



make it grow

**MAKING
COTTON A
SUSTAINABLE CROP**

FELIPE REY MONTERO

**SUGAR
BEETS
ROI**

Dr. KHALED SHALABI

ALKHORAYEF IRRIGATION SOLUTIONS (AISCO) QUALITY, TECHNOLOGY, SERVICE & PROFITABILITY



AROUND THE WORLD

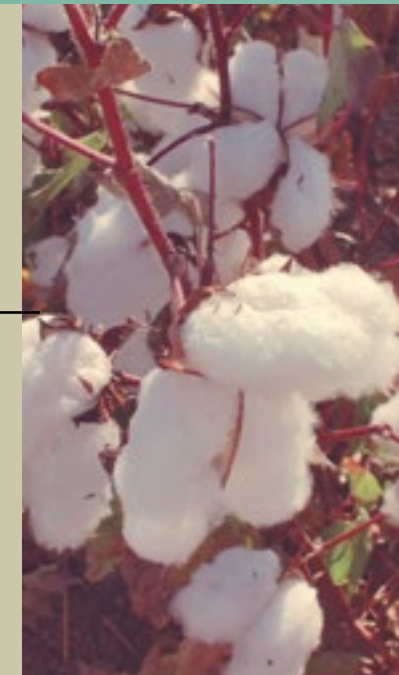
WE ARE ON EVERY CONTINENT AND IN MORE THAN 80 COUNTRIES,
SUPPORTING SMALL FARMERS AND LARGE AGRIFOOD COMPANIES.



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it grow

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A WORD FROM CEO



JOSÉ FERNANDO TOMÁS



It is my pleasure to introduce you to MAKE IT GROW, the new AISco Magazine. This is a project that has been launched to get closer to the global farmers, with the idea of keeping them informed about what is happening in our industry and in our company. We present this to you because it is very important for all of us to share with you our new ideas, our latest products, where we feel the industry is moving to, what are we doing to help you to produce more, and most importantly, using your resources with more efficiency.

Even if you already know it, I have to repeat it; the world population keeps growing, and all projections indicate that in 2050 it will surpass nine billion. But population is not the only factor we have to consider; the world climate is getting increasingly volatile. We also need to keep an eye on protecting the most important resource that we have, water. This is the real challenge that society will face in this century. All actors need to understand that agriculture will shortly become the most important economic sector, and that it has a direct impact on reaching the food security level that every country should target as their main goal.

Very few countries have understood the importance of securing the food sufficiency as much as the Kingdom of Saudi Arabia has. The concept was very clear, Saudi Arabia invested part of the income generated by other sectors on promoting the agriculture, which had not only a direct impact on

their own food production, but also alleviated poverty, spurred economic growth and promoted social stability.

And at AISco we share those strategic objectives the Food and Agriculture Organization (FAO) of the United Nations have defined, and aligned our goal and mission to support farmers, companies, corporations and governments developing their agricultural projects. So we offer our Customers not only products but also services as Project Engineering, Project Management, Project Finance, together with all Farm and Irrigation Equipment supply, installation and maintenance, through our Dealers, Companies and Partners. And always meeting our AISco vision: to provide you *solutions for life*. And because our goal is to make your life easier, we do also offer our customers the service of operating their project during the time required to guarantee the right technology transfer to regions where it is not properly known.

This magazine is going to be part of that commitment we have with society. MAKE IT GROW will be sharing with you information about agricultural experiences that we know will be interesting for you, the latest technology developments released by AISco and our partners. It is also an open forum where we can all discuss our projects and ideas, offering you opportunities to invest on agricultural projects, or just to look for a commodity.



“We will MAKE IT GROW with you, TOGETHER.”



SUCCESS STORY



SUGAR BEETS

Increasing return on investment (ROI)

Getting a high return on investment (ROI) is the main target of all agricultural investors. To achieve that target, you must first purchase the irrigation system best suited to your project's unique conditions. Once the systems are in place, you must then consider how to increase the system's efficiency, maximize your yield, minimize your operating cost and maximize your water use efficiency in order to achieve that target.

