



**TECHNICAL REPORT ON THE
EFFECT ON THE YIELD OF TWO
PRODUCTION INDUCERS IN THE
CULTIVATION OF WHITE
ASPARAGUS**

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8. "OBSERVATIONS OF THE ROOT SYSTEM

During the stage of full rooting has been observed the presence of reserve roots of very good lengths from 60cm to 75cm and with very good calibers ranging from 2.5mm to 3.4mm and very abundant in the soil profile. It is expected that the next campaign performance levels will be even higher

9. "ANNEX I: PHOTOGRAPHIC TEST SEQUENCE



Effect of TRANSPORT-T on the quantity and quality of buds.



TRANSPORT-T and whether it influences the formation of root mass.



TNF





The trial from the start showed a good plant conformation.



The maturity generated by K-22 was uniform and good color.

10. ANNEX II: CUMULATIVE HARVEST TABLES, CUMULATIVE TEMPERATURE AND QUALITY, WHERE T32 IS CONSIDERED, CASE STUDY. AL 25-11-18

Executive Summary U.N.ESP.ÁRRAGO - Week 47

From: Ing. Wilson Marí Olano - Responsible for Harvest Area.

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- Head of U.N.E

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A5unto; efficiency results for week 47 and weekly planning

I. MIDDLE PART

11. MIDDLE PART

111. TOP PART

Table 1 : Cumulative summary of harvest shifts as at 11/25/2018

Ublc	Turno	Proy.	N° yema	Oías	Prod. acumulad	Und /kg	Peso (gr)	Observación
tsaja	21	11910	108.0	20	4556.0	41.3	24.2	Cosecha concluida
	23	5000	94.6	21	4276.7	44.3	22.6	Cosecha concluida
	28	5500	101.5	19	6069.2	25.9	38.7	Cosecha concluida
	29	5500	88.1	25	5551.3	34.2	29.2	Cosecha concluida
	30	5500	86.0	24	5367.7	29.0	34.5	Cosecha concluida
	22	5000	125.0	43	9816.6	36.0	27.8	Cosecha concluida
	28	7500	118.0	20	9292.9	20.0	49.9	Cosecha concluida
	23	6300	118.4	32	8384.1	36.6	27.3	En proceso
	29	9000	115.2	16	6663.6	24.2	41.3	En proceso
	muna	40	2100	60.0	12	2381.3	36.0	27.7
46		5000	69.8	16	3742.0	32.9	30.3	Cosecha concluida
34		5000	83.1	19	5636.0	34.8	28.8	Cosecha concluida
32		3600	84.2	16	4474.0	32.7	30.6	Cosecha concluida
7c		4100	69.8	14	3117.3	39.0	25.6	Cosecha concluida
35		4100	83.8	19	4509.3	37.1	27.0	Cosecha concluida
36		3600	72.2	15	3370.5	34.5	29.0	Cosecha concluida
42B		4000	68.1	17	3629.7	36.0	27.8	Cosecha concluida
44		4000	73.2	22	3597.3	31.6	31.7	Cosecha concluida
45		3900	11.6	21	3656.6	32.2	31.3	Cosecha concluida
41		3800	77.6	21	3919.6	32.4	30.9	Cosecha concluida
43		4100	77.8	21	3875.4	34.5	29.3	Cosecha concluida
7A		3400	76.9	20	4385.2	34.7	26.7	Cosecha concluida
6		4000	77.0	19	3609.5	29.8	33.5	Cosecha concluida
7		4000	93.4	19	5352.1	26.0	38.5	Cosecha concluida
3B		800	74.5	17	3171.3	32.5	31.0	Cosecha concluida
39		3800	71.6	20	3847.1	28.7	34.9	Cosecha concluida
jt		5100	94.6	24	6272.3	21.0	47.3	Cosecha concluida
42A		4300	70.2	14	2839.9	31.0	32.3	Cosecha concluida
37		3800	57.3	15	2929.0	28.5	35.0	Cosecha concluida
25	5300	96.1	22	5685.4	31.8	31.5	Cosecha concluida	
JJ	5100	96.6	17	5866.2	29.0	34.5	Cosecha concluida	
78	4000	73.0	13	4344.8	27.6	36.2	Cosecha concluida	
9c	4100	84.3	15	5144.7	28.5	35.1	Cosecha concluida	

