Salad Potato Technology Project

Crop Walk May 2015 (Workshop 2)

Workshop 2 will look at planting, spacing, review of cultivations, root and stem development, irrigation and blight control

5/25/2015

Teagasc, Bord Bia, IFA and Salad Potato Technology Project

Context

The imports of salad potatoes are estimated at 20,000 tonnes per year. It is estimated up to 15 Irish growers have been supplying approx. 10-15% to this market each year. There is huge scope to increase the volume of home produced salad potatoes to the domestic market. Increasing the area grown to salad potatoes can thereby displace imported salad potatoes and will also help potato growers diversify existing ware production into a premium market. The production of salad potatoes requires considerable skill and a change of practice if changing from traditional ware potato production. Grower diversification into salad production cannot be taken likely as the supply chain (from seed supply, agronomy, to final sale) need to be secure.

Coping with an expansion of salad potato will be challenging. Potato farmers will require the knowledge and support to enable them to make the necessary changes for a profitable and sustainable future. It is within this context this initiative between Teagasc, Bord Bia, IFA and industry has been agreed.

Purpose

The overall purpose of the program is to increase the level of information to existing growers and ultimately increase the quantity of salad potatoes grown in Ireland. This will involve equipping the industry with the necessary skills and knowledge to sustainably develop their potato enterprises

Objective

The program has five objectives

- Improve existing growers knowledge in all areas (agronomy/storage) of growing salad potatoes
- Increase the total quantity of salad potatoes grown in Ireland
- Grow the market for indigenously grown salad potatoes to keep pace with increased production
- Increase the number of growers supply salad potatoes
- Upskill the industry on storage of salad potatoes
- Leave a legacy of information for growers to use after the program is finished

Methodology

1. Run a Technology transfer project over the next 3 years
2. Regularly meet existing growers through each season at critical times
3. Develop markets and solutions to prolong window where salad potatoes are delivered
4. Provide up to date agronomy notes for growers at each meeting , building to a substantial volume of information over the three years which can be used in the future

Demonstration site (John Stafford, Wexford)

Field name	**J.Murphy's**	
Soil type	Fine Clay with percentage of sand, on a river bank	
Soil analysis		
pH	6.0	
P	3.8 (Low index 2)	
K	237 (high index 4)	
Mg	110 (index	
Manure applied?	No	
Fertiliser used	N= 68kg/ha (54units/ac) (54 units/ac in bed) P= 115 kg/ha (92units/ac) (60 units/ac in the bed) K= 90 kg/ha (72units/ha)	
Field history		
Last year potatoes grown?	2011	
Previous crop?	Spring Barley	
Any groundkeepers?	No	
PCN? FLN?	Not tested	
Stone content	Very low stone content	
Bed width	72 inches	
Irrigation available?	Yes	
De-stoner webs spacing	30mm Space	
Harvester webs spacing	30mm Space	
Varieties in demo	Maris Peer (35/55mm) Jester (25/35mm) Charlotte (35/45mm) Jazzy (35/45mm) Imagine	EC2 EC2 EC2 EC3
Market size requirement	25-45mm	
Seed tuber count (tubers/50kg)	Maris Peer (35/55mm) Jester (25/35mm) Charlotte (35/45mm) Jazzy (35/45mm)	940 per 50Kg 2650 per 50Kg 810 per 50Kg 910 per 50Kg
Planned seed tuber spacing (inches) for 300,000stems/ac	Maris Peer (1.28ac) Jester (0.67 ac) Charlotte (0.625ac) Jazzy (0.196ac) Imagine (2 rows)	4.4 3 5.7 6.5 4.4
Seed quality (perhaps we can have a washed sample at the visit of each stock?)	Maris Peer (2.5tons 35/55mm) Jester (2.5tons 25/35mm) Charlotte (2.5tons 35/45mm) Jazzy (1ton 35/45mm)	EC2 Class SE EC2 Class E EC2 Class SE EC3 Class A
Seed tuber fungicide treatment	All treated with Imazalil/Thiabendazole	All varieties also receive Monceran 1.5 kg/ton
Weed control	May 21	Defy 3L/ha Shotput 0.75kg/ha Activator 0.2L/ha Retro 2L/ha
Irrigation	To start	
Blight applications	To start at roseate stage (2")	

