

# The Lindsay Total Solution

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2. Pre-feasibility study
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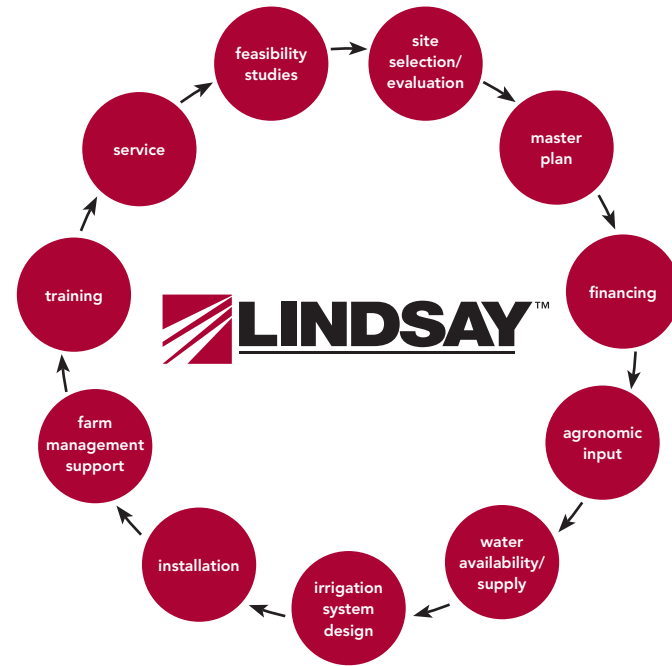
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- Pre-assessment
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**Site selection/evaluation**

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**Master plan**

- Financial
- Infrastructure
- Water supply and irrigation
- Management
- Environmental impact assessment
- Agricultural/agronomical
- Human resources management

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- Risk-free source of financing and leasing
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**Irrigation system design**

- Chemigation
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- Uniformity
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**Installation**

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**Farm management support**

- Yield improvement guidance
- Annual maintenance costs and savings
- Return on investment analysis

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- User product training
- On-site training or seasonal training

**Service**

- Spring startup
- Preventive maintenance programs
- Spare parts



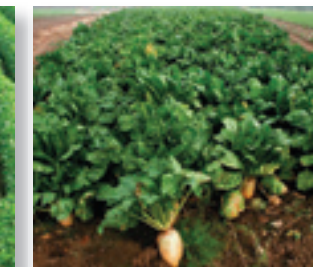
## IMPROVING BIOFUEL ROI THROUGH EFFICIENT IRRIGATION SOLUTIONS

HIGHER YIELDS... LOWER COSTS...  
PRECISION APPLICATION

### An international irrigation leader

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# How irrigation increases yields and ROI

To meet the continually rising needs of a fuel-hungry world, growers must focus on delivering reliable yields and a timely supply, while controlling quality, managing input costs, providing more biofuel per gallon of water used (irrigation efficiency), and wastewater use.

Applying the correct amount of water on a biofuel crop is essential for producing high yields. Zimmatic® by Lindsay irrigation systems bring a cost-effective solution, alleviating risk when the weather isn't cooperating. They also give more flexibility when it comes to planting, because a grower's timeline is not as affected by nature. Above all, proper irrigation management helps optimize yields, size distribution and quality of biofuel crops.

## Irrigation impacts every stage of growth

From establishment to harvest, effective water management is important at each stage of crop growth. At Lindsay, we take into account many factors when designing irrigation systems to meet a grower's specific needs, such as local microclimate, soil type and elevation.

## WHY PIVOTS/LATERALS?

Applying the correct amount of water at the right time is crucial to achieving a good yield, but it's also important to apply it uniformly. Surface irrigation systems fall short in this area, but pivot systems apply water evenly throughout the field at precisely the right amount.

### Pivots/laterals vs. flood irrigation

#### Less waste

The most obvious benefit to irrigating with a pivot or lateral system is that it produces less waste. You get even, precise water application across the rows (Figure A), rather than having too much water at the upper end, and not enough water at the other end of the field (Figure B). You won't lose water to evaporation, and you can control the timing and amount of water that is applied. There's also less runoff, helping prevent contamination of the water table and nearby streams.