						33.7	
			17				
(f32)	6800						
40	3600	80.0	15	3015.4	29.7		Cosecha concluida
46	5000	85		3507.1	24.2	41.2	Cosecha concluida
35	5500	99.1	17	5123.5	25.4	39.4	Cosecha concluida
	5500	105.0	17	4103.5	25.0	40.0	Cosecha concluida
	5500	104.0	17	4114.4	25.3	36.6	Cosecha concluida
alta	4200	96.6	13	3640.9	24.1	41.4	En proceso
	4500	92.0	11		24.9	40.1	en proceso
	5000	91.8	10	2960.5	22.9	43.6	En proceso
	3800	81.1	27	3855.6	24.1	41.5	Cosecha concluida
	4400	93.5	21	3903.7	47.2	21.2	Cosecha concluida
	3700	80.3	20	4117.7	21.9	45.7	Cosecha concluida
	3700	77.1	19	4401.0	23.5	42.7	Cosecha concluida
	3500	81.2	22	3518.1	44.2	22.6	Cosecha concluida
	3500	87.8	38	3901.6	47.9	20.9	Cosecha concluida
	3500	86.7	19	3304.1	41.5	24.1	Cosecha concluida

Of the table:

- Middle, low and high harvest shifts
- Initial projection in kgs / ha
- Number of buds eara harvest
- Accumulated days per day Sunday 25/11/2018
- Cumulative production according to harvest days
- Units per kilogram and weighted average weight in grams according to accumulated days Finished harvest of T22 with 23 % below projected
- Finished harvest of T23 with 15 % below projected
- Finished harvest of T28 with 10 % above projected
- Finished harvest of T40 with 15 % below projected
- Finished harvest of T46 with 25 % below projected
- Finished harvest of T34 with 13 % above projected
- Finished harvest of T32 with 24 % above projected
- Finished harvest of T7c with 24 % below projected
- Finished harvest of T35 with 10 % above projected
- Finished harvest of T36 with 6.4% below projected
- Finished harvest of T29 with 0.9% above projected
- Finished harvest of T30 with at 2.5% below projected
- Finished harvest of T42B with at 9.3% below projected
- Finished harvest of T44 with 10 % below projected
- Finished harvest of T45 with 6.2% below projected
- Finished harvest of T15DB with 1.5% above projected
- Finished harvest of T41 with 3.15% above projected
- Finished harvest of T43 with a 5.5 ¾ below projected
- Finished harvest of T7A with 29.0 % above projected
- Finished harvest of T6 with 9.7% below projected
- Finished haverst T12D with 11.3% below projected
- Finished harvest of T38 with 16.5% below projected
- Finished harvest of T15D with 11.5% above projected
- Finished harvest of T14D with 20.0% above projected
- Finished harvest of T7 with a 34.0 ¾ above projected

- • Finished harvest of T 39 with 1 % above projected
- • Finished harvest of T 13D with 0.5% above projected
- • Finished harvest of T 42A with 34.0 % below projected
- • Finished harvest of T 31 with 23 % above projected
- • Finished harvest of T 37 with 22.0 % below projected
- • Finished harvest of T 25 with 7 % above projected
- • Harvest with T 110 with 5.5% below projected
- • Finished harvest of T 10D with 11.5% above projected
- • Confluent harvest of T 33 with 15.0% above projected
- • Confluide harvest of T 7B with 8.6% above projected
- • Finished harvest of T 7C with 14.3% above projected
- • Confluide harvest T 40 with 16.2% below projected
- • Finished harvest of T 46 with 11.3% below projected
- • Harvest with T 28 with 23.9% above projected
- • Confluide harvest of T 22 with 96.3% above projected
- • Finished harvest of T 35 with 6.8% below projected
- • Confluide harvest T 32 with 10.9% above projected
- • Confluent harvest of T 34 with 3.2% below projected

