

## INCREASING SUGAR CANE YIELDS THROUGH EFFICIENT IRRIGATION SOLUTIONS

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



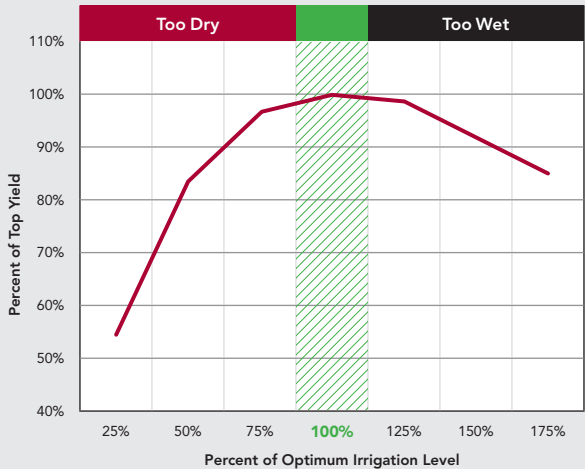
# Why irrigate?

Getting the correct amount of water on your sugar cane 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. It also gives growers more flexibility when it comes to planting, because the timeline is not as affected by nature.

Proper irrigation management minimizes yield loss due to crop water stress and optimizes crop and sucrose yield per unit of water applied.

### APPLYING THE CORRECT AMOUNT OF WATER AT THE CORRECT TIME ENHANCES SUGAR CANE YIELDS<sup>1</sup>

For every 0.4 inches (10 mm) of soil water used by the crop, one tonne per hectare cane is produced. Note: Optimum irrigation rates and scheduling help the crop achieve optimal yield since both overwatering and underwatering result in lower yields. Overwatering will also result in higher operating costs.



## IRRIGATION IMPACTS EVERY STAGE OF GROWTH

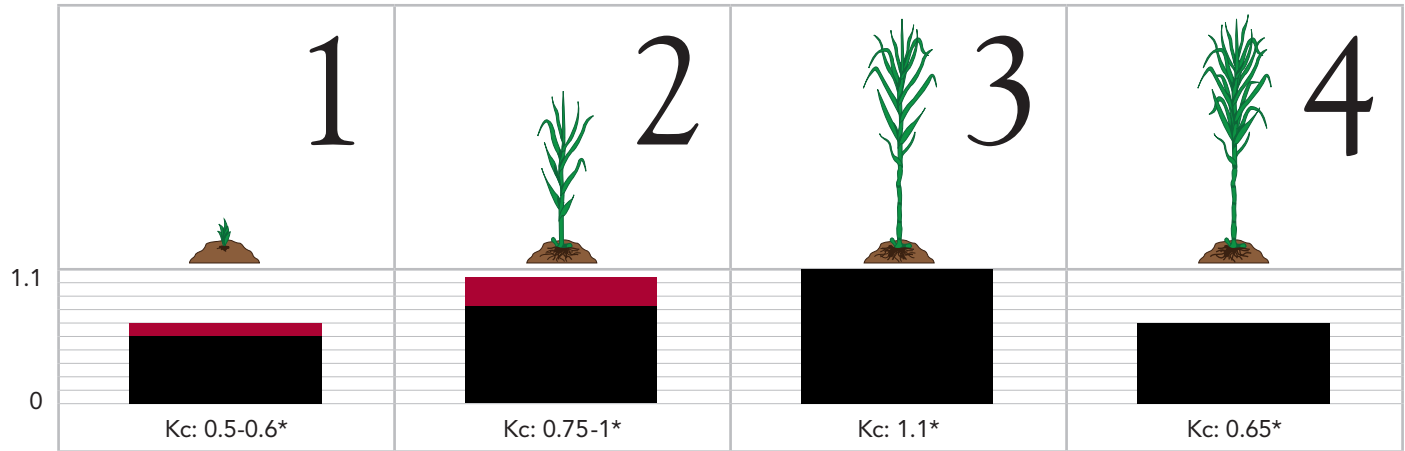
From establishment to ripening, proper irrigation is important at each stage of sugar cane growth. At Lindsay, we take into account many factors, such as local microclimate, soil type and

elevation when designing proper irrigation systems to meet your particular needs.

One key relationship in determining sugar cane’s water

requirement is its coefficient (Kc) in relation to its evapotranspiration (ET). The Kc is different at every stage of sugar cane’s development.

Water requirement = ET x Kc



**Establishment:** Small and shallow root system has low water requirement, but frequent applications are more necessary than at any other stage. Water deficit has significant impact on sugar yield by reducing adult plant density.

