- I want to thank you for inviting us here today,

- We are here today to help water users use conservation products/technologies and introduce them to grant or financial assistance opportunities.

WORLDWIDE AG SYSTEMS

SAVING WATER ONE FIELD AT A TIME

Our goal at World Wide AG is to continually find the best water conservation tools and make them available to all water users!

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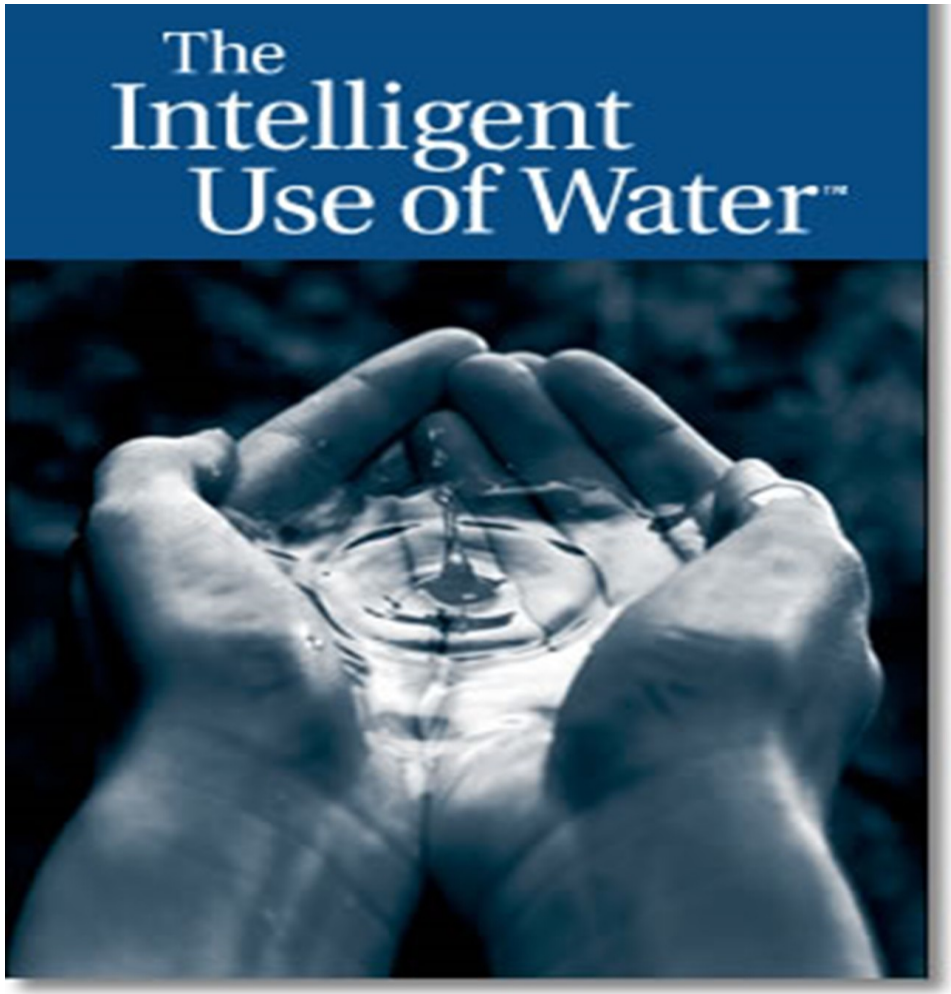
- We at World Wide Ag are not Product reps!

- I started Looking into ag because I was being asked by farmers to help save water.

- I'm not a salesman, but after seeing the need for water conservation in ag I know I have a working knowledge of three types of products that when combined can significantly reduce water and overhead in agriculture

Water Conservation Technology

- Farm Shots
- Moisture Sensors
- Subsurface Drip



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What does FarmShots **do**?

FarmShots analyzes satellite & drone imagery of farms

- FARM SHOTS TECHNOLOGY:

- Gives you the ability to see and react to plant stress two weeks before it is visible on site!

