SOUTHERN IRRIGATION

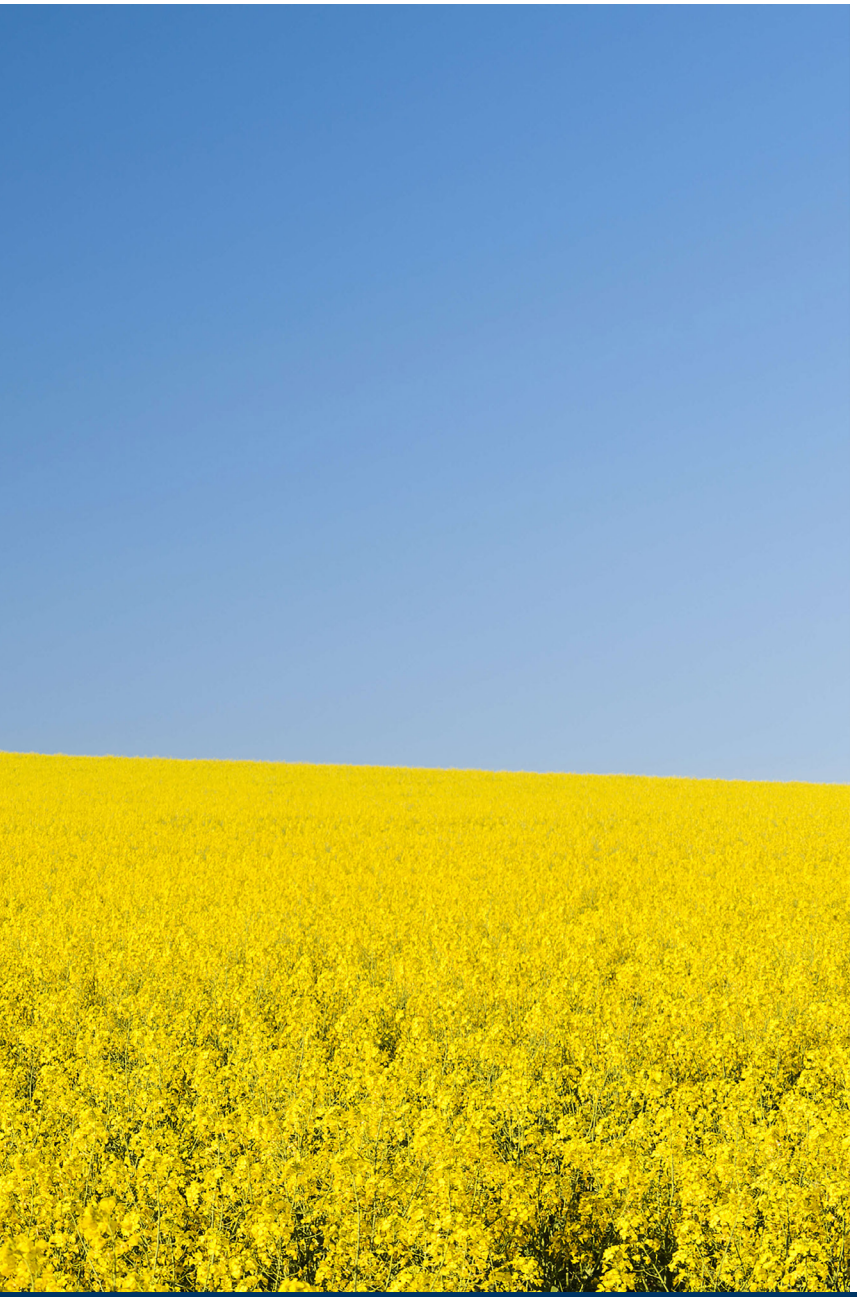
EXCELLENCE IN WATER



SUBSURFACE DRIP IRRIGATION



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WHY SOUTHERN IRRIGATION?

"

WITHOUT THE SUPPORT, EDUCATION, AND HELP OF SOUTHERN IRRIGATION, WE WOULD STILL BE TRYING OUR BEST, NOT DOING OUR BEST.

