

Advantages the “Low Irrigations System” on “ELS Cotton Varieties”

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7-Oct-2015



Objetives of the Study

The aim of this investigations was to study of performance in yield and quality fiber parameters in ELS varieties in Spain, using irrigations system LEPA (*low energy precision applications*), in **Drip & Pivots**.



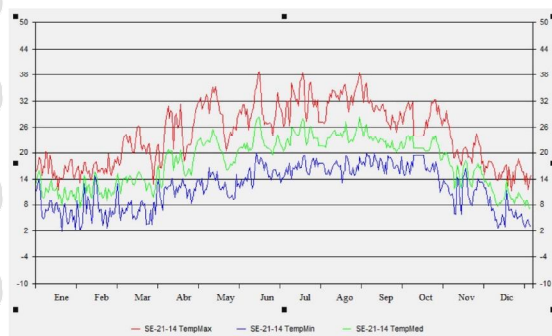
Introduction

In Spain cotton area has “Mediterranean climate”, the temperature varies widely during the growing season (*April-October*), variations between 15 ° C to 43 °C. are normal



GRAPHIC AVERAGE T° Year 2014 in trial area

Red color T° Max Green color T° Average Blue color T° Min



Introduction

- ELS fiber production began in Spain in 2007 and in 2014 reached 4,500 hectares with an average yield of fiber of **1,277 kg / ha**
- The ELS varieties used by producers are only interspecific hybrid varieties
- Reason is that in ELS fiber only hybrids able to adapt to our GD-15,5



The graphics show 1.246 DG-15,5 (from planting to harvest)

1.250 DG-15,5 are very short in compare with countries as Egypt or Sudan

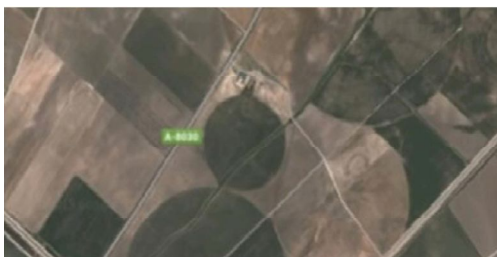


Material and Methods

The field was located in Seville (Spain SW 37° 4'N)

The soil type is called "Vertisol" (deep, fertile soil and its physical composition is clay loam)

Part of the land was irrigated by pivot and another part was irrigated by drip



Material and Methods

- The trial consists 9 varieties with 4 replications (*split plot*). The elemental plot was 4 row 10 meters long with a separation between row 0.75 meters.
- The distance between repetitions was 2 meters.
- The Seeding was effected on April 27
- The population density was 100,000 plants/Ha



Material and Methods

Table of "ELS" varieties used in the test

LIST OF TESTED VARIETIES			
VARIETIES	SPECIES	TYPE	BREDEER
INTERCOT-211	G. Hirsutum x G. Barbardense	HYBRID	HAZERA GENETIC
INTERCOT-212	G. Hirsutum x G. Barbardense	HYBRID	HAZERA GENETIC
INTERCOT-213	G. Hirsutum x G. Barbardense	HYBRID	HAZERA GENETIC
GW-HY 9	G. Hirsutum x G. Barbardense	HYBRID	GOLDEN WEST
GW-HY 15	G. Hirsutum x G. Barbardense	HYBRID	GOLDEN WEST
GW-HY 273	G. Hirsutum x G. Barbardense	HYBRID	GOLDEN WEST
GW-HY 277	G. Hirsutum x G. Barbardense	HYBRID	GOLDEN WEST
E-1	Gossypium Barbardense	Open pollinated	ISRAEL SEED
E-5	Gossypium Barbardense	Open pollinated	ISRAEL SEED

Material and Methods

Pivot Features

- Center Pivot Western 8120 model for 60Ha.
- 6-5/8" diameter spans and Overhang with Flexible drops at 1.2m over the ground, 15PSI Pressure Regulators and Nelson D3000 Sprays with Brown pads (For low crop as cotton).
- High float Wheels and 1HP UMC gearmotors
- The approximate flow rate was 1,3 liters/seconds/hectare



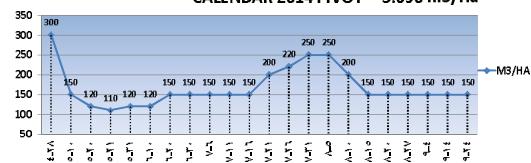
Material and methods

- The Drip system used was PE (polyvinyl expanded) surface.
- The drippers were pressure-compensating at a rate of 2.2 liters / hour
- The distance between emitters was 50 cm, and the distance between row 75 cm
- The capacity was 5.8 liters / meter 2 / hour

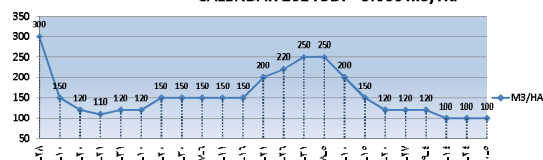


Material and Methods

CALENDAR 2014 PIVOT "3.690 m3/Ha"