Modified from *SAC Association of Potato Producer Bulletin for its members on Weed Control*

Residual herbicides

It is worth repeating again that herbicide trials over the last few years have confirmed that metribuzin remains the key active ingredient to ensure successful weed control, particularly if conditions are dry. Metribuzin can now be purchased in both liquid – SC – form (Sencorex Flow) and in WDG form (various products). Both formulations will have the same variety restrictions for pre- and post-emergence use. Although there is less active in the liquid formulation, it is recommended that at reduced doses both products are used at the same dose e.g. 0.75 kg/ha = 0.75 l/ha. The assumption has been made that at the same dose the phytotoxicity to sensitive varieties remains the same, but there still has not been extensive trialling with the liquid formulation.

Mixture partners for metribuzin

In 2013 & 2014, the combination of metribuzin @ 0.5 – 0.75 kg/ha + linuron @ 1.35 l/ha + diquat continued to provide excellent weed control pre-emergence. As long as it remains available linuron continues to provide a useful addition to pre-emergence herbicide programmes.

Our experience is that Defy (prosulfocarb) is not as effective in dry conditions. With moisture and a dose not less than 4.0 l/ha, the combination of Defy and metribuzin works well and provides additional control of cleavers (at high doses), black nightshade, speedwell and annual meadow grass. In dry conditions though, it is not worth using Defy except in situations where you have missed the herbicide timing and emergence is starting or the variety is sensitive to metribuzin (obviously missing out metribuzin as a partner in the above example). In this situation Defy remains the safest option.

Clomazone, either as a straight product or in co-formulations can be a useful addition to weed control programmes, particularly where there is a late flush of weed seedlings. If cleaver control is required then full dose is required. Key benefits are control of polygonums, AMG, shepherds purse, sowthistle and black nightshade. It will not improve fumitory control or volunteer OSR. Yellowing can be seen from clomazone, although mostly after full dose, when the ridge is dry and subsequent irrigation or very heavy rain results in uptake by the crop. When it occurs it can set the crop back, although rarely results in yield reduction when the crop is grown on. If you are using clomazone in 3 way mixes or more, in order to be backed by the manufacturer it must be applied within 2 weeks of planting but providing plants are not cracking ridge it should be OK in most cases.

Stomp Aqua (pendimethalin) really only comes into play in three way mixes where metribuzin is not applied. Its main benefit is persistence in wet conditions. It must be applied early prior to any plants cracking the ridge, otherwise crop damage occurs and this is long lasting.

Timing is everything with potato weed control with the aim being to avoid any post emergence applications. If conditions are moist soon after the beds have settled then it may be worth applying the residual products while holding back the contact element until just before crop emergence. This would be preferable to allowing the beds to dry up again thus minimising the effect of a later applied residual spray. If the beds remain dry after planting then you should definitely hold off and hope to apply the whole mix onto a moist bed 2-3 days before crop emergence – this is the ideal. It does mean that regular digs across crops are required to know when spraying should be timed.

Metribuzin sensitivity:

The best policy is to get your metribuzin herbicide mix on when the potato shoots are no less than 5cm from the surface of a moist seed bed. This will negate the need for any post-em application. Remember to check varietal sensitivities on the label though as varieties such as Cabaret, Fambo, Lady Claire, Shepody and Innovator are listed as sensitive even to pre-emergence sprays. More care also has to be taken on very light sandy soils where many varieties including Maris Piper are at risk.

Contact herbicides

Contact options are the same as previous years:

- Diquat (various products) 2.0 l/ha (+ a non-ionic wetter such as Activator 90 sufficient for 0.1% of total water volume applied – but no wetter needed if mixed with Spotlight or the residual Defy)
- Spotlight 0.33 l/ha
- A diquat/Spotlight combination (typically adding 1.0 to 1.5 l/ha diquat to the dose of Spotlight above)

Increase dose of diquat where annual meadow grass

Post emergence metribuzin where weeds persist:

Trials last season using low-dose post-emergence metribuzin application on relatively insensitive Markies post-emergence showed good weed control and minimal phytotoxicity at 75 to 250 g/ha (see table below). However, at 0.5 kg/ha post-emergence severe phytotoxicity occurred and persisted for up to 56 days. The post-emergence low dose option for multiple (2-3) doses of up to 0.1 kg/ha or a single dose of up to 0.25 kg/ha have proved effective over three seasons.