In the southern region of Egypt, a large project has a planted area of 10,000 Acre of sugar beets. Sixty center pivots were installed in that project, where each pivot irrigates 120 Acres. The project owner decided to increase the irrigation efficiency and water use efficiency of the existing irrigation systems. In addition, he also decided to buy additional irrigation systems to irrigate the remaining areas not yet irrigated.





In order to supply the proper irrigation systems, the site was visited to check its soil type, water volume, water quality and climatic conditions. Based on the information obtained from the field, our Engineers configured the pivots to match the project conditions. In order to increase the efficiency of the existing systems, Engineers decided against using the existing fixed sprinklers, but instead offered them dynamic sprinklers to match the soil type. In addition, the outlet spacing of the new spans was selected to match the selected dynamic sprinklers.

As a result of the aforementioned changes, a number of benefits have been achieved thanks to the proper design of the new irrigation systems. The overlap between sprinkler heads was increased to 150% and runoff has been reduced. In addition, the number of drop hoses required per system was also reduced, making the price of the center pivot equipped with dynamic sprinklers almost the same as a system using the fixed design. Also, due to selecting the correct sprinklers, the water distribution uniformity was increased to 98%, resulting in an increase of the germination rate and its uniformity.

In order to increase the water use efficiency of the project, we offered the following through the Irrigation Management Consultancy Service:

- Evaluation of the performance of the running pivots
- Improvement of the distribution uniformity of the pivots
- Monitoring of the weather and soil moisture levels
- Database creation and data recording for the project
- Irrigation scheduling based on weather and moisture records

The work started by evaluating the performance of the running pivots and to find out the available flow rate, operating pressure and pivot configuration. Based on that information, we evaluated the sprinkler chart in order to re-distribute the sprinklers along the length of the machine in order to overcome the problems related to runoff, overlapping and lack of water at the overhang.

After reconfiguring the sprinklers on the running pivots and ensuring the application depth was correct for the soil type and crop being grown, a weather station was installed to monitor the climatic conditions of the farm. Weather data was now being obtained and stored, along with the data from newly installed moisture sensors.

Once we knew exactly how much water would be applied to the soil surface, the soil type and its infiltration rate, the crop type and its water requirements, climatic conditions at the site and how much water is consumed on a daily basis, we started to create the database of the weather and moisture records in order to establish an irrigation schedule. Every week, project technicians

receive the irrigation schedule of each pivot, informing them of the required irrigation schedule including the required speed, run time, and if/when to run the system.

By offering the irrigation management consultancy service, the optimum application depth was delivered to match the crop requirements during each stage of growth to the correct root depth.

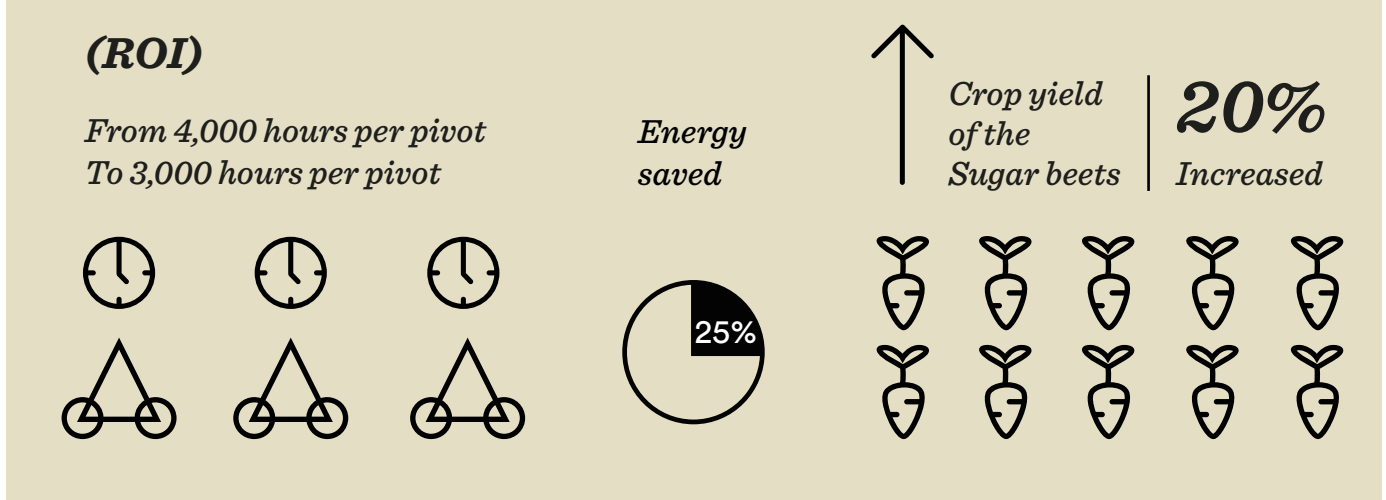
The results were magnificent. By applying the Irrigation Management Consultancy Service, the required number of operating hours per each pivot during the growing season was reduced from 4,000 hours to 3,000 hours, a 25% reduction in use when compared to previous year. In addition, because the right amount of water was being applied to the correct root depth at the correct time, the crop yield of the sugar beets was increased by 20%.