**Vegetative Growth:** Growth and yield are very sensitive to any water deficit at this demanding stage.

**Yield Formation:** Little vegetative growth, but important sucrose buildup. Any water shortfall would begin the ripening process and stop sucrose buildup before its optimal stage.

**Ripening:** Requires low soil moisture content, so irrigation must be reduced and then stopped to bring cane to maturity.

Note: A better Uniformity Coefficient alone does not ensure more sucrose yield if the overall crop water requirement is not met and results in a water deficit. \*Stated Kc values are an average. Local Kc values will vary with local microclimate, terrain and cane variety.

Conditions vary by location. Talk to your local Lindsay dealer for more detailed information.

# Why pivots/laterals?

### Pivot/lateral irrigation systems – right amount, right time, right place

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

### THE RELATIONSHIP BETWEEN UNIFORMITY AND SUGAR CANE YIELD<sup>1</sup>

| Uniformity Coefficient (UC) | Relative Cane Yield |
|-----------------------------|---------------------|
| 100%                        | 1.00                |
| 95%                         | 1.00                |
| 90%                         | 0.99                |
| 85%                         | 0.98                |
| 80%                         | 0.97                |
| 75%                         | 0.95                |
| 70%                         | 0.93                |
| 65%                         | 0.90                |
| 60%                         | 0.86                |
| 55%                         | 0.82                |
| 50%                         | 0.77                |

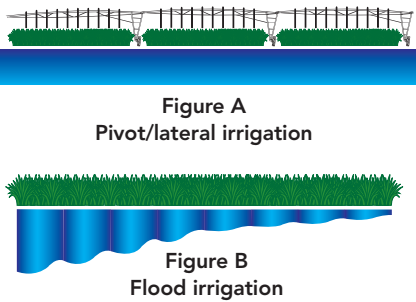
### References

- <sup>1</sup> “Irrigation Systems and Water Application Efficiencies” Dr. Kenneth H. Solomon January 1988
- <sup>2</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 #MC02-201 (4/2002)
- <sup>3</sup> “Economics of Irrigation Systems” – B-6113 (12/2001) Texas Cooperative Extension, Texas A & M University

### Pivots/laterals v. 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 can control the timing and amount of water that is applied. Also eliminating runoff, helping prevent contamination of the water table and nearby streams.



#### Lower labor costs

The Zimmatic irrigation system by Lindsay 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 v. drip

#### Greater return on investment

First of all, a pivot or lateral system costs less per hectare (acre) to install. For example, a Subsurface Drip Irrigation (SDI) system costs over 200% more than a pivot system to install on 50 hectares (125 acres).<sup>2</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>3</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 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. You won’t have to make trips out to the fields looking for leaks that need fixing. 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. And if you want to remove your equipment, it’s easy on your field. Pivot/lateral systems are 95% recyclable.





# Why Lindsay?

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.

**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 by Lindsay 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.



Pump station

**Watertronics – Customized pump stations for maximum efficiency**

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 your needs and field conditions to ensure peak performance.

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

Also available as an economical pump control upgrade for existing pumps.

**Superior components built to last**



Exclusive collector ring

Eliminates water flow restrictions, unlike internal design of other pivots.



Formed outlets

Ensures precisely matched threads for a watertight seal, unlike welded outlets that can leak on other pivot brands.



Uni-Knuckle span connector joint

Provides stress-free flexibility to handle the uneven terrain of cane fields and on slopes up to 30%.



Advanced drive line (center drive and PowerDrive gearbox)

Assures long life and durable operation in demanding sugar cane applications, characterized by thick and damp foliage.



Poly-lined pipe

Heavy-duty High Density Polyethylene (H.D.P.E.) handles corrosive elements, saline and acidic water.





Irrigation solutions for any terrain, from Mauritius to Brazil to your field.



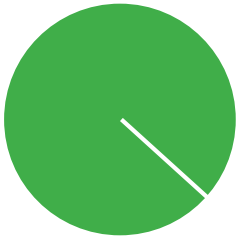
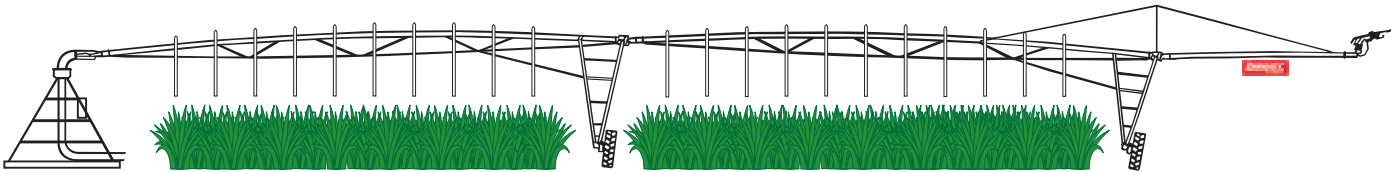
Image © 2007 DigitalGlobe, © Europa Technologies, © 2007 TerraMetrics.