- Stotz Equipment owns the sole rights to farm shots in Idaho.

- We have an established relationship with (Stotz Equipment ”One of the Largest John Deere dealers in Idaho”).

The combination of world wide ag conservation plan and farm shot technology gives us the information we need to write a water prescription for the individual crop.

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Moisture Sensors
Are A Thermostat for Your Field!

- Soil moisture sensors have been used in irrigation for 50 years Product issues
  - Human interaction
  - Current moisture sensors are a probe that is installed after crop is planted and removed before harvest. These systems require human interaction by taking a reading then making human made decision to adjust the water schedule.

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Baseline Soil Moisture Sensors!

- Baseline's soil moisture sensors send a high frequency pulse of electricity down an embedded wire path
  - The high frequency of the pulse causes the sphere of influence of the pulse to move outside the sensor blade and into the soil around it
- When the pulse travels through moisture, it slows down
  - The sensor measures the speed, and then converts this measurement to a moisture content reading

The Reason We Need Soil Moisture Technology!

- Even when the surface of the soil is dry, there may be adequate moisture available in the root zone.

- The Baseline system combined with their soil moisture sensors can eliminate the need for constant monitoring and soil moisture guesswork based on general observations.

- The baseline system automatically takes the reading of the sensors and waters based on moisture level eliminating the human made water decisions

  - We can reliably track changes in soil moisture content at less than 1/10th of a percent
  - Many sensors on the market are ± 2-3 percent
  - Baseline sensors are expected to last 25 years in the soils when used in desert soil temperatures that exceed 100° and in northern environments with freezing conditions.

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Myth "Soil moisture sensors won't work here; we have heavy clay, or we have sand."

They will work in all soil conditions!

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- **Subsurface Drip Tubing Irrigation**
  - Can be difficult to manage because you cannot see the water being applied
  - The surface can be dry even when the root zone is saturated
  - A Baseline soil moisture sensor is the perfect tool for managing subsurface irrigation systems because the sensor is barried in the roots where the water is used.

Biggest issues with most drip installs.

1. Incorrect Filter Sizing.
2. Not matching drip emitters and spacing with soil types and slopes.
3. Water quality.
4. Proper winterization setup.
5. Incorrect selection and sizing of drip tube.