Such reductions in operating cost and increases in crop yield maximized the return on investment of the project.

The results were magnificent.



Khaled Shalabi
(Ph.D & MBA)
(Global Development & Marketing Director – Alkhorayef Industries Co.)





ARTICLE

Making cotton a sustainable crop

“The fact that a crop may become sustainable depends on the technological level implemented for cultivation and the level of excellence used for handling”.



Felipe Rey
Montero
Cotton crop
expert

The key to making cotton a sustainable crop is the integration of several factors such as climate, soil, water availability and social structure, with varietal changes, the use of technological systems of last generation and training agricultural technicians on systems integration.

SUSTAINABLE COTTON IN SPAIN

Cotton production in Spain has been gradually decreasing since 2005 with 86,100 hectares planted, until 2015 in which 64,500 hectares were planted.

The reason for this reduction was twofold, the implementation in 2006 of the CAP (Common Agricultural Policy) and the increasingly negative balance between income and expenses compared to other

alternative crops as corn, sugar beet, sunflower or tomato for processing. These crops have higher profitability, reduced risk, and reduced finance requirements that have made them more attractive at the expense of cotton.

The cotton must be sustainable to meet the needs of the gin industry and other ancillary industries of this crop. This is the reason that encouraged us to study agronomy and technology facts that could make cotton sustainable over time against competitors.

In our research into how to increase sustainability, ***we found three fundamental factors to re-energize cotton in Spain.***

- 1 Changing the germplasm used to achieve varieties.
- 2 Using the latest technologies applied in irrigation systems.
- 3 Setting up integrated crop management programs run.

We evaluated the different factors and their contribution to the success of the sustainability of the project, and we obtained the following percentages:



60%

The varietal change provides 60% of success achieved.

25%

The implementation of the new generation of irrigation systems provided 25% of success achieved.

15%

The use of integrated management programs through specialized technicians provided a 15% of the success achieved.



NEW GERMPLASM FOR NEW PLANT VARIETIES

All varieties planted in Spain until the beginning of this project in 2007 were Upland varieties of the species *Gossypium hirsutum*, and whose characteristics were:



MEDIUM-SHORT CYCLES
with 1150-1250 DD-15.5 °C
(accumulated degree days at 15.5 °C)

**AVERAGE YIELD GROSS
PRODUCTION:** 3900 Kg. / Ha.

**AVERAGE YIELD FIBER
PRODUCTION:** 1350 Kg. / Ha.

FIBER LENGTH: Of 26 to 29 mm.

FIBER STRENGTH: 28 to 30
grams / tex

MICRONAIR: 3.8 to 4.2

**INTERNATIONAL AVERAGE
PRICES OF FIBER:** Fluctuations
between 55 to 80 cents per pound

It was essential to change to a germplasm that, while maintaining current production levels, could produce a quality fiber whose average prices in the international market fluctuated between 90 and 115 cents per pound.

To get these prices it was urgent to change current varieties belonging to the species *Gossypium Hirsutum* to others from the species *Gossypium Barbadense*. Because of the high quality extra long fiber and market prices between 90 and 120 cents a pound, this change increases crop profitability and makes the cotton sustainable.

