

Timed Flooding Yields Significant Gains in Rice Farming





Leif Chastaine

COO & Co-founder,
WaterBit



Greg Van Dyke

President, RGA Rice
Owner, Kanpeki Rice





How precision technology and real-time data drive true sustainability in rice production



Introducing Kanpeki Rice



Fifth-generation farmer
and Californian



Farm in the heart of the
South Sacramento Valley



Conservation and sustainability
are our core principles

What Makes Kanpeki Rice Different?

Unique cultural practices and precision technology.



Kanpeki's Unique Cultural Practices

Kanpeki Uses Dry Seeding aka Alternate Wetting and Drying

- Traditional rice productions involves flooding the field just before applying seed aerially. Rice remains in a flooded environment until just before harvest.
 - Used in 95% of California Rice
- Dry seeding involves aerially applying seed to a field that has not been pre-germinated with water. Then, water is managed using Alternate Wetting and Drying (AWD), also called Dry Seeded rice farming.
 - AWD sends various flushes of water throughout a rice field in a timed manner - “timed flooding” - rather than having persistent water on the crop.





Crop Benefits of Dry Farming & Timed Flooding

- Improved physiology of the rice when the plant isn't always in moisture. The semi-aquatic environment allows the **root zone to get bigger and healthier**.
- **Lower risk of pathogens** like fungi and stem rot.
- **Huge increases in yield to water efficiencies**.
- The semi-aquatic environment **restricts the growth of weeds** during the drying times.
- Only need to apply a soil-activated **herbicide once** during the season that never comes in contact with the crop, which **eliminates the risk of herbicide residue**.

Global Environmental Benefits of Dry Farming



15-25%
water savings



Reduced
herbicide use



Integrated environmental
management



Precision Ag Makes Dry-Farming Possible

- Real-time soil monitoring allows for informed irrigation decisions
- Can pinpoint when to bring floods in or flushes across for saturation
- Integrate the data with other precision technologies & geo-farming practices with generational knowledge



Introducing WaterBit

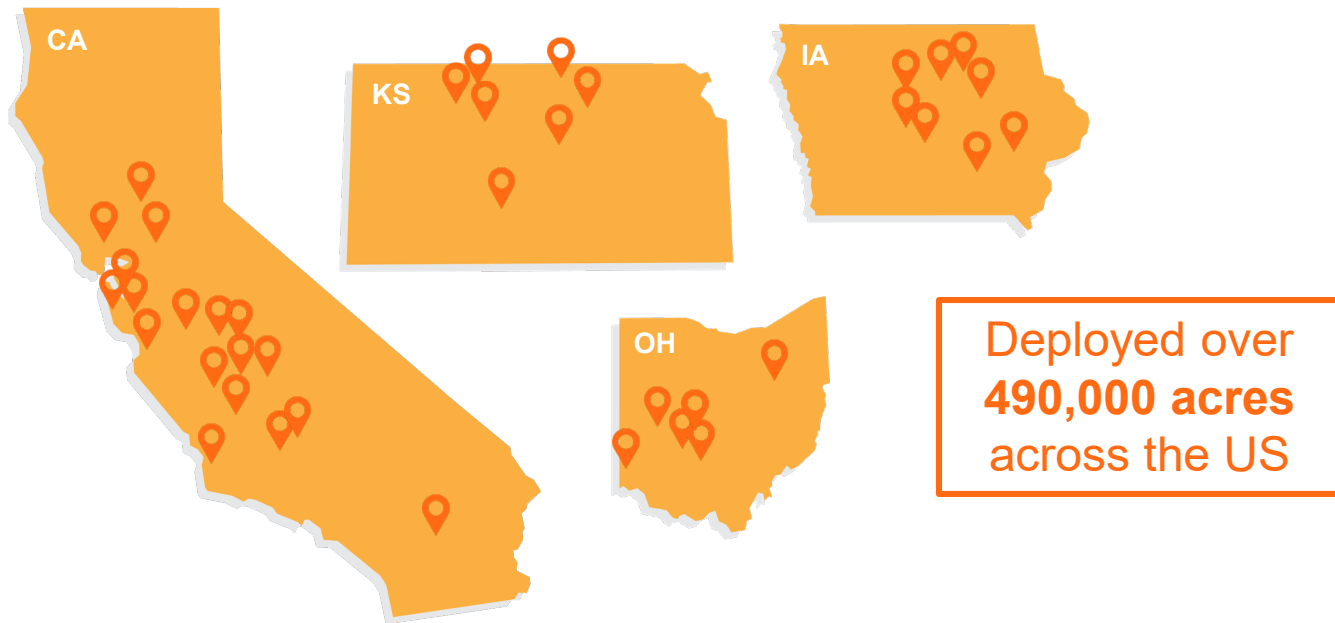


- Precision irrigation solution
- Founded in 2015
- 40 employees
- Offices: San Jose, Salinas, Fresno
- Moving beyond simple valve automation to precision irrigation
- Products designed & assembled in USA
- \$11.4M Series A in June 2018





Where is WaterBit Currently Deployed?