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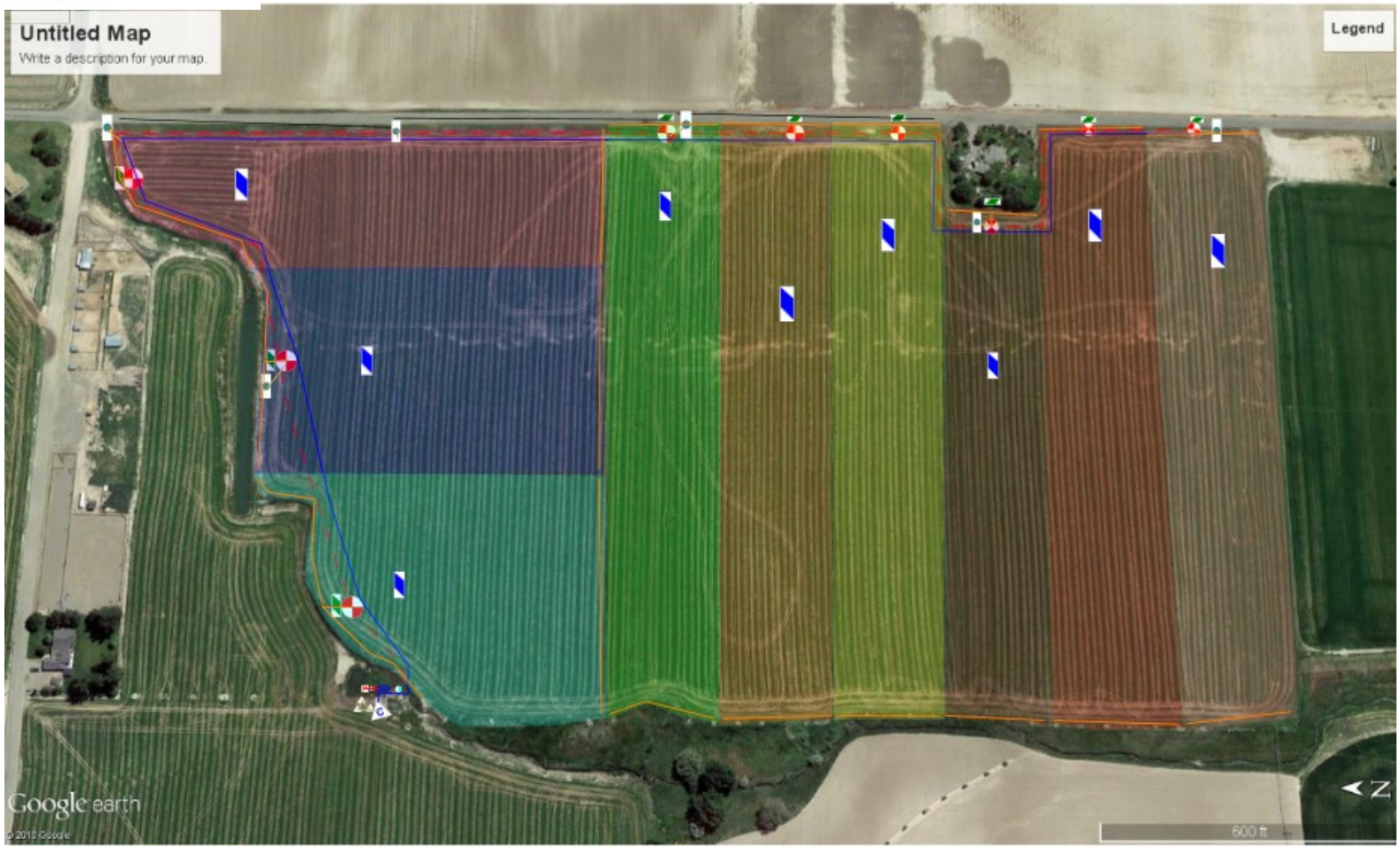
SDI Smart irrigation



Subsurface Benefits

1. Reduces over water use
2. No Staking wheel lines
3. No Labor
4. No Wheel tracks
5. No wind skips
6. Reduces high power pumping costs
7. No evaporation loss
8. No hitting risers or piping when harvesting.
9. Reduces leaching of fertilizers