However, we found that the plant life cycle of extra-long fiber varieties from *Gossypium Barbadense* (Egyptian type) is too long for the growing areas of Spain and Greece, so we had to start breeding new varieties from crosses between species of *Gossypium Hirsutum* x *Gossypium Barbadian* whose final result was obtaining interspecific hybrids that may develop in Spain the complete life cycle and whose characteristics were:



MEDIUM CYCLE :
with 1200-1300 DD-15.5 °C
(Degree Days at 15.5 °C)

**AVERAGE YIELD GROSS
PRODUCTION:** 4500 Kg. / Ha.

**AVERAGE YIELD FIBER
PRODUCTION:** 1450 Kg. / Ha.

FIBER LENGTH: 34 to 36 mm.

FIBER STRENGTH: 34-38 grams / tex

MICRONAIR: 3.8 to 4.2

**INTERNATIONAL AVERAGE
PRICES OF FIBER:** fluctuations
between 90 to 115 cents per pound

*These new interspecific hybrids were
successfully produced on an R&D
multidisciplinary program, and promoted the
sustainability of the crop:*

+10%

Improvement in productivity of 10% thanks to hybrid vigor and greater DSI (drought susceptibility index), higher resistance to diseases (*Verticillium Daliae*) and pests (*Heliothis* and Red spider mite)

+35-50%

Up to 35 to 50% higher prices over Upland Cotton

The use of LEPA irrigation systems have led to a minimum level of stress and therefore the variety can express its full potential.

IRRIGATION SYSTEMS OF LAST GENERATION

In Spain cotton has been traditionally irrigated by furrow followed to a lesser extent by solid set. High-efficiency systems such as Pivot and Drip were rarely used.

The Mediterranean climate in the Valle del Guadalquivir is highly variable during the culture period (April- October) with temperatures between 15° C to 45° C. The warmest months are July and August with average temperatures above 37° C and up to 40° C. Under these conditions irrigation management is the most crucial factor to maximize performance and achieve high fiber quality.

Furrow irrigation forces the farmer to a

huge and unnecessary waste of water and provokes water stress to the cotton, sometimes excessive and sometimes default.

The use of LEPA irrigation systems (Low Energy Precision Application) using pivot and drip irrigation, has led to a minimum level of stress and therefore the variety can express its full potential.

The four-year study showed us that Pivot and Drip irrigation were significantly more efficient systems than furrow irrigation, both on gross yield (Kg/Ha.), and fiber yield (Kg/Ha.) and increased quality of cotton fiber properties such as length, strength, uniformity and micronair

When comparing the Pivot irrigation, versus Drip irrigation we noted that there was also difference in favor of Pivot irrigation observed by monitoring CWSI

(crop water stress index) measurements made in the phenological periods within the first 45 days, in which it was clear that in the early stages, drip irrigation was insufficient and the plant experienced water stress which affected to performance and quality of fiber.

INTEGRATED MANAGEMENT CROP

We trained some technical specialist on integrated systems to help the farmer understand the changes required on crop management to integrate new varieties and new irrigation systems. We have focused on following areas:

- **Knowledge of the physiology of the new varieties of interspecific hybrids**
- **Proper fertilization**
- **Pest and disease monitoring**
- **Irrigation scheduling**
- **Farm notebook monitoring**

The performance of these technicians was very helpful for the farmers. Each technician covered approximately 350 Ha. and their contribution to the crop success was valued on 15% over the fields that did not have this type of help. The level of stress and anxiety of the farmer was far less than farmers who did not have help.



This model on cotton and the guidelines for sustainability can be easily transferred to other crops and countries.

Therefore, encourage the technicians in charge of alternative crops, where some of the priority crops are in a situation of “unsustainability in the medium and long term, to implement projects similar to this model used in cotton, so they can make the crop sustainable over time”.

*A multidisciplinary team specializing in sustainability, can study in record time the chances of success to change a precarious culture system into a **FULLY SUSTAINABLE SYSTEM.***

iControl Remote

ANYTIME, ANYWHERE

PRODUCTS



iControlRemote is the state-of-art technology designed to easily manage your irrigation systems remotely, without changing your existing control panel. It is installed inside the last tower box of your center pivot and it comes with a built-in SIM card. The system automatically selects the preferred network to connect your center pivot to our iControlRemote.com website where you can control and manage your irrigation systems remotely.