- Matthew Wiens,
First Fruit Farms



SUBSURFACE DRIP IRRIGATION

What is it?

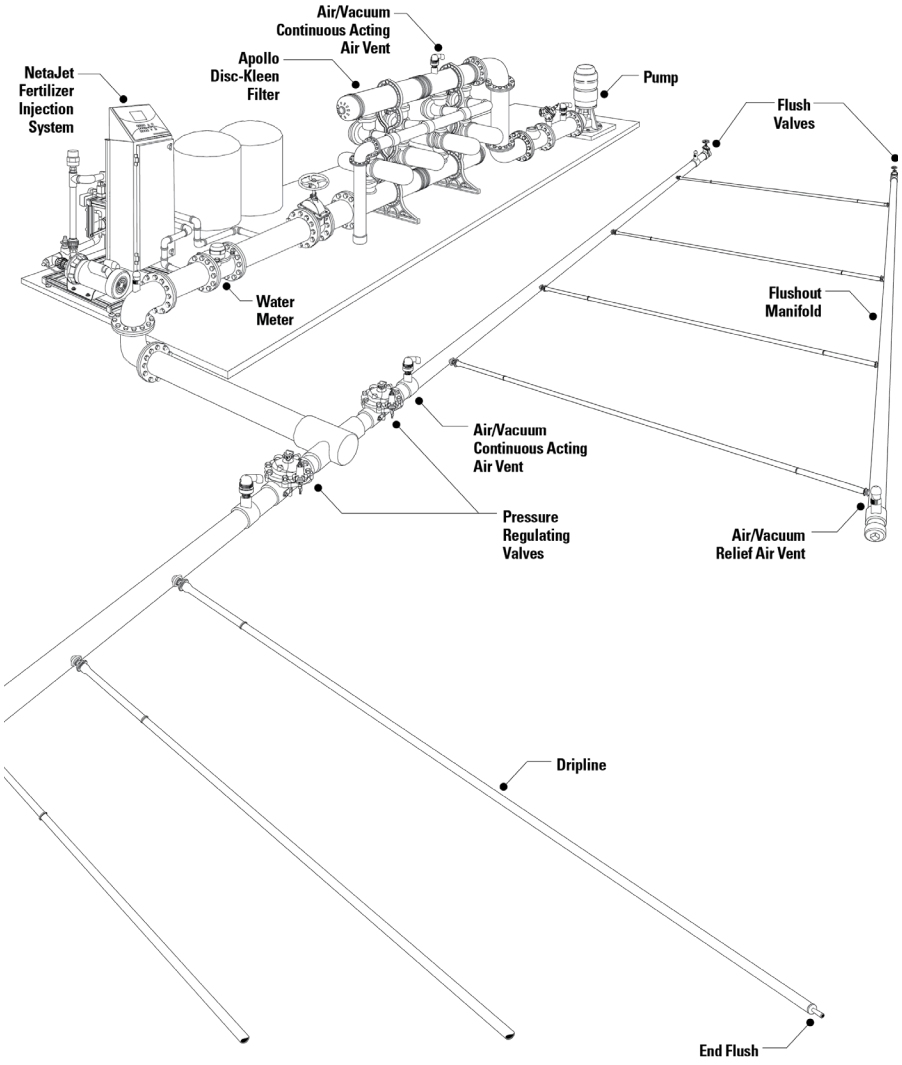
Subsurface Drip Irrigation (SDI) is a variation of drip irrigation where the dripline is buried beneath the soil surface as opposed to laying on the surface.

Water is pumped under low pressure through a filter system to the driplines. The dripline emitters slowly emit specific amounts of water directly to the plant's root zone and moves through the soil downward by gravity and outward and upward by capillary action.

The controlled emission rate allows the plant to up-take most of the water pumped.

The system can also be used to deliver nutrients more efficiently.

SDI USES 20-40% LESS WATER THAN A SPRINKLER SYSTEM OR PIVOT.