10. Irrigate ground not reachable by pivot.
11. Drier soil surface minimizing weed growth
12. Eliminates leaf wetness which reduces disease
13. Field access during and after harvesting.

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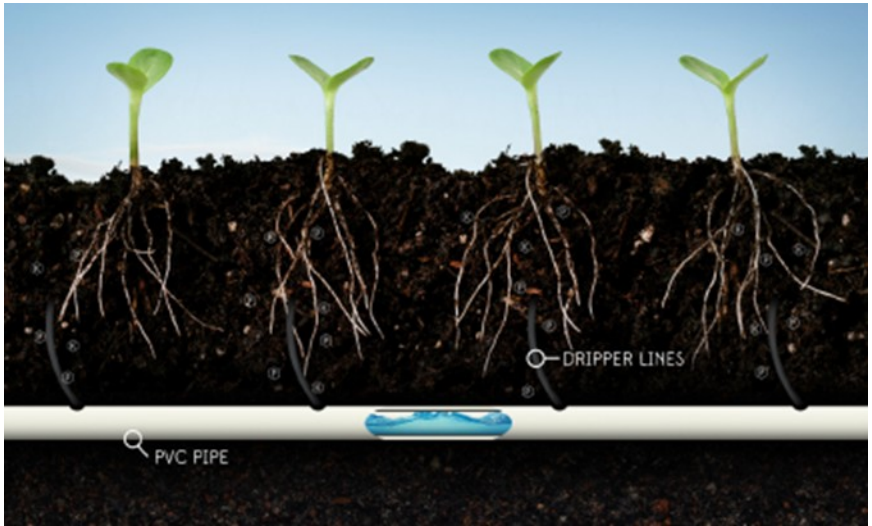
Drip

- Subsurface Drip saves 10%-40%of your water from evaporation and runoff.