Why do you need an iControlRemote?

- Saves your time and reduces operational costs.
- Controls the irrigation performance from your computer, portable or smartphone.
- Easy to use, anywhere and anytime.
- It can be used in all the pivot brands available in the market.

It works with Western and Pierce systems as well as all other brands available in the market.



iControlRemote product has been developed for Western and Pierce control panels. It can be used with basic electromechanical panels or advanced panels whenever the panel includes the Auto Reverse function.

When you choose iControl-Remote you don't need to change your existing standard control panel nor do you need to add another junction box beside your control panel.

iControlRemote.com website allows you to monitor the current status of your irrigation systems including current end pressure, speed percentage, angle, endgun, total hours running and total hours with water.

iControlRemote and its website iControlRemote.com display your historical operations in a graphical format to help you easily visualize the status

of your irrigation systems during the growing season.

It can be used with all the pivot brands available in the market.



CONTROLS

- Start/Stop
- Forward/Reverse
- End gun ON/OFF
- Speed %
- Speed controlled by iControlRemote or Main Panel

PROGRAMS

- Start/Stop programs on weekly calendar
- End gun control by sector
- Speed % and Water application depth controlled by sector and by running direction
- Auto Reverse or Auto Stop controlled by 2 angles with delay if with water
- Stop in Slot by Angle

MONITORING

- Span position on Google Maps
- Status of the machine (ON/OFF)
- Running direction
- End Gun Status
- Real Speed of the machine (%)
- Pressure at the last tower (as an option if pressure transducer is installed)
- Position by angle relative to North
- GPS signal
- GSM signal
- Total Hour Counter
- Water Hour Counter

ALARMS

- Cable Theft Alarm
- Power lost
- Low pressure

- No water
- Status
- Direction change
- GPS connection lost

OPTIONS

- Pressure transducer on the last tower
- Water control (ON/OFF): needs additional device to control pump or valve on the hydraulic networks
- Solar panel for cable theft alarm when machine is without power during the winter season
- Compatible with IProx product to control pump station, solid set sprinklers, drip Irrigation and other network valves
- Weather station



OUR SUPPLIERS

Komet Pivot Sprinkler Products

Innovation with Impact.



Komet Irrigation is a second generation family business with headquarters in Austria for the International markets and one in the USA for the North American market. The business is still run respecting the values of the company founder: create innovative products with a great value for our customers while respecting all parties involved.

Today, our efforts in product development and all other services we provide are focused to make sure our customers have water application products of the highest quality and operating at outstanding levels of efficiency and effectiveness readily available to them. Best water application results with limited use of natural resources and reduced input costs is our ongoing goal.



Available through Alkhorayef, the Komet Precision Twister (KPT) sprinklers streamline pivot sprinkler choices by combining the highest pattern uniformities, widest nozzle ranges and lowest pressure inputs into ONE SPRINKLER, an industry first! Several years of development and extensive worldwide field testing have resulted in the most innovative sprinkler ever introduced to the world of center pivot irrigation. The Komet Precision Twister (KPT) leads the industry in the following ways:

Water Distribution

- The most uniform wetted pattern in the industry offers the highest potential for infiltration to the roots of your crop.
- Excellent throw and pattern uniformity yield the lowest instantaneous application rates in the industry.
- Reduced dripping from the specially designed body legs of the Komet Precision Twister (KPT) increase the uniformity over competitive devices.
- Lowest vibration levels in this class of sprinkler.
- Manufactured from the highest quality shock and UV resistant polymers providing long life in the field.
- Open body, plug resistant design.
- Crop guard keeps plant matter from disturbing the operation of the Komet Precision Twister (KPT) in canopy installations.
- Outstanding reliability and quality in most climatic and water conditions.

Consistency of Droplet Size

- Greatly reduces wind drift and evaporation losses due to the lack of fine droplets.
- Uniform medium droplet size treats the soil gently, unlike the heavy droplets of the competitor's "random" droplet devices.
- In highly sensitive soils, simply increase the nominal pressure of the regulator for a consistently smaller droplet.