Observations:

- The trend is maintained for better diameters in the last shifts that have entered production except for the old shifts with more than 20 crops, as can be seen in Table 1
- We closed the week with a positive difference of 1.2% compared to the projected.
- Temperature data weeks 31 - 47

Dia	Fecti I	TMAX	TMIN	Diferencial	Horas < 15°	Horas (15° 17)
L	03/09/2018	24.7	15.4	9.3		13.0
M	04/09/2018	24.4	16.1	8.3		13.0
Mi	05/09/2018	24.8	15.8	9.0		9.5
Ju	06/09/2018	25.3	16.3	9.0		12.0
Vi	07/09/2018	24.9	15.7	9.2		13.0
Sa	08/09/2018	22.7	15.8	6.9		15.5
Do	09/09/2018	23.3	15.2	8.1		15.5
L	10/09/2018	23.1	13.6	9.5	3.	15.0
M	11/09/2018	22.3	12.5	9.8	0	10.5
					8.5	
Mi	12/09/2018	22.8	15.1	7.7		18.0
Ju	13/09/2018	24.9	15.4	9.5		16.0
Vi	14/09/2018	23.9	14.9	9.0	1.0	11.5
Sa	15/09/2018	24.2	14.8	9.4	1.5	12.5
Do	16/09/2018	23.4	15.2	8.2		11.5
L	17/09/2018	23.6	14.8	8.8	1.0	12.0
M	18/09/2018	19.0	15.2	3.8		14.0
Mi	19/09/2018	23.0	14.8	8.2	2.0	9.5
Ju	20/09/2018	24.2	14.6	8.6		
Vi	21/09/2018	23.9	13.4	10.5		
Sa	22/09/2018	24.9	12.8	12.1		
Do	23/09/2018	23.8	15.1	8.7		
L	24/09/2018	24.4	15.0	9.4	0.5	13.5
M	25/09/2018	25.7	14.4	11.3	0.6	0.3
Mi	26/09/2018	25.9	17.2	8.7		
Ju	27/09/2018	25.2	17.3	7.9		
Vi	28/09/2018	23.2	15.2	8.0		14.0
Sa	29/09/2018	22.2	14.7	7.5	6.0	10.5