- The moisture sensors allow us to know that your water is at the right place at the right time.



- A **subsurface** drip irrigation (SDI) system uses 6” – 24” emitter spacing and a thicker wall 15-45mil) dripline injected 8” – 24” below the surface. These systems are permanent, making design and installation critical to ensure longevity.

- Most Subsurface Drip tubes have some form of ROOTGUARD, which is the commercially available method guaranteed to protect emitters from root intrusion.

Examples around the country

- Subsurface users on average have been able to use 30%-40% less water.
- While maintaining or increasing yields.

Professor Brodsky from Texas A&M

Says drip irrigation can increase efficiency significantly, if the system is designed and managed properly.

- A well-designed and managed subsurface drip irrigation system is the best available option for efficient water use.
- A good drip design includes proper sizing and arrangement of filters, drip tube, valves and plumbing components.
- Installation of drip laterals in uniform, straight rows is critical for ease of management and proper operation over the long term."

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Testimonial from ECO –Drip (They have been installing drip systems in Texas for 30 Years)

- **SDI vs Pivots**
- **Efficiency** – SDI is 25-40% more efficient.
- **Longevity** – SDI has a proven life span of over 25 years and requires very little maintenance when compared to pivots.
- **Environmentally Friendly** – By applying water and nutrients below ground, we have eliminated the possibilities for nutrient runoff and water evaporation.
- **Flexibility** – No matter the size or shape of your field, We can Drip irrigate 100% of it.

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Test Examples

- I have installed subsurface drip at 6”-8” in this State in multiple locations under turf.

- When comparing water use to the same size sqft area irrigated by traditional sprinklers.

- The drip uses 70% less water to keep the grass green.

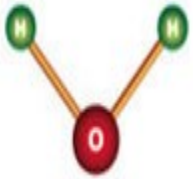
Summary
Combination of Technologies

- By combing these three technologies we are able to see what's happening above the ground to plant 2 weeks before it can be seen with the eye in the field.

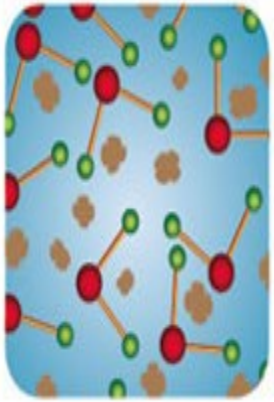
- Then by using that information we make adjustments to the moisture level prescription to keep the correct about of moisture in the root zone with subsurface drip.

Water Quality Issues

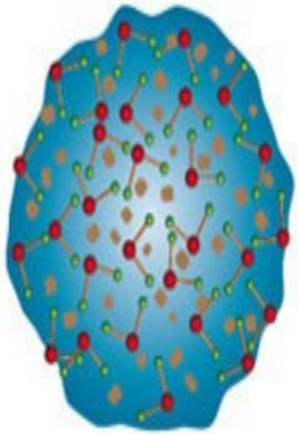
- Maximum H2O makes water extremely productive by making it more bioavailable to the cells of plants.
- Delivering more oxygen and nutrients while reducing scaling, harmful salts, and total dissolved solids.
- The increase in nutrient solubility creates healthier plants.



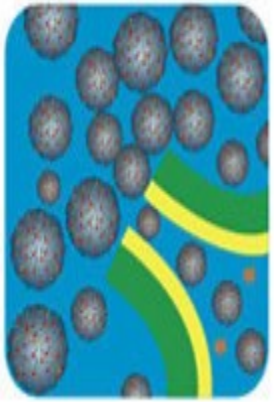
Water molecules



bond together

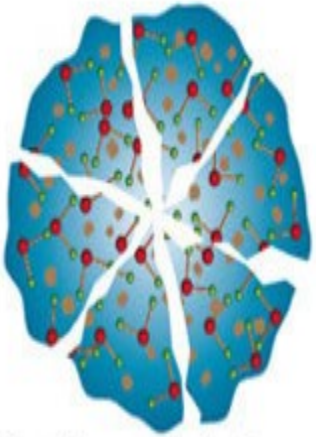


to form water molecule clusters.