Installed and working in: Grapes | Tree Nuts | Rice | Leafy Greens | Cotton | Corn



Growers face a host of issues



WaterBit provides the solution

- Crop Quality and Yield
- Water Management
 - Irrigation planning & execution
 - Leak detection
 - Verification of plan
- Labor Cost Management
- Automation





Automated Irrigation Benefits

Achieve optimum quality and yield with less labor and water



AGRONOMIC

- Prevent over and under-watering
- Reduce crop disease
- Confirm water delivery as planned
- Automate irrigation tasks



FINANCIAL

- Improve crop yield and quality
- Realize water savings via optimal water delivery
- Save labor costs
- Reduce fuel use



ENVIRONMENTAL

- Reduce soil erosion and nitrate leaching
- Save water
- Comply with reporting regulations
- Reduce emissions and carbon footprint

Precision Irrigation Benefits



Application Areas

Water Supply
Monitoring & Control

Farm & Control

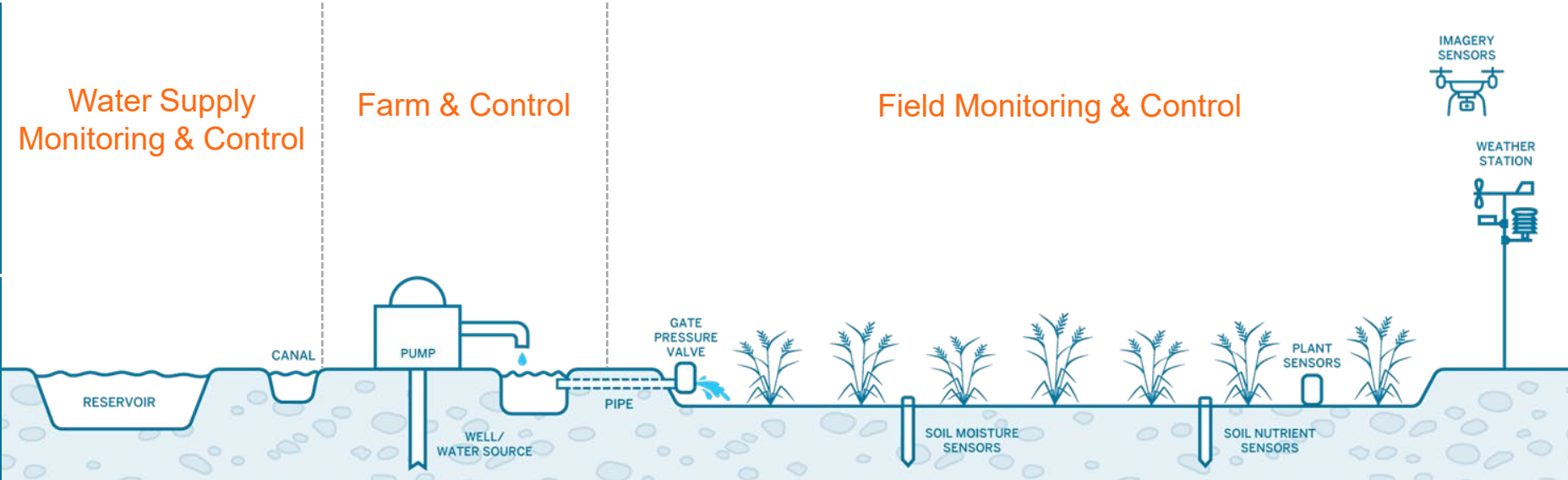
Field Monitoring & Control



WEATHER
STATION



Ag. Infrastructure



Business Benefit

CHEMICAL/FERTILIZER OPTIMIZATION