SDI History

19TH CENTURY

German researchers used clay pipe to create subsurface irrigation and drainage.

1920

Austrians further developed the usage of plastic pipe.

1950

The plastic emitter was invented in Israel by Netafim, now a global leader in drip technology.

2000

Interest in SDI began to grow rapidly as refinements were made on procedures, product quality and overall cost.

CURRENT

SDI is now at the forefront of agriculture irrigation globally, especially where water is scarce.



Netafim continues to lead the world in technologically-advanced, user-friendly drip irrigation systems, offering a complete line of superior components.

Southern Irrigation works closely with Netafim to bring this revolutionary system to Canadian farmers.



BENEFITS

Increase Your Bottom Line

LABOUR

Having an irrigation system underground makes harvesting and machinery work easier and allows quick entry into the field after irrigating. Fertigation can also continue without interruption and multiple operations can take place, simultaneously. SDI systems can be fully automated to save you time.

WATER

Plants use almost 100% of the water emitted with SDI. SDI also **reduces the amount of water applied by 20-40%*** compared to an efficient sprinkler system or center pivot.

ENERGY

SDI systems operate with less water at lower pressures reducing energy costs.

FERTILIZER

Fertigation is able to be applied through the dripline directly to the roots at the right time. This allows for greater use efficiencies - **reducing fertilizer use by 25-40%.***

IMPROVE CROP QUALITY

INCREASE YOUR YIELDS

*Lamm, Freddie & Trooien, ToddP. (2003). Subsurface Drip Irrigation for Corn Production: A Review of 10 Years of Research in Kansas. Irrigation Science. 22. 195-200. 10.1007/s00271-003-0085-3.

Manages Your Root System

SDI maintains optimal soil moisture and nutrient levels and increases soil aeration so your crops will have more vitality, less stress and disease, while producing higher volumes and quality.

Adapts to Your Field

SDI is compatible with difficult terrain such as undulating, sloping or irregular shaped fields. It is also compatible with land that has meandering rivers, streams, or canals as well as varying soil types.

Protect Your Environment

SDI systems have the highest water use efficiency of any irrigation system, conserving the earth's usable water. The lower application rate of SDI also prevents run-off carrying pesticides and fertilizers.



DESIGN

Before You Begin

Proper irrigation design incorporates agronomic, financial, and ergonomic considerations into a balanced system. In order to create an SDI system that will be successful, you must consider the following variables.

Water Quality & Availability

Properly addressing water quality issues is the most important factor in the successful operation of a SDI system.

PHYSICAL

- Suspended particles and filtration

CHEMICAL

- pH, iron, bicarbonates, carbonates

BIOLOGICAL

- Organic growth (algae) and filtration/aeration, chemical treatment





Soil Profile

Soil type and absorption play an important role in determining the dripper application rate, lateral spacing, depth and row spacing.

HEAVY TEXTURED SOIL (CLAY)

- Low flow drippers are recommended

MEDIUM TEXTURED SOIL (SILT)

- Requires closer dripper spacing compared to clay soil
- Lower flow drippers are recommended

LIGHT TEXTURED SOIL (SAND)

- Closer dripper spacing is required in order to wet the soil profile

Field Shape & Topography

Field slope will determine whether a designer selects a pressure compensating or non-pressure compensating dripper.

FLAT TERRAIN

- Non-compensating drip irrigation
- Large fields with up to 1/2 mile runs

ROLLING TERRAIN

- Pressure compensating dripper line (applications demanding high uniformity)
- Long runs

SYSTEM COMPONENTS

Filtration

Having a properly designed filtration system is the main difference between having an easy-to-use system and one that requires constant monitoring.

A well-designed filter system maximizes the performance and longevity of your SDI system. Filtration should be based on several factors:

- Water quality throughout the growing season
- Dripper flow path area
- Nature of contamination
- Fluctuations of water source condition.

Manifolds

Manifolds can be constructed of PVC, PE, or layflat and must be designed to produce minimal pressure drop due to friction, because of the low-pressure differentials allowed in drip system.