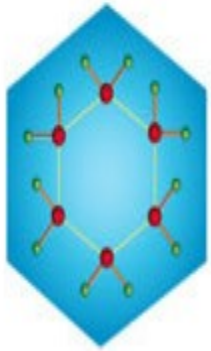


Many are too large to enter the cell.

Omni's Magnetic science



breaks apart clusters



into smaller hexagonal clusters.

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Maximum H_2O

- Increases water absorption and permeation
- Prevents and reverses mineral scale buildup
- Reduces fertilizer, pesticides, & chemical inputs
- Increases nutrient uptake
- Mellows soil and balances pH
- Reduces and eliminates salts

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Efficiency

- When we use smart technology. We take away the human factor. Meaning the human error of overwatering!

Other Water conservation Options

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Pivot Drip Line

Quality's- •

1. REDUCES RUN OFF, COMPACTION AND CRUSTING OF SOIL,AND ELIMINATES WIND DRIFT LOSS.
2. ELIMINATES LEAF BURN, PLANT SHOCK FROM SUDDEN TEMPERATURE CHANGES
3. 10% 20% water reduction

- Issues

1. Drag lines can get in the way during harvesting.
2. Drag lines have to be hung up when running cattle.
3. Still have pivot maintenance.

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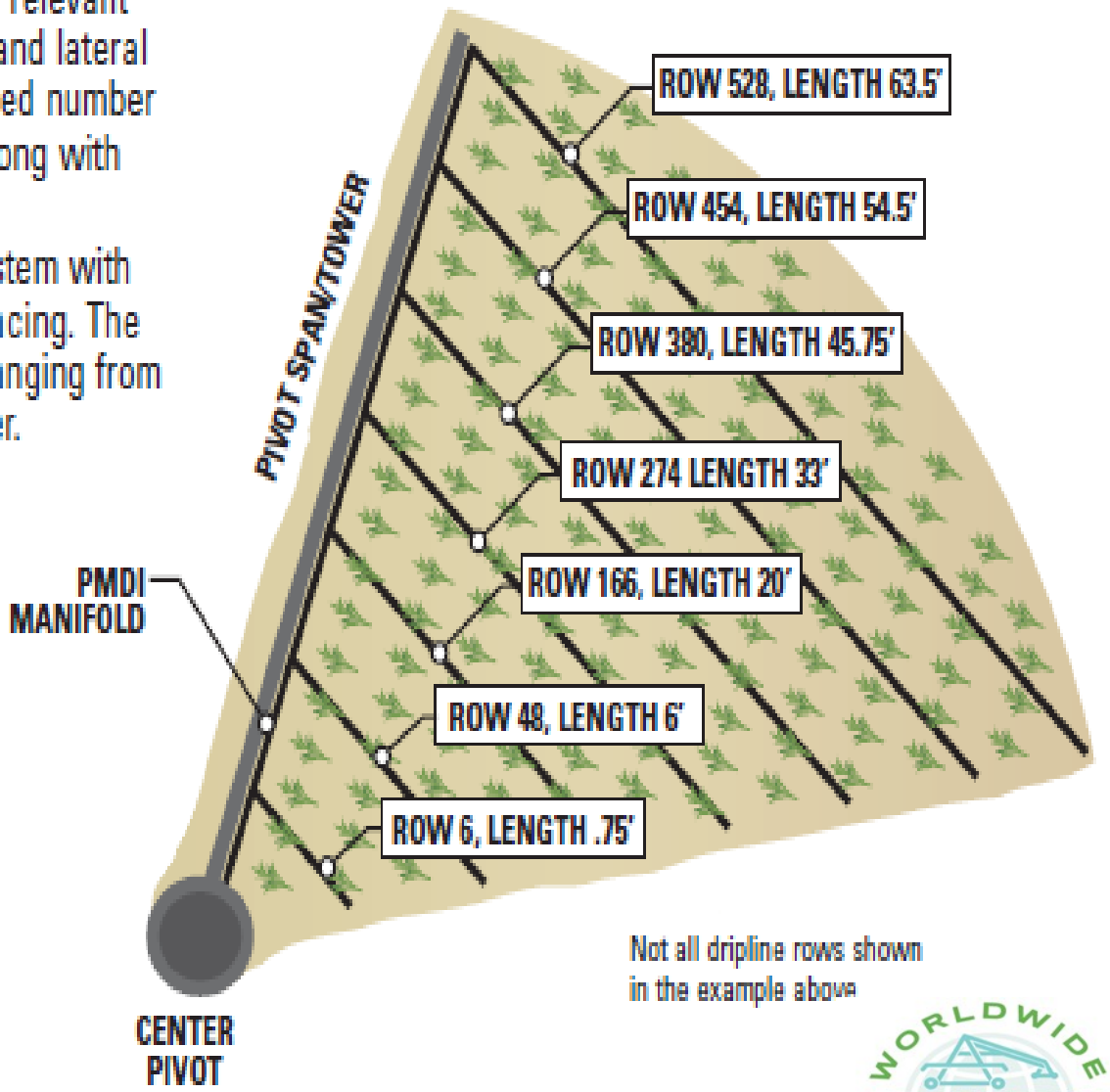
PMDI SYSTEM DESIGN