# The Lindsay Advantage for Sugar Cane

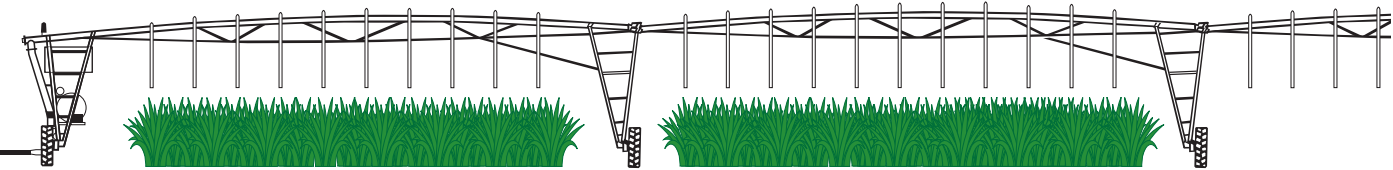
HIGHER CANE YIELDS FOR BIGGER PROFITS

## Zimmatic Center Pivot Irrigation



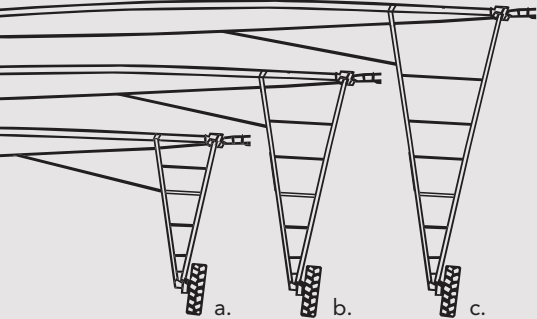
Custom-fit your irrigation system to your fields for uniform application.

## Zimmatic Lateral Irrigation



Irrigate 98% of square or rectangular fields, and tow your irrigation system between fields.

### Height advantage using Ultra High Clearance



- a. Standard Height
- b. High Clearance
- c. Ultra High Clearance





## An international irrigation leader

Lindsay continues to be a leader in technological innovations – developing systems that increase irrigation efficiency, boost productivity and reduce energy and labor costs. With hundreds of dealers across the world as well as strategically located parts distribution centers, we offer growers immediate certified service, customer training and helpful advice.

For more information, visit [www.zimmatic.com](http://www.zimmatic.com) or talk to your Zimmatic® by Lindsay dealer.



### THE LINDSAY ADVANTAGE

DURABLE • RUGGED • EASY TO USE • INTEGRATED TECHNOLOGIES •  
BROADEST LINE OF SOLUTIONS



2222 N. 111th St., Omaha, NE 68164 • 1-800-829-5300 • 1-402-829-6800 • [www.lindsay.com](http://www.lindsay.com)

**Lindsay USA:** 2222 N. 111th St., Omaha, NE 68164 • **Lindsay Africa:** 25 Karee Street, Kraaifontein Ind Kraaifontein, 7570, South Africa

**Lindsay Brazil:** Rodovia Adhemar Pereira de Barros - SP 340 KM 153, 5 - Caixa Postal 1001 CEP 13804-830, Mogi-Mirim, Sao Paulo, Brazil

**Lindsay Europe:** L'Epinglerie 72300 La Chapelle d'Aligné, France • **Lindsay International BV:** Weena 278, Tower B, 7th floor, 3012 NJ Rotterdam

**Russian Branch of Lindsay International BV:** Russia, 350063 Krasnodar City, ul.Sovetskaya, 30, office 1202

**Lindsay China Sales Office:** Room 403, Building C Beijing Lufthansa Center Number 50, Lianmaqiao Road Chaoyang District Beijing, China 100125

**Lindsay Australia Warehouse:** Lindsay International (ANZ) Pty Ltd 19 Spencer Street Toowoomba QLD 4350



**Lean, Clean and Green.** Lindsay Corporation is committed to developing environmental awareness and implementing sustainable practices to reduce the use of and protect energy, water, and all other resources.



© 2014 Lindsay. All rights reserved. Zimmatic, FieldNET, GrowSmart, Watertronics and LAKOS are trademarks or registered trademarks of the Lindsay Corporation and its subsidiaries. All brand names are trademarks or registered trademarks of their respective companies.

LI SUGARCANE BRO  
INT-AUS-0710 1214