

Agricrop Pty Ltd

Evaluation of Fertigation of Photon in Peas & Beans

Tatura, Victoria, 2014/15



**David J Bell & Associates Pty Ltd
Ag & Horti Consultant**

**2 Lapwing St
Kialla 3631
Victoria
Australia**

**Phone: 03-58235414
Mobile: 0417-501503
Email: david.j.bell@telstra.com**

Project: Fertigation of Vegetables with Photon

Trial Location: Tatura, Victoria

Submitted to: Agricrop Pty Ltd
Queensland

Principal Investigator: David Bell (*Dip.Ag.Sci; G.D.A; M.App.Sci; M.A.I.A.S.T*)
David J Bell & Associates Pty Ltd
2 Lapwing St.
Kialla 3631. Vic

Report Submitted: April 2015

COMPANY CONFIDENTIAL

This document is the property of Agricrop Pty Ltd; the recipient is responsible for its safekeeping and disposition. It contains CONFIDENTIAL INFORMATION which must not be reproduced, revealed to unauthorised persons or sent outside the Company without proper authorisation.

Table of Contents

OBJECTIVE..... 4

SITE DETAILS 4

WEATHER DETAILS..... 5

RESULTS & DISCUSSION 6

Crop Safety 6

YIELDS - PEAS 6

YIELDS – BEANS #1 8

YIELDS – BEANS #2 10

Photos 12

OBJECTIVE

The objective of the trials was to evaluate the Efficacy and Crop Safety of Photon when applied via fertigation to peas and beans.

SITE DETAILS

Location	Tatura, Victoria
Co-operator	Ange Russo
Irrigation	Trickle.
Soil type	Tatura clay loam

WEATHER DETAILS

Temperature data was obtained from the Bureau of Meteorology weather station located at Tatura and are summarised in table 1. The temperatures at this site would be indicative of the temperatures and rainfall at the trial site, approximately 5 kms away.

Table 1. Bureau of Meteorology Weather Data for Tatura

Date	Maximum Temperature C					Date	Minimum Temperature C				
	Sept	Oct	Nov	Dec	Jan		Sept	Oct	Nov	Dec	Jan
1	15.7	16.9	20.3	33.7	31.4	1	10.5	1.8	13.9	21.1	9.1
2	14.5	18.8	19.1	31.7	38.5	2	2.4	2.2	4	12.1	12.7
3	14.7	21.7	24.2	30.3	38.7	3	4.2	5.9	5.1	16.8	21.8
4	15.2	24.8	29.9	30.7	29.3	4	0.8	3.3	8.3	16.2	21.5
5	17.4	24.3	20.8	29.7	32.9	5	3.4	8	11.7	16.8	13.3
6	18.7	27.6	25	27.5	35.9	6	3	8.6	7.5	15.2	14.9
7	19.1	17.7	30.2	25.4	38.1	7	1.2	9.5	7.6	15.2	20.6
8	21.2	18.9	36	25.2	36.2	8	8.5	2.6	10.3	14	23.6
9	19.2	22.7	25.3	28.8	27.2	9	12.5	3.9	11.2	12.3	20.1
10	17.2	24.6	23.3	31.2	21.2	10	5.9	9.7	9.6	13	14.1
11	16.6	29.3	24.5	27.2	30.6	11	9.5	5.9	9.4	16.1	14.5
12	15.3	31.8	29.8	28.3	33.5	12	2.6	6.9	6.4	12	17.9
13	18.1	17.3	33.6	29	24.5	13	0.4	9.8	10.3	13	20.8
14	20.8	17.6	29.7	31.8	26.5	14	1.5	7.3	18.1	16.1	17.6
15	19.1	18.5	21.4	35	24	15	5.9	5.5	12.5	12.6	14.2
16	18.6	19.1	20.7	33	28.7	16	4.4	3.2	12.1	18.8	8.5
17	16.8	20.5	22.6	24.7	27.3	17	4.8	4	7.1	7.3	13.2
18	15.2	24.4	23	26.8	23.9	18	3.3	3.2	8	7.2	10.9
19	17	30.5	28	22.9	28.1	19	-0.4	10.9	8.8	9.8	11.1
20	17.5	24.4	33.5	28.3	30.2	20	5.1	10.2	12.9	9.6	14.3
21	19.2	27.3	27.8	33.2	32.9	21	4.5	7.8	16.3	11.9	17.2
22	22	29.9	30.7	36.8	35.1	22	2.4	12.9	9.6	15.7	18.2
23	24.2	32.6	31.7	32.8	37.5	23	4.3	14.4	16.2	20.3	22.2
24	20.7	30.6	30.3	29.4	33.1	24	14.1	15.2	16.6	12.9	14.7
25	19.2	29.3	22.9	29.3	24.7	25	13	13.4	7.8	12	12.2
26	17.5	25.9	23.4	22.3	23.3	26	7.7	10.7	10	10.3	10
27	21.4	22.3	26	28.2	26.4	27	2.8	14.9	9.4	7.6	11
28	27.4	21.5	29.4	31.2	28.1	28	11	7	9.2	12.1	12.8
29	20.9	23.7	33.4	31.1	25.6	29	7.3	3.8	11.8	15.1	10.6
30	24.7	27.8	35	27.2	23.8	30	6.2	7.9	18.6	9.3	10.1
31		33.8		27.9	25.1	31		5.8		10.4	11.9