Our unique Design Calculator makes designing a PMDI system quick and easy. By entering the relevant information such as acres, pivot span/length and lateral spacing, the program will calculate the required number of PMDI manifolds and DripNet PC dripline along with the water usage.

In this example, we are designing a PMDI system with manifolds for a short crop with 30" lateral spacing. The dripline drags behind the pivot with lengths ranging from 1.5' to 63.5' in length based on the row number.

EXAMPLE: SHORT CROP PMDI SYSTEM	
Acres	125
Application/Day	0.25"
Total Gallons per Minute	588
Span/Tower Length	1,320'
Lateral Spacing	30"
Total Number of PMDI Manifolds	7
Total Drip Laterals	528
Total Amount of DripNet PC Dripline	17,000'



Not all dripline rows shown in the example above

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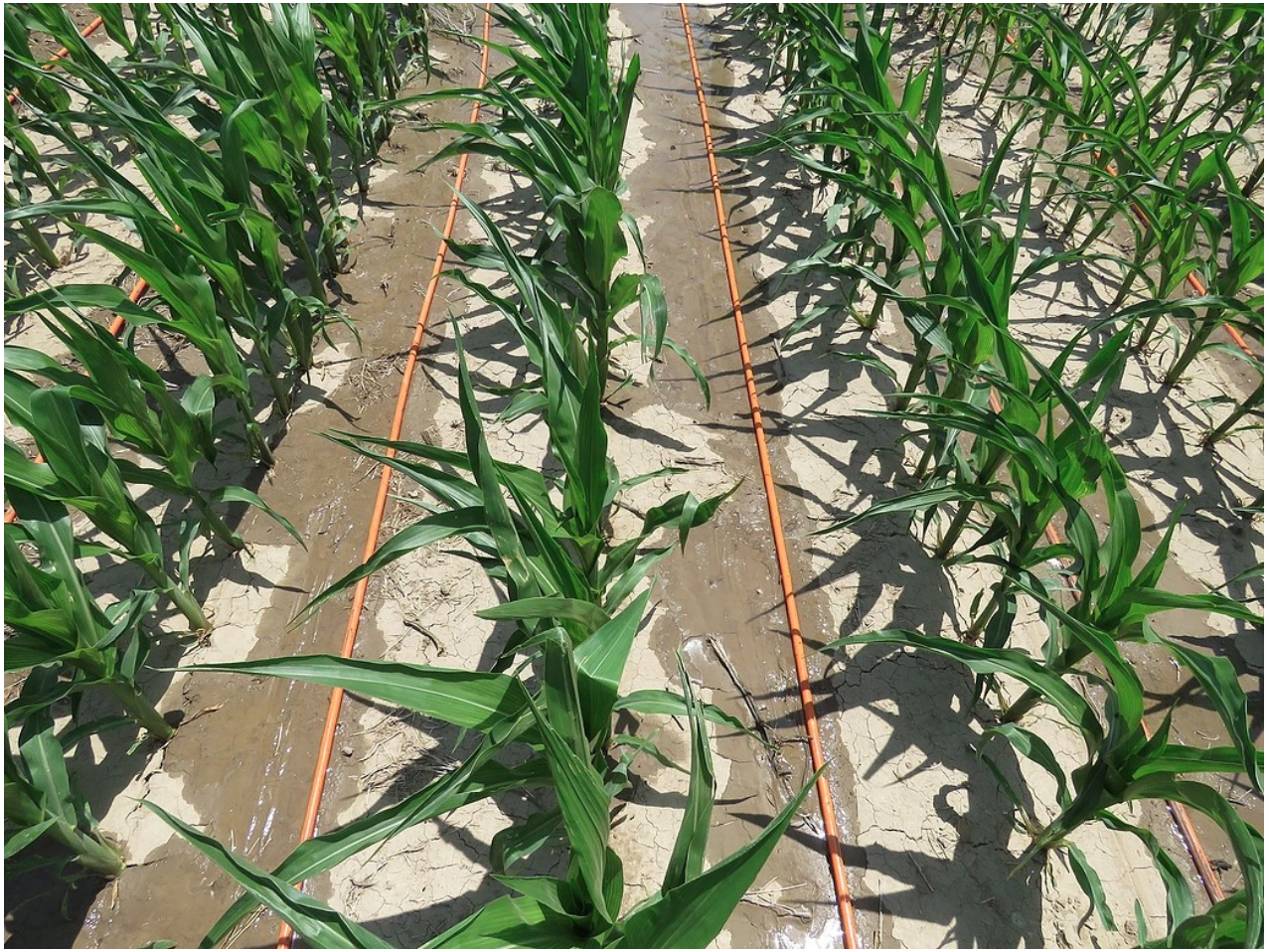
No wheel Tracks