Herbicide trial 2014 – Phytotoxicity – Post-em

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	Product	18 June (+1d)		4 July (+17d)	23 July (+34d)	14 August (+56d)
		% leaf affected		Presence of any symptoms/plot		
1	Untreated	0.0	a	0/3	0/3	0/3
	↓ Treatments 13 to 16 had 2.0 l/ha diquat pre-emergence					
13	Shotput 0.5	23.3	d	2/3	2/3	2/3
14	Shotput 0.25	0.0	a	0/3	0/3	0/3
15	Shotput 0.1	1.67	ab	0/3	0/3	0/3
16	Shotput 0.075	0.67	ab	0/3	0/3	0/3
	LSD	7.49 •••		-	-	-

Potato Herbicides 2015 (From Teagasc Crop Report)

Product /Active Ingredient	Company	RRP ex VAT	Mode of Action	Crop	Weeds	Rate /ha	Comments
Basta *(Glufosinate Ammonium 200g/L)*	Bayer	€123 / 5L	Contact	Before 10% emergence	Post emg.	3.0 L	Low Toxicity
Dessicant (Diquat 200 g/l) Reglone D-Quat Farmco Regal	 Syngenta Barclay Farmco	€8+/1L	Contact	Pre harvest	Burnoff of top growth	2.0-5.0L	Use in mix with residual herbicides
Herbicide (*Diquat 200 g/l)* Retro Quad Beretta Di-Quattro Dragoon Gold	 Syngenta DHM Croplink Unichem Unichem	€8.8+/1L	Contact	Before 10% emergence	Pre Emerg	2.0L	Use in mix with residual herbicides
Spotlight Plus *(Carfentrazone-ethyl 60g/L)*	Whelehan	€325/5L	Contact	Before 10% emergence Cleared as herbicide only		0.33 L/ha	Alternative to diquat (Good desiccant)
Lingo *(Clomazone 45g/L +linuron 250g/L)*	Whelehans	€149/5L	Residual	Pre-emerge	Pre emerge	2.0 L/ha	Good spectrum but can cause bleaching if applied post emerge
PDM 330 *(PDM 330g/L)* Stomp Aqua *(PDM 455g/L)* Most Micro	BASF BASF Unichem	€7/1L €59/10L 16/1L €39/5L	Residual /Contact	Pre-emerg	Pre-emerg	4.0 L + 0.5kg Sencorex 2.9L + 0.5 kg Sencorex	Ìdeally tank mix with Metribuzin @ 0.5 kg
Titus *(Rimisulfuron 25% ww)*	Du Pont	€134/120g	Contact	Post emg. up to 10 " of crop	Post emg.	50g	Must use wetter
Afalon Liquid *(Linuron 450 g/L)* Daltura *(Linuron 500g/L)*	Croplink Unichem	€64/5L €66/5L	Residual	Pre emg.	Pre emg.	2.1 L	Pre Emg. for use in earlies and maincrop, rate varies with soil type Fumitory resistant
Sencorex Flow *(Metazachlor 600g/l)*	Bayer	€278/5L	Contact & Residual	Earlies -Pre emg. Safe Post Emg. Up to 6" high on most main crops	re & Post emg. Knotgrass best applied as Pre. Bindweed best applied as Post. emg.	0.85-1.15 L/Ha	Wide spectrum Cleavers is resistant See label for varietal tolerance
Shotput *(Metazachlor 700g/l)*	Croplink	€361kg	Contact & Residual	Earlies -Pre emg. Safe Post Emg. Up to 6" high on most main crops	Pre & Post emg. Knotgrass best applied as Pre. Bindweed best applied as Post. emg.	0.75 kg depending on soil type (* MTD of 1.25 kg/ha on maincrop with MID of 0.5 kg/ha allowed post crop emergence until shoots are 15cm in length)	Wide spectrum Cleavers is resistant See label for varietal tolerance
Defy *(Prosulfucarb 800g/L)*	Syngenta	€103/ 10L	Residual	Pre-emerge	Pre Emerg	4L	Best used as tank mix
Stratos Ultra *(cycloxydim 100 g/L)*	BASF	€29/1 L	Contact	Post emergence	Ware Potatoes	1.5 – 4.0L	1.5 L/ha Wild oats 4.0L/ha Scutch
Fusulade Max *(Fluazifop-P-butyl 125g/L)*	Syngenta	€51/1 L	Contact	Post Emergence	Ware Potatoes	1.5-3.0 L	No oil Required
Falcon Claw 100 *(propaquizafop100g/L)*	Croplink DHM	€45+/1L	Contact	Post Emergence	Ware Potatoes	1.0-1.5L	