Do	30/09/2018	24,8	14,6	10,2	8,5	4,5
L	01/10/2018	23,2	14,0	9,2	4,0	10,0
M	02/10/2018	24,7	15,0	9,7	1,0	8,0
Mi	03/10/2018	24,8	14,9	9,9		11,0
Ju	04/10/2018	26,1	13,8	12,3	2,5	8,5
Vi	05/10/2018	22,7	16,0	6,7		6,3
Sa	06/10/2018	25,2	16,3	8,9		6,7
Do	07/10/2018	24,3	16,8	7,5		2,1
L	08/10/2018	26,7	15,1	11,6		6,2
M	09/10/2018	24,7	15,7	9,0		11,7
Mi	10/10/2018	25,5	13,7	11,8	5,8	5,7
JU	11/10/2018	25,2	15,4	9,8		9,8
Vi	12/10/2018	24,4	14,4	10,0	1,2	9,8
Sa	13/10/2018	24,3	14,1	10,2	6,6	9,1
Do	14/10/2018	24,9	15,2	9,7		8,1
L	15/10/2018	25,1	16,6	8,5		6,7
M	16/10/2018	25,2	15,8	9,4		4,1
Mi	17/10/2018	24,7	14,4	10,3	0,5	9,8
Ju	18/10/2018	25,6	13,7	11,9	4,2	7,5
Vi	19/10/2018	24,7	13,9	10,8	4,9	5,4
Sa	20/10/2018	25,0	13,7	11,3	6,7	2,2
Do	21/10/2018	25,8	14,2	11,6	2,5	8,3
L	22/10/2018	24,3	14,3	10,0	3,8	6,6
M	23/10/2018	25,4	12,6	12,8	7,0	3,9
Mi	24/10/2018	24,4	12,8	11,6	7,3	4,0
Ju	25/10/2018	24,2	14,8	9,4	2,2	7,6
Vi	26/10/2018	23,7	14,0	9,7	6,2	4,7
Sa	27/10/2018	24,2	14,0	10,2	7,6	4,6
Do	28/10/2018	25,4	14,0	11,4	4,7	6,4
L	29/10/2018	25,6	14,3	11,3	2,0	5,8
M	30/10/2018	26,4	16,1	10,3		8,5
Mi	31/10/2018	25,6	15,8	9,8		7,5
Ju	01/11/2018	25,9	16,2	9,7		6,9
Vi	02/11/2018	26,4	15,3	11,1		7,5
Sa	03/11/2018	26,1	16,7	9,4		3,4
Do	04/11/2018	24,9	15,7	9,2		6,6
L	05/11/2018	25,4	16,3	9,1		2,1
M	06/11/2018	26,3	15,2	11,1		9,1
Mi	07/11/2018	25,7	15,8	9,9		5,7
Ju	08/11/2018	25,8	17,7	8,1		
Vi	09/11/2018	26,8	17,9	8,9		
Sa	10/11/2018	25,8	17,2	8,6		
Do	11/11/2018	23,7	16,0	6,8		0,5
L	12/11/2018	26,8	17,7	9,1		0,0
M	13/11/2018	24,9	16,4	8,5		0,4
Mi	14/11/2018	24,9	16,8	8,1		7,2
Ju	15/11/2018	26,1	15,9	10,2		0,4
Vi	16/11/2018	26,1	16,1	10,0		0,7
Sa	17/11/2018	25,6	15,7	9,9		3,2
Do	18/11/2018	26,1	16,7	9,4		6,9
L	19/11/2018	26,6	16,2	10,4		7,0
M	20/11/2018	26,4	16,9	9,5		0,4

Mi	21/11/2018	25,8	16,7	9,1	5,8
Ju	22/11/2018	25,4	17,3	8,1	0,0

From the table we observe differentials within the average , however on days 26 and 27/09 there is an increase of T° of up to 2° in the maximum and minimum temperatures.