Energy Efficiency

- The highest uniformities at the lowest pressures.
- Full nozzle ranges (#10/128 inch through #52/128 inc) starting at 6 psi, an industry first!
- Reduces your input costs while increasing performance.

Reliability

- Proven reliability in the toughest conditions worldwide:
 - Surface water with silt and sand.
 - Abrasive iron water.
 - In canopy irrigation.

Adaptability

- One sprinkler for all of your center pivot crop applications.
- Full nozzle ranges (#10/128 inch through #52/128 inch) at all allowable pressures (6 to 20 psi).
- Three trajectories to adapt to climatic and crop conditions:
 - Standard Angle (Black) for most conditions.
 - Low Angle (Blue) for very windy conditions.
 - Ultra-Low Angle (Yellow) for very windy, dry and/or low flow conditions.
- Dual Nozzle Carrier integrated into the Komet Precision Twister (KPT) body, so it is always there if you need it to adjust flows during the growing season.
- Low vibration levels allow for the Komet Precision Twister (KPT) to be installed on flexible hose.

The Komet Precision Twister (KPT) is the performance leader in center pivot sprinkler technology!

For more information, please visit www.kometirrigation.com

What's next?

AISco makes sure to communicate with its clients, which is why the company cares a lot about sharing during the agriculture tradeshows. AISco is considered one of the strongest competitors worldwide, whether in the irrigations solutions which it offers professionally, or in the agriculture field generally in which the company offers pioneering services for all the people working in this field. As it is known, 2016 proves to be a spectacular year in the agriculture forums, as the presence was remarkable for all those who are considered to be a part of the agriculture business. This is why those forums are an excellent way to meet our clients, answer their questions, and offer advice that we gained from years of hard work and from our high standard experts that are eager to answer all your questions.

Beside the tradeshows, AISco holds a number of seminars through its representatives around the world, which a lot of people who are interested or working in the agriculture field attend. For those seminars, the company invites experts to give lectures in order to highlight the latest technology used in agriculture, and to answer any inquiry from the attendants.

Also the research and development department presents its latest research, technology, and some practices which improved the return on investment of the clients. An example of this is the seminar which Trans Orient for Marketing (TOM) held in Egypt last May.

All in all, AISco carries the responsibility of offering solutions and answers for the agriculture projects' owners to achieve success through partnership.

Some of the tradeshows in 2016:

AGRITECHNICA – Germany
agritechnica.com

AGROSALON – Russia
agrosalon.com

AGRO 2016 – Ukraine
agro-expo.com

EIMA – Italy
eima.it

IRRIGATION AUSTRALIA
irrigationaustralia.com.au

SAHARA – Egypt
saharaexpo.com

IRRIGATION SHOW – USA
irrigation.org/IrrigationShow



NEW INCORPORATION ONBOARD

ELVA PÉREZ ARAGÓN

MARKETING MANAGER

Elva is the newest member to join our team. She has over 10 years of experience in the agro-business sector related to sales, marketing and business development. She has been working as Spare Parts Responsible in a pivot manufacturing corporation for Europe & West Africa markets. Previously, she had worked for the same company as a Marketing Responsible developing the marketing strategies in Europe & West Africa and consolidating the corporate image. Elva has a Degree in Agricultural Engineering from the University of Leon in Spain and a Masters in International Trade from ESIC Business and Marketing School, Spain.

“I hope to do my best and to support to my colleagues to get all together successes for the firm”

Elva has been enthusiastic about agriculture machinery since she was a child, and she remembers when she and her older brother would sit for hours waiting for the tractors to pass by so they could try to be the first to get right trade mark. “Since that moment, I knew I would be working with ag. machinery. Now, I feel very proud to be a member of the pivot industry, not only to work with machines, but also because they are a resource of life.

Elva is delighted with this new position at AISco in Marketing Department and giving support to the Parts Department when requested, “I hope to do my best and to support to my colleagues to get all together successes for the firm”.



Alkhorayef
Irrigation Solutions

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make it grow

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