A SDI system has a buried main line and sub-main line on one side of the field and a flush line on the other side.





Dripline Laterals

SDI driplines are available in many different configurations to meet your unique crop and soil conditions.

The options you choose will determine the overall cost of the system.

- Wall thickness – consider the planned length of use
- Tubing size
- Dripper spacing
- Dripper type – pressure compensating or non-pressure compensating
- Dripper performance – consider the products history, physical characteristics of flow path and hydraulic parameters.



Valves

Proper use of pressure regulating valves is essential, because each irrigation zone may require different pressures.

Air/Vacuum Release

The use of air and vacuum relief vents can mean the difference between a successful system and one with vacuum-induced plugging problems.

Vacuum placement is critical and is topography dependent. Depending on the field layout, venting may have to be provided at the top of the valve sets and both ends of your field.

Water Meter

It is essential to monitor the flow in the operation of your system and crop's water use. Your SDI system is designed to produce a specific flow rate at a given pressure. Changes in the flow rate may indicate leaks in the system, improperly set pressure-regulating valves or even changes in the water source and pumping station.



Fertilizer Injection

Good fertigation capabilities will help the system pay for itself faster than any other component. Growers often neglect to utilize this feature to its full potential because of its perceived complexity.

Fertigation has the opportunity to immediately provide the crop with nutritions/fertilizer directly to the root zone when the plant needs it the most during the growing season.

Injection systems should meet expected demands for all chemicals, be easy to operate and calibrate and have provisions to prevent unwanted precipitates.



INSTALLATION

Southern Irrigation uses plow machines that cut the soil and places the drip line into the ground.

These machines plow multiple lines at a time and requires one tractor operator and two persons to change the spools and ensure the lines are being fed into the ground properly.

The horsepower requirement on the tractor depends on how many lines are being plowed, but generally each shank uses 50 horsepower.






FORD





AFTER CARE & FAQ

Maintenance

Routine maintenance will help extend the life of your system.
Maintenance should follow a regular schedule and be recorded for later reference.

When properly maintained, a drip irrigation system can last up to 25+ years –
producing greater yields, improved quality and increased profits for your business.



Frequently Asked Questions

DOESN'T WATER ONLY MOVE DOWNWARDS?

Water movement varies depending on the soil type. Part of the design process will be to take a soil content probe at 0-6", 6-12", and 12-18". Properly designed and installed, the water will move both downwards due to gravity, and upwards and outwards due to capillary action.

ARE THERE ISSUES WITH LINES PLUGGING?

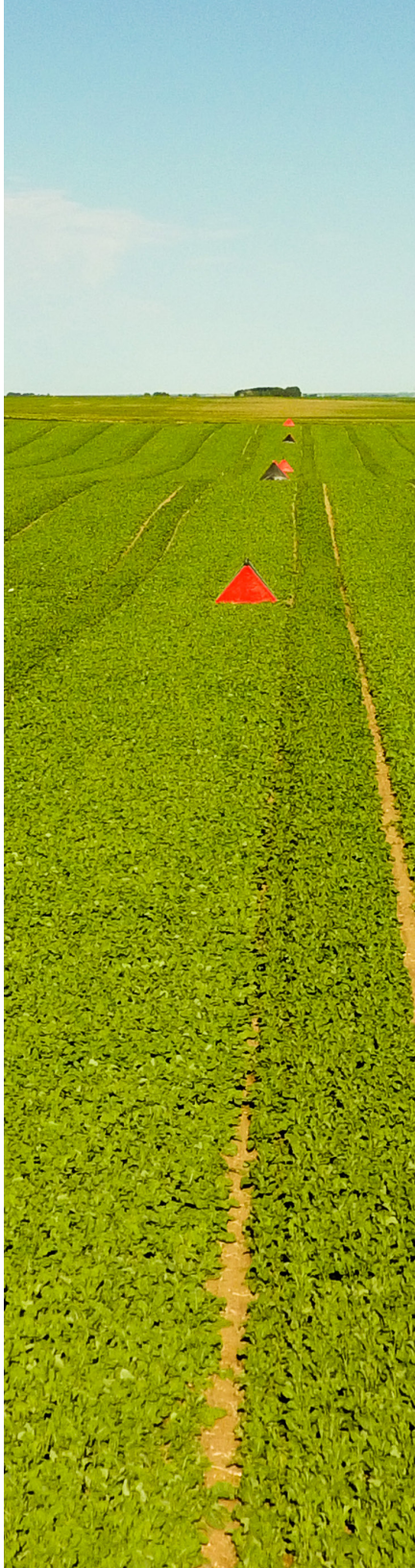
By using Netafim's advanced dripper construction and proper installation, operating, proper maintenance and flushing procedures, the risk of lines plugging is insignificant. If this does occur, there are acids and chemicals that can be pumped through the lines to unplug the drippers.