Reduces Evaporation



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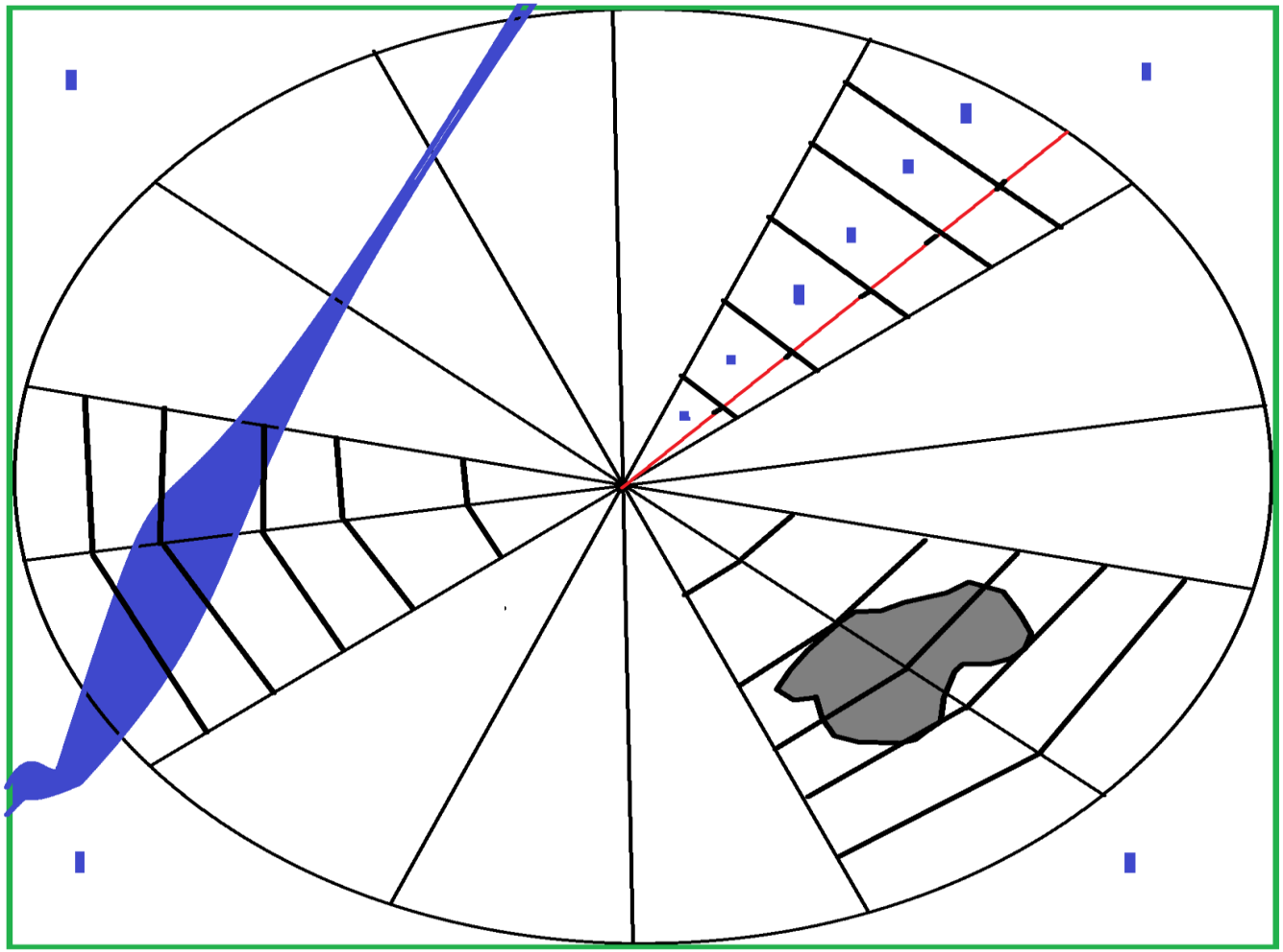
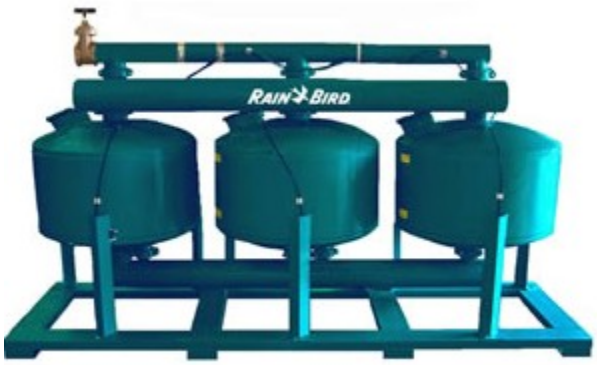
Reverse without Kinking

Pivot Smart Irrigation



Filter Types

- Disc Filters- Good with Organic only
- Sand media- Good with organic and Non organic
- Screen Filters- Good with organic and Non organic



Disc Filters

Sand Media

Screen Filters

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Summary of World wide AG

We at World Wide AG use and combine existing technologies to customize water prescriptions and conserve more water.

- Rough costs :

- Subsurface drip W/ moisture sensors- $1100-$1800/acre
- Pivot corners subsurface W/moisture sensors $1100-$2500 /acre

Standard 7 tower pivots

- Smart Sensor system/with existing pivot: $30,000
- Pivot dragline system with smart sensors system: $55,000

"When the well is dry, we learn the worth of water."

Ben Franklin, Poor Richard's Almanac 1733

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Thank YOU!

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