Summary table of grades accumulated as of 11/25/2018

Ubic	Turno	Fresco(%)		Conserv a (%)	uescarte (%1				total descartet%1
		Delgado	Grueso		Oxido	Rajado	Recorte	Otros	
Baja	22	20.3	20.2	34.5	5.4	2.5	10.5	6.5	24.9
	23	24.0	18.9	27.5	7.0	1.9	12.6	7.8	29.3
	28	14.4	28.7	25.5	8.8	1.7	12.8	8.6	31.9
	29	18.0	27.4	26.4	5.5	2.5	11.9	8.3	28.2
	30	11.8	24.9	31.0	6.2	b10J	11.1	9.9	32.2
	22	18.6	19.9	36.6	1.9	€	10.0	8.3	24.9
	28	14.4	32.4	27.3	3.8	2.6	11.3	7.2	25.9
	23	16.5	20.1	37.4	2.5	3.6	10.1	6.4	26.0
	29	15.5	37.3	22.7	2.9	2.5	10.7	7.2	24.4
	Media	40	24.1	28.5	21.6	3.0	3.7	11.5	7.5
Media	46	18.4	8.7	23.1	5.4	5.1	11.8	6.5	29.5
	34	23.5	22.1	24.2	5.3	6.8	11.2	7.0	30.3
	32	21.3	22.0	24.3	6.7	7.1	11.8	7.5	33.1
	7c	28.9	17.6	26.6	6.5	1.2	12.0	7.1	26.8
	35	21.5	23.3	24.6	4.6	1.1	11.7	7.4	30.5
	36	19.7	25.2	23.4	4.0	3.3	12.0	7.1	31.4
	42B	17.8	8.5	23.6	4.1	6.1	10.8	9.0	30.0
	4	15.9	7.9	23.7	4.3	5.2	11.0	11.9	32.4
	41	16.4	4.0	29.3	2.9	6.1	11.4	9.4	30.3
	45	13.6	4.2	31.2	2.9	5.1	11.4	9.7	30.8
	43	15.8	26.9	27.3	2.9	5.2	11.7	9.8	30.0
	7A	16.0	1.5	32.5	2.6	3.7	11.1	9.3	28.2
	6	14.6	30.3	29.1	2.2	1.8	12.0	10.0	26.0
	7	12.0	33.1	29.2	2.2	2.4	11.6	9.4	25.7
	38	17.8	31.0	24.5	2.8	5.1	10.7	7.8	26.6
	39	17.7	33.0	23.3	2.3	5.1	11.2	6.6	26.0
	31	9.9	39.4	21.8	0.0	2.7	11.4	5.6	28.8
	42A	15.7	35.8	21.4	2.9	5.0	11.1	-5.5	27.0
	37	17.8	32.4	23.2	2.1	4.0	11.8	12.7	26.6
	2ff	18.1	27.1	27.1	1.9	ffl	11.3	17.7	27.4
	33	19.9	36.5	18.4	2.4	ffl	10.1	7.1	26.1
	71	17.8	17.8	17.8	4.3	2.9	11.4	6.2	23.7
	2	19.0	2.4	22.6	2.5	2.6	12.8	6.2	24.8
	7C	19.0	33.7	22.6	2.5	2.6	12.8	6.2	24.8
	40	20.6	30.6	23.1	2.3	€	11.2	6.2	25.6
	46	19.2	39.7	15.3	2.8	€	11.6	6.9	25.8
	JS	20.6	36.2	15.8	2.0	€	11.6	7.3	27.2
	32	17.2	31.1	22.7	2.6	11	10.8	5.6	29.0
34	22.6	29.8	19.3	2.5	11	11.5	7.1	28.1	
JFI	21.5	35.7	16.2	1.7	11	11.6	6.8	26.6	
42B	21.0	36.4	16.6	1.5	11	11.4	7.1	26.0	
2	19.2	37.1	16.6	1.2	11	11.0	6.9	27.1	

Muestra

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Alta	150B	11.3	26.6	30.6	2.8	2.8	11.7	12.3	26.6
	12D	18.4	20.9	34.6	2.1	3.8	10.8	9.4	26.1
	1:u	11.8	36.6	24.4	4.1	2.0	11.3	9.6	26.9
	140	11.6	38.0	24.5	4.0	2.2	11.6	8.0	25.8
	1:u	25.6	22.9	26.7	1.7	3.5	10.5	9.1	24.8
	10D	20.1	22.1	33.0	1.4	3.6	10.0	9.5	24.9
	11U	23.6	22.3	29.8	1.3	3.8	10.9	9.0	24.3

Observations:

- From the picture , we can appreciate that in the thick fresh quality we have
- considerably improved with the **exception of T100, T110, T12D, T13D, T25, T22 and T23** producing thin turions as fields with more 20-crop
- Increased product quality, which is why the discard in all shifts that are in production is maintained with a weighted average of **25.6 %**.
- The **problem discard as strong oxide** low considerably to **2.0%** and **strong crack** increased to **5.0%** in all turns due to presence of jumlios cracked.

IV. MAJOR DAILY INCIDENTS REPORTED

- Increased discard due to presence of split jumbo turions.
- The disinfection test of 100% soil for asparagus replant, with product Triform 35 scheduled for 24/11/2018 was not executed because when performing calicata moisture monitoring dry areas are observed. So it's being rescheduled to apply in week 48.
- Advance disapprove of shifts 32 and 34 , for market inconvenience

V. RECOMMENDATIONS

- NONE

VI. OPPORTUNITY FOR IMPROVEMENT

- **T32 : HARVEST RESULTS WITH O2 PRODUCTION INDUCTORS (TRANSPORT - T AND K-22) + BIOFERMENTS**
- **CONTROL T34 WITHOUT BIOFERMENTS..**