IS THERE A RISK OF RODENT DAMAGE?

This is a recognized risk of any SDI system and there are many methods to reduce this risk as much as possible. These include packing/rolling the soil immediately following dripline placement, trenching, running water through the lines immediately following installation, use of bait and traps, fumigation, predator introduction, and habitat modification.

DOES THE SYSTEM NEED TO BE WINTERIZED?

This is a typical maintenance procedure as water will freeze and expand, possibly damaging plastic and metal system parts. Water from filters, valves, chemigation equipment, pressure regulators, subsurface pipes, and driplines should be emptied - especially at lower ends of the field where water typically accumulates. Polyethylene driplines are not subject to damage from freezing since drippers provide drainage points and polyethylene is flexible.



CASE STUDIES

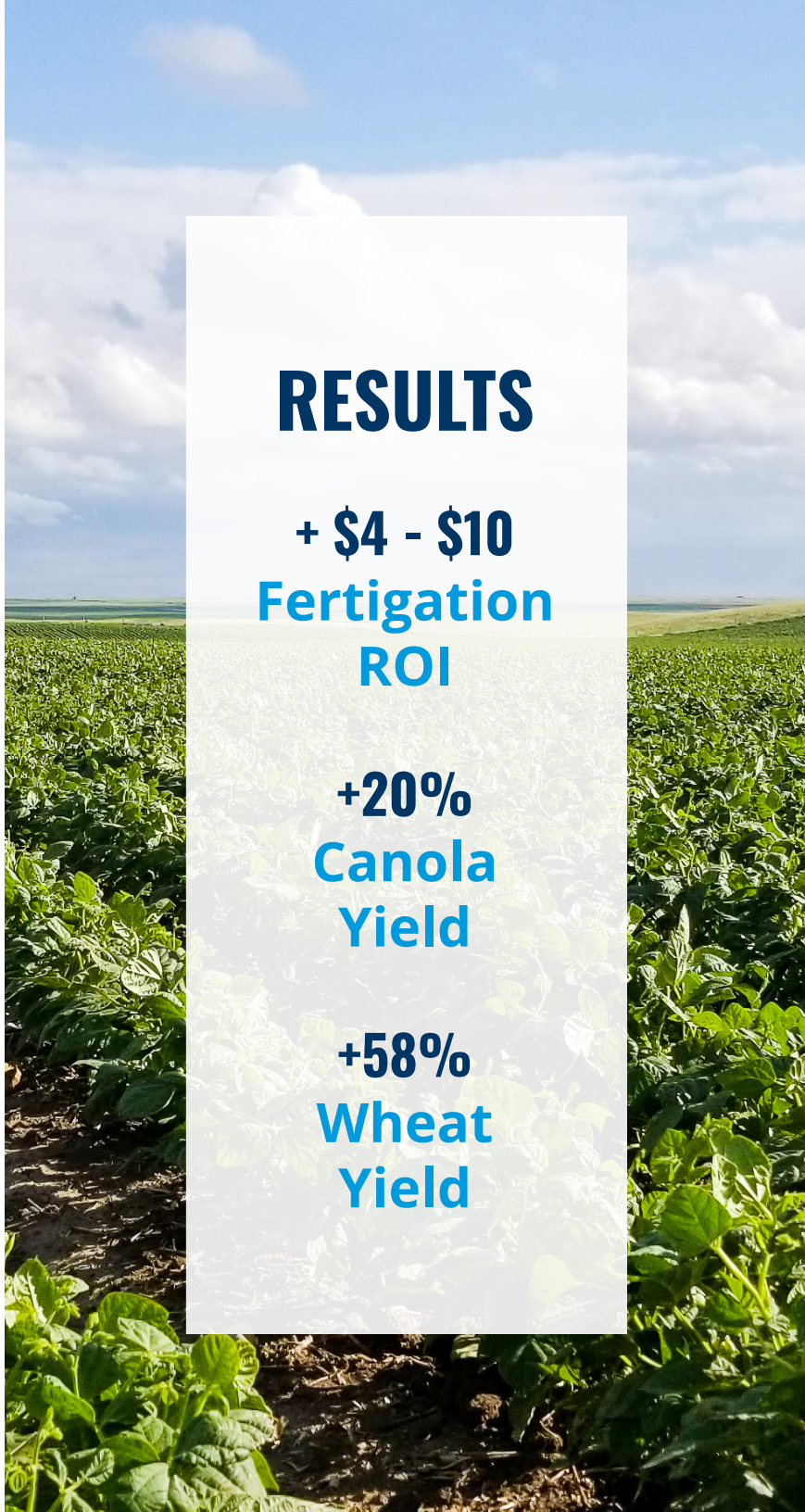
First Fruit Farms

First Fruit Farms is a small family farm in southeast Lomond, Alberta. The farm began in 2010 with seed crops and has continued into specialty crops like beans, seed canola and hemp in an effort to steward the land as well as they can. Before SDI, they were relying on rain and snow-melt for irrigation.

WHY SDI?

Their field was an irregular shaped parcel of land divided by a canal. Two pivots placed as strategically as possible could only irrigate 78% of the land and in their area of the prairie, dryland acres do not produce the same type of crop or the same yield. In order to ensure a profitable return on investment, land must be irrigated efficiently and accurately. SDI provided the best solution to these problems.