#### Lower labor costs

The Zimmatic irrigation system is automated, so no one has to move pipes, or open and close floodgates. There are no ditches to maintain for pivots. One irrigator can operate as many as 25 pivots.

Plus, remote control and monitoring options are available.

### Higher return on investment

The long life of a pivot or lateral system will save you money year after year. You'll use less water, reducing your energy costs. A Zimmatic pivot or lateral system also applies chemicals and fertilizers evenly, accurately and inexpensively. All this adds up to consistently higher yields.

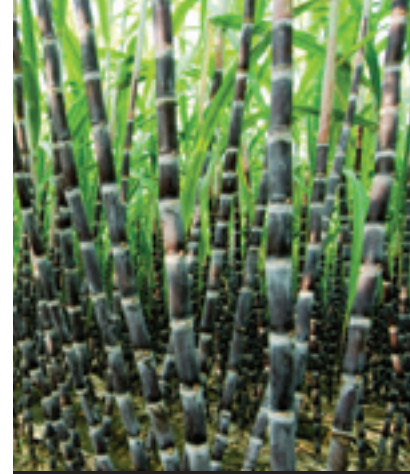
### Pivots/laterals vs. drip

#### Better return on investment

A pivot or lateral system costs less per acre (hectare) to install. For example, a Subsurface Drip Irrigation (SDI) system costs more than 200% more than a pivot system to install on 125 acres (50 hectares).<sup>1</sup> On larger fields, the cost difference is even greater. The irrigation efficiency is similar with use of drops and LEPA nozzles (95% v. 97%).<sup>2</sup> And if you ever want to sell, there's a higher resale value on a pivot/lateral system, too.

#### Fewer maintenance hassles and labor costs

Compared to an SDI system, maintenance is extremely simple



**PIVOT IRRIGATION SYSTEMS CAN SUBSTANTIALLY INCREASE MOST CROP YIELDS.**

for pivot and lateral systems. There is no emitter clogging, and no filter maintenance – it requires only a screened intake. Rodents, roots and cultivation equipment won't damage your system. Even algae and chemicals aren't issues.

#### More benefits for you and your environment

You can monitor and control your pivot/lateral irrigation system remotely. You can quickly apply water after seeding and as often as needed after that. It's also easier on your field. When you want to remove your equipment, you won't have to remove and replace damaged or deteriorated SDI tape. Not to mention the fact that pivot systems are nearly 95% recyclable.

## References

<sup>1</sup> Freddie Lamm, Daniel O'Brien, Danny Rodgers, Troy Dumler "Sensitivity of Center Pivot Sprinkler and SDI Economic Comparisons" American Society of Agricultural Engineers (ASAE) Meeting Paper #MC 02-201 (4/2002)

<sup>2</sup> "Economics of Irrigation Systems" – B-6113 (12/2001) Texas Cooperative Extension, Texas A&M University

# Lindsay – a proven solution provider

Tough, dependable Lindsay irrigation systems have been the choice of the world's irrigators for more than 40 years. Lindsay irrigation systems pay for themselves many times over during their lifespan, and alleviate risk when weather conditions are not ideal for planting and growing conditions.

Lindsay is a proven partner that's dedicated to maximizing yield. Through our technology, reliable products and network of certified dealers, we can create a customized total integrated solution.

### Yields: maximized

A Lindsay irrigation system can provide proper application to every part of a field throughout the growing season, even in those areas that are currently underutilized.

### Energy, water, labor and time: saved

When compared to other irrigation methods, a Lindsay system will help maximize crop yields while using less energy, water, labor and time. Flexible, intuitive Lindsay irrigation control products make scheduling and operation simple, while Web-based remote control options offer comprehensive monitoring and management.

### Application: precision

Zimmatic dealers analyze each grower's operation to customize a sprinkler package based on crop and climate conditions.

### Downtime: minimized

Lindsay irrigation systems are designed and engineered for life on the farm. They're constructed using only the highest quality components for superior performance season after season.