TURNOS	T32	T34
N° de cosecha	9 /	9 /
Días cosecha	17 I	17
Numero de tallos x m	23.3	21.8
Altura de planta	1.95	1.93
Numero yemas	105	104
Rmtto (Kg/ Ha)	6297.0	6579.4
Calidad (%)		
F. delgado	11.5	14.8

F.Grueso	34.4	37.5
Total fresco (%)	45.9	52.3
Conserva	29.7	25.5
Aprovechamiento (%)	75.6	77.8
DescarJte	24.4	22.2
O. fuerte	2.8	2.4
R. fuerte	4.5	2.9
Recorte	12.7	13.9
Otro	4.4	3.0
Unidad/ kg	26.3	29.7
Peso x turión	38.0	33.7
Precio retorno (\$ / Kg)		
Ingresos (\$ / Ha)		
#turión esdafiados cosecha	4.25	4.6

CONCLUSIONS:

- IN THE CONTROL THERE WERE 13 % OF MILD OXIDIZED AGAINST 10 % FROM SHIFT 32 THAT THE TREATMENT WAS PERFORMED.
- FROM SHIFT 32 THAT THE TREATMENT WAS PERFORMED. AS INDICATED IN THE PREVIOUS ITEM
- HIGHER WEIGHT TURIONS WERE OBTAINED IN THE TREATMENT : TREATMENT 38 gr x turion and control 33.7 gr x turion
- IT IS OBSERVED THAT IN THE SHIFT THAT WE PERFORM THE TREATMENT THERE IS A RECOVERY IN THE YIELDS OF KILOS X HA AS SEEN IN THE ATTACHED RECORD:

Turnos	Rendimientos (TM /Ha-campaña)			
	6ta	7ma	Bva	9na
32	4.5	5.6	4.5	6.3
33	4.8	7.1	5.6	6.6
34	4.4	6.8	5.6	6.6

- SO THAT THE TREATMENT CAN BE REPEATED AT HARVEST #10

- T28 - T34 : HARVEST RESULTS NOT APPLIED
- BIOFERMENTS FOR THE PURPOSE OF MONITORING TURIONS RUSTY.

TURNOS	T28	T34
N° de GOsecha	11	9
Días cosecha	20	17
Numerp yemas	118	104
Rmtto (Kg/ Ha)	9292.9	6579.4
Calidad (o/o)		
F. delgado	8.8	14.8
F. Grueso	33.4	3/!)
Total fresco (%)	42.2	52.3
Conserva	37.3	25.5
Aprovechamiento (¾)	79.5	77.8
Descal'lte	20.6	22.2

O. fuerte	3.5	2.4
R. fuerte	0.6	2.9
Recorte	13.8	13.9
Otros	2.7	3.0
Unidad/ kg	25.4	29.7
Peso x turión	39.3	33.7
Precio retorno (:i: /Kg)		
Ingresos (\$/ Ha)		

- CONCLUSIONS:
- IN THE 02 SHIFTS THERE WAS A CONSIDERABLE DECREASE IN PASSENGER CARS
- DETAIL OF OXIDIZED TURIONS PER SHIFT :

Turnos	Tratamiento	% oxido leve	% oxido fuerte
32	Biofermentos semana 1 - 8	13	2.8
34	Sin biofermento	10	2.4
28	Sin biofermento	19	3.5

- The turn KA presents greater deviation for being a heavy ground. HOWEVER IF WE COMPARE WITH THE PREVIOUS CAMPAIGN WE HAVE DROPPED FROM 8.8% TO 3.5% IN RUSTY WAS RTE.
- IT IS CONCLUDED THAT THE BIOFERMENTS IF THEY INFLUENCE THE OXIDIZED TURIONS AND IT IS OK TO APPLY ONLY WITHIN THE 1ERAS 08 WEEKS OF CULTIVATION TO ALLOW WASHING FROM WEEK 9 AND ACHIEVE REDUCING THE AMOUNT OF STAINED BUDS..
- Continuous crop monitoring with plastic in T36.

VII. ACCIDENTS OR SAFETY INDICATORS

- NONE

VIII. REQUIREMENT OF PERSONNEL

- NONE