VIEW THE FULL CASE STUDY



RESULTS

+ $4 - $10
Fertigation ROI

+20%
Canola Yield

+58%
Wheat Yield

Valk Land and Cattle

- 625 acres
- Winter wheat, barley, yellow mustard

WATCH THE PROCESS VIDEOS



Deld Agro

- 75 acres.
- Seed, grain, forage
- Harvested good crop from unproductive land
- Looser soil
- Less salt problems

READ MORE

Ken Coles

- 135 acres
- Canola, durum, alfalfa
- 30% water savings
- Lower energy savings

READ MORE

Lethbridge Cornmaze

- 31 acres
- Corn
- Extremely high corn crop
- Zero runoff
- Looser soil

READ MORE

SOUTHERN IRRIGATION

Southern Irrigation brings 35 years of irrigation expertise. Our team is equipped with certified designers, the right tools and the manpower needed to provide complete solutions for any size irrigation job.

As the irrigation company that pioneered subsurface drip irrigation in Canada, you can be assured that you will be given the best design, products and advice for your success.



CERTIFIED DESIGNERS

A well designed irrigation system ensures every plant gets what it needs.



PREMIUM BRANDS

We only use the best quality products.



LARGEST INVENTORY

We can complete a project faster than anyone else in Canada with little wait.



EXCELLENT PEOPLE

Utilize the knowledge, passion and experience of our team.



ROI CALCULATIONS

Specifically for SDI systems, we will provide return on investment calculations.



EXCELLENCE IN WATER

SOUTHERN IRRIGATION

Lethbridge
Red Deer
Chilliwack
Oliver
Kamloops
Williams Lake

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SOUTHERN IRRIGATION