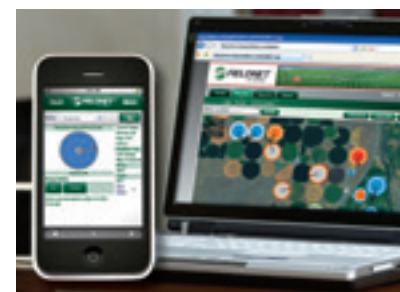
### Support: certified

Our network of certified dealers is trained to customize, install and service our entire range of irrigation systems.



### Zimmatic irrigation system

Durable parts, quality components and a wide range of tower structure heights provide crop clearance and stable operation on varying terrain.



### FieldNET by Lindsay wireless irrigation management

FieldNET® builds a network between pivots, providing full control and monitoring capabilities. It's the industry's first completely Web-based, real-time irrigation management system that provides a view of every pivot, including location, status and water usage. Managing pumps is more efficient with a pump control service package.



### Poly-lined pipe

Top-of-the-line alternative pipeline offers excellent wastewater management solutions. Heavy-duty High Density Polyethylene (H.D.P.E.) Liner handles corrosive elements, saline and acidic water.



### Customized sprinkler packages

Rotating-spray, fixed-spray and LEPA sprinklers provide a variety of coverage and pressure solutions to fit any operation.



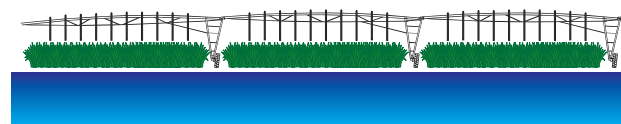
### Watertronics customized pump stations

Watertronics, a Lindsay company, offers a complete, integrated pump station that helps maintain consistent water delivery from river stations, irrigation reservoirs, canals and lagoons.

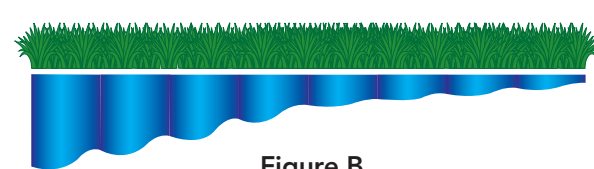
Factory tested, each pump station is engineered based on the grower's needs and field conditions to ensure peak performance.



- All components are integrated and housed in one complete unit
- Precision energy-efficient Variable Frequency Drive provides immediate energy savings
- Simple monitoring and control
- Continuous surge-free pressure regulation for enhanced efficiencies



**Figure A**  
Pivot/lateral irrigation



**Figure B**  
Flood irrigation

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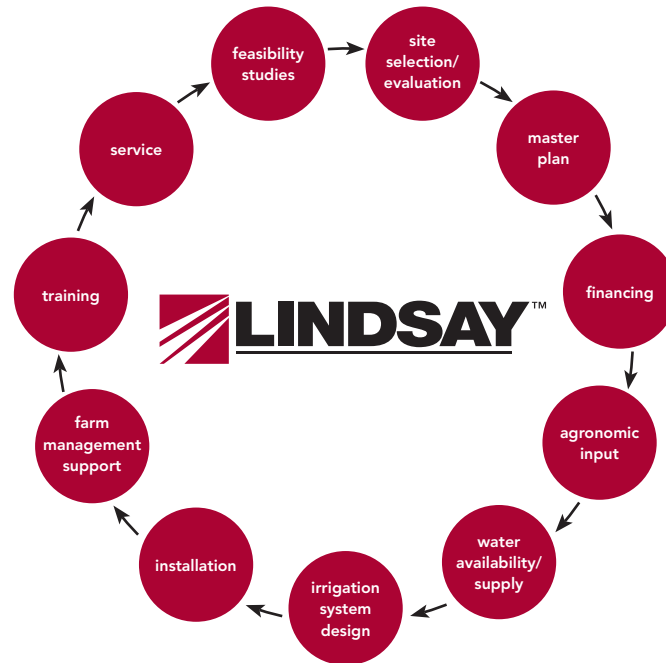
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