CALENDAR 2014 SDI "3.600 m3/Ha"



-
- Trabajo - Hybrid Parcela PIVOT Año 2014 Vainidad: 0 OTRAS CICLO LARGO Sair Ayuda Pica 1 Pica 2 Pica 3 Retirar
- Estación Año Actual Asociada - Predicción
- IFAPA LOS PALACIOS Siembra 27-04 Nacimiento 02-05 Plástico Pica 1 Pica 2 Pica 3 Retirar
- 2 Siembra 27-04 In Botones 20-05 In Cálculas 19-07 In C. Abiertas 31-08 60% Ca 13-10 85% Ca Recol 18-10
- Estación Histórica: Solo con Historia 02-05
- MEDIA DE IFAPA Lda Siembra 27-04 In Botones 21-06 In Cálculas 18-07 In C. Abiertas 31-08 60% Ca 30-08 85% Ca Recol 13-10 70% Ca 18-10
- 2 Siembra 27-04 In Botones 21-06 In Cálculas 18-07 In C. Abiertas 31-08 60% Ca 30-08 85% Ca Recol 13-10 70% Ca 18-10
- Estación Año Actual Año Act. Calcul Vainidad: 0 OTRAS CICLO LARGO Pica 1 Pica 2 Pica 3 Retirar
- IFAPA LOS PALACIOS 2014 21-12 Check Siembra 27-04 Nacimiento 02-05 Plástico Pica 1 Pica 2 Pica 3 Retirar
- Estación Histórica Año His. Calcul Vainidad: 0 OTRAS CICLO LARGO Pica 1 Pica 2 Pica 3 Retirar
- MEDIA DE IFAPA Lda MEDIO 30-12 Check Siembra 27-04 Nacimiento 02-05 Plástico Pica 1 Pica 2 Pica 3 Retirar

The screenshot shows the Pivot Irrigation Design software interface. The top panel contains input fields for 'Location', 'Project', 'Design', 'Area', 'Crop', 'Soil', 'Water', 'Fertilizer', and 'Irrigation'. The main area displays a 'Potential Yield' table with columns for 'Crop', 'Yield', 'Area', 'Water', 'Fertilizer', and 'Irrigation'. Below this, there are four pie charts showing the distribution of water, fertilizer, and irrigation for different crops. The bottom panel shows a 'Hybrid Pivot Irrigation' design with a map of the field and a table of crop yields.

FIBER YIELD

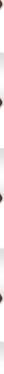
Genotype	FIBER/KG/HAPIVOT (kg/ha)	FIBER/KG/HADRYP (kg/ha)
Intercro-211	1,831	1,731
Intercro-270	1,998	1,903
Intercro-701	1,987	1,891
GW-13-9	1,868	1,717
GW-13-15	2,096	1,872
GW-13-73	2,239	2,011
GW-13-222	2,161	1,981
Average Hybrid	2,026	1,873
E-1	1,393	1,368
E-3	1,244	1,194
Average Bt transgenic	1,318	1,281

MICRONAIRE

Test Case	MICRONAIREPIVOT	MICRONAIREDRYP
Interact-211	3.8	3.9
Interact-670	3.7	3.8
Interact-701	3.4	3.6
F113-9	3.7	3.6
F113-35	3.6	3.6
F113-278	3.5	3.4
Average Hybrid	3.7	3.6
E1	3.7	4.2
E-5	3.6	4.5
Average In-house	3.6	4.4

LENGHT (mm)

Hybrid	LENGHT (mm) PIVOT	LENGHT (mm) DRYP
Intercon-211	36.7	36.1
Intercon-670	34.0	33.0
Intercon-701	36.3	35.6
P113-9	35.1	35.1
P113-15	36.6	35.8
P113-273	35.8	35.3
P113-277	36.1	35.6
Average hybrids	35.2	35.2
E-1	38.7	37.8
E-5	36.6	35.0
Average Barbed	37.6	36.6




STRENGTH

Category	STRENGTH PIVOT	STRENGTH DRY P
Intersect-11	38.7	37.5
Intersect-676	40.5	40.0
Intersect-701	39.4	38.7
F1 13-9	38.6	38.0
F1 13-15	35.5	35.0
F1 13-23	39.5	38.0
F1 13-27	38.6	36.4
Average Hybrid	39.0	37.7
E-1	47.3	47.3
E-5	44.3	44.2
Average Subset	46.3	45.8



CONCLUTION



The results belong only **to 2014**, we will need the results of at least two more years to verify this data



In the year 2014 the conclusions were as follows



FIBER YIELD Kg/Ha.

☺ **Pivot irrigation** demonstrated superior performance to **Drip irriations**



FIBER QUALITY (HVI)

☺ The results of the main quality parameters measured with HVI, only the **length parameter** has had slight differences in favor of Pivot irrigation



Thanks to all