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DRIP IRRIGATION AND SUGARCANE

- Over 30 years we are constantly developing drip irrigation solutions for sugarcane
- We have more than 400,000 ha of sugarcane irrigated by us
- The switch from the traditional furrow irrigation to drip has increased water efficiency by more than 50%
- Drip allowed working in complicated climates and with harsh water, and has turned desert land into green, productive fields



AGROVALE BRAZIL — INCREASING YIELDS AND WATER PRODUCTIVITY

Project Passport

- Implementation Date: 2007
- Region/Country: Bahia, N.E. Brazil (Sao Francisco Valley)
- Total Growing Area: 16,000ha (3,080ha drip irrigated)
- Current Irrigation System: Subsurface drip irrigation (SDI)
- Other Deployed Irrigation Methods: Furrow, Center Pivot (CP)

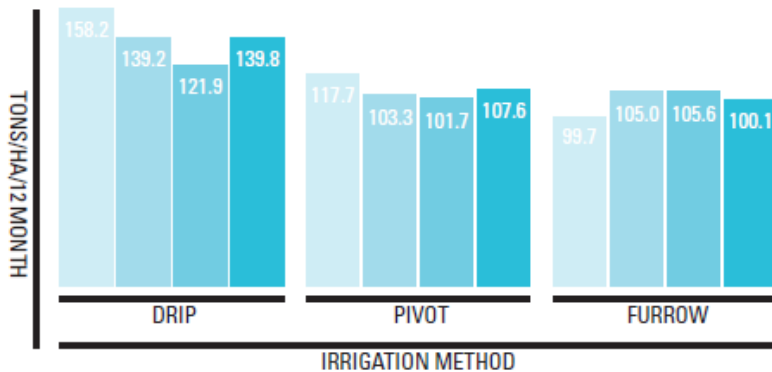


Why Drip?

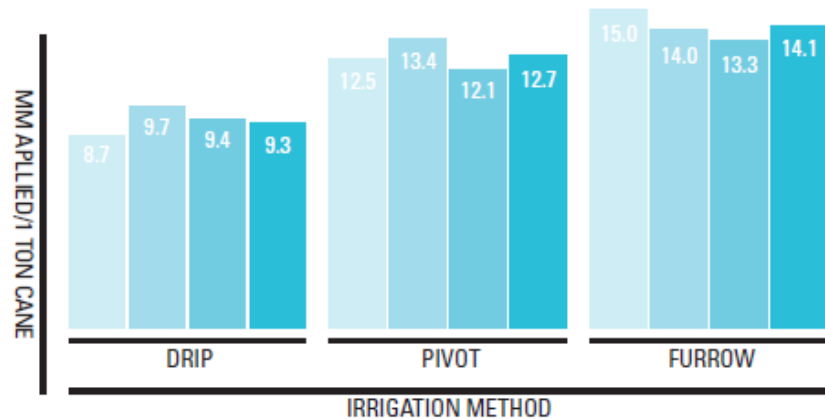
- Increase water use efficiency- More ton of sugar per m³ water

AGROVALE BRAZIL – INCREASING YIELDS AND WATER PRODUCTIVITY

Yield by Irrigation Method



Water Productivity by Irrigation Method




PLANTING
YEAR 1
YEAR 2
AVERAGE

Drip increased yield compared to furrow by 39%

Water productivity:

- Drip: 93m³ per ton of cane
- Furrow: 141m³ per ton of cane

IT DOESN'T MATTER HOW YOU LOOK AT IT. DRIP MAKES SENSE



Use less
water to
produce the
same
amount of
calories

Use the
same
amount of
water to
produce
more calories

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SUMMARY

- Climate Smart Agriculture is a must, if we want to feed the world's rapidly growing population, mainly the growing urban population
- Innovation and new technologies are needed. In agriculture in general, and in water management in particular
- Drip irrigation increases the effectiveness of water utilization in agriculture
- Drip irrigation touches most of the SDGs: Eliminating poverty and hunger, combating the negative effects of climate change, investing in women and girls, improving health, wellbeing and education, ensuring availability of clean water and sanitation and delivering inclusive economic growth.



A close-up photograph of a person's hands planting a small green seedling into the soil. The person is wearing a green long-sleeved shirt. The soil is dark brown and rich. A black drip irrigation line runs horizontally across the foreground. The background is a blurred field of similar soil.

THANK YOU