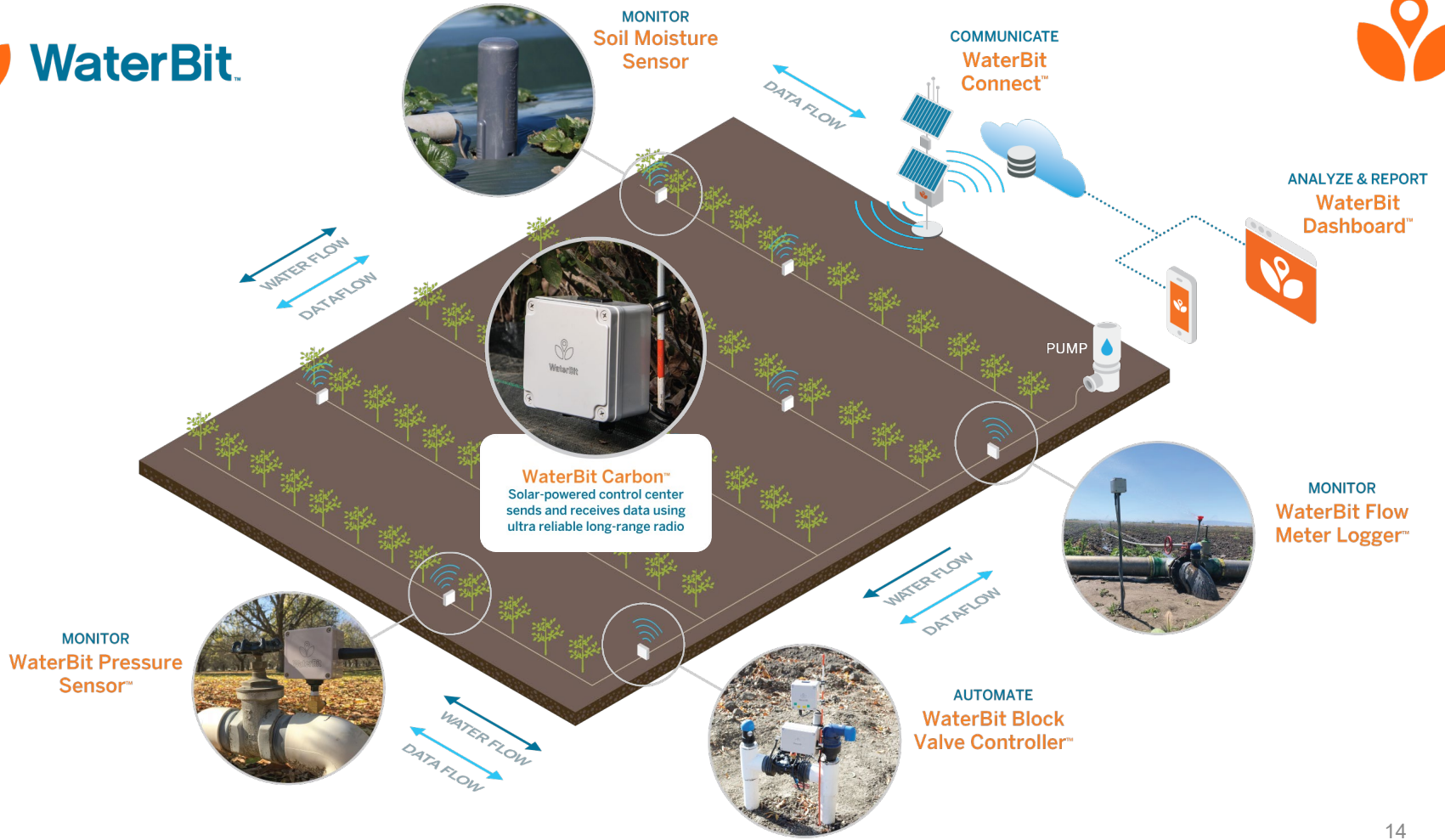
LABOR REDUCTION

WATER COST/AVAILABILITY

ENERGY OPTIMIZATION

PLANT HEALTH & YIELD OPTIMIZATION

CARBON & METHANE REDUCTION





WaterBit at Kanpeki Rice

Problems

- Over and under-watering comprises yield and quality, especially in dry-farming
- Invasive weed and pest growth
- Methane gas emissions due to standing water in fields

Solutions

- Low-power, wireless data collection for distributed sensors
- Unobtrusive and stays out of the way of field/harvest operations
- Ability to operate in standing water 24/7
- 30% increase yield to water efficiency gain

Products Used

- WaterBit Carbon™, WaterBit Connect™, WaterBit Dashboard™
- Aquacheck subsurface soil moisture probes





“We can learn more in the next two seasons of applying WaterBit technology around plants response to soil and moisture than we’ve learned in the past 3,000 years since rice has been cultivated.” – Greg Van Dyke

Questions?



Thank You

Leif Chastaine
leif@waterbit.com

Greg Van Dyke
greg@rgarice.com



For more information, visit www.waterbit.com.