RESULTS & DISCUSSION

Crop Safety

Assessments for crop safety were undertaken over the growing season of each crop. At no stage was there any evidence of crop phytotoxicity to the bean or pea seedlings, plants, flowers and harvestable crop.

YIELDS - PEAS

Crop	Peas
Plant Variety	Melbourne Market
Date Planted	2 nd September 2014
1 st Harvest	28 th October 2014
Photon applications	4

Four fertigation applications of Photon at 20 g/ha occurred once the peas had germinated. Application occurred at approximately 14 day intervals. The Photon was applied in the last one hour of the irrigation cycle.

In a 1.62 ha block comprising 24 rows of peas, two rows were fertigated with Photon. The balance of 22 rows was untreated controls. The Photon treated area yielded 1,558 x 10 kg cartons per hectare whilst the untreated control area yielded 1,297 x 10 kg cartons per hectare.

Four applications of Photon via fertigation provided a yield increase of 262 x 10 kg cartons per hectare or a yield increase of 20%.

Yield	Cartons per ha		Average
Photon	1533.3	1583.3	1558.3
UTC	1283.3	1310.0	1296.7

Grower Comments

The Photon treated peas had better colour and the plants were healthier and could have been picked for a third time. The peas were more even in length. The Photon treated peas were ready to harvest 7 to 10 days earlier than the untreated control peas.



Photon treated peas.

YIELDS – BEANS #1

Crop	Beans
Plant Variety	Hickock
Date Planted	14 th September 2014
1 st Harvest	25 th November 2014
Photon applications	4

Four fertigation applications of Photon at 20 g/ha occurred once the beans had germinated. Application occurred at approximately 21 day intervals. The Photon was applied in the last one hour of the irrigation cycle.

In a 1 ha block comprising 24 rows of beans, twelve rows were fertigated with Photon; with the remaining 12 rows being untreated controls. The Photon treated area yielded 1,773 x 10 kg cartons per hectare whilst the untreated control area yielded 1375 x 10 kg cartons per hectare.

Four applications of Photon via fertigation provided a yield increase of 398 x 10 kg cartons per hectare or a yield increase of 29%.

Yield	Ctns/ha
Photon	1772.8
UTC	1375.4

Grower Comments

After two picks the Photon treated bean plants showed much less stress with the harvested beans having better colour and quality.



Photon treated beans set lots of beans even in hot weather.

YIELDS – BEANS #2

Crop	Beans
Plant Variety	Hickock
Date Planted	10 th December 2014
1 st Harvest	26 th January 2015
Photon applications	3

Three fertigation applications of Photon at 20 g/ha occurred once the beans had germinated. Application occurred at approximately 21 day intervals. The Photon was applied in the last one hour of the irrigation cycle.

In a 0.72 ha block comprising 24 rows of beans, twelve rows were fertigated with Photon; with the remaining 12 rows being untreated controls. The Photon treated area yielded 794 x 10 kg cartons per hectare whilst the untreated control area was not harvested. The beans in the untreated control area were severely stressed with high levels of flower abortion and poor quality beans.

Four applications of Photon via fertigation provided a yield increase of 794 x 10 kg cartons per hectare.

Yield	Ctns/ha
Photon	794.4
UTC	0.0

Grower Comments

The bean plants in the Photon treated area showed very little stress with good bean colour and uniform coloured beans at harvest.

Untreated beans were not able to be harvested. The plants showed severe stress with poor bean set and unthrifty plants following hot weather in January.



Photon



Untreated (Unharvestable)



Photon Treated

Photos



Photon treated – beans snap.

Untreated – beans bend.