Off label use approved for : Aramo (3099)

Potato Fungicides 2015

Product Name	Active Substance	Mode of Action	Rate/Ha	RRP/ha ex VAT	Marketing Company	Water Vol	Application Interval	PHI	Max Total Dose	Max No Appns per crop	Curative	Leaf Blight	Rain Fastness	New Growth
Amistar Opti/Curator/Vertik *(off label)*	Chlorothalonil 500 g/l Azoxystrobin 80g/L	Contact + Systemic	1.0 L	€96/5L	Syngenta	200-300	7 - 10 days		1	-	-	-	-	-
Cuprene 50	Copper oxychloride 500g/Kg	Contact	5Kg	€195/25kg	Unichem	200	7 Days	14 Days		Not Specified	-	-	-	-
Dithane 945	Mancozeb 80 %w/w	Contact	2.25 kg	25kg/ TBA	Whelehans	200 – 1000	7 days	7 days		Not Specified	0	2		1 1/2*
Penncozeb WDG	Mancozeb 750 g/kg	Contact	2.1 kg	€62/10 kg	Unichem	200 - 1000	7 - 14 days	7 days		Not Specified	0	2	-	1 1/2*
Ranman Top	Cyazofamid 160 g/l	Contact	0.5 L/ha	€150/5L	Whelehans	200 – 400	5 days	7 days	3.0L	6	0	3.8	3*	-
Shirlan/Tizca/ Volley/Farmco Blitz	Fluazinam 500 g/l	Contact	0.4L/ha	€33+/1L	Syngenta/DHM / Croplink/Farmco	200-500	7 days	7 days	4lt/Ha	10	0	2.9	2 1/2*	-
Ridomil Gold MZ 68 WG	Mancozeb 64 %w/w + Metalaxyl M 4.0 %w/w	Systemic + Contact	2.5 kg	€113/1kg	Syngenta	200	10 - 14 days	7 days	7.5 kg/ha	3	2 1/2 *		3*	2
Option	Cymoxanil 600 g/kg	Translaminar (Tank Mix partner only)	187g/ha	€92/1.5kg	DuPont	200 – 500	7 – 10 days	14 days	1.125 kg/ha	6	-	-	-	-
Cymbal	Cymoxanil 45% ww	Translaminar (Tank Mix partner only)	0.25 kg/ha	€38/1kg	Whelehans	200	7 – 10 days	14 days	1.5kg	6	-	-	-	-
Revus	Mandipropamid 250 g/l	Translaminar + Contact	0.6lt	€260/5L	Syngenta	200	7-10 Days	3 Days	2.4 L/ha	4	-	-	-	-
Curzate M WG	Cymoxanil 4.5 % w/w + Mancozeb 68 %w/w	Translaminar + Contact	2.5 kg	€79/10 kg	DuPont	200	10 – 14 days	7 days	16 kg/ha	6	2*	-	2*	-
Globe	Cymoxanil 6g/kg + Mancozeb 700 g/kg	Translaminar + Contact	2 kg	€72/10kg	Unichem	210	10 – 14 days	7 days	12.0 kg/ha	6	2*	-	2*	-
Zetanil WG	Cymoxanil 45g/kg + Mancozeb 650 g/kg	Translaminar + Contact	2.4kg	€73/10kg	Unichem	300	7 days	7 days	19.2kg/ha	8	2*	-	2*	-
Proxanil	propamocarb 400g/l + cymoxanil 50g/l	Translaminar + Contact	2.5 l	€110/10l	Unichem	400	7 days	-	15 L/ha	6	2 1/2 *	-	-	-
Infinito/ Farmco Blight	Propamocarb 625 g/l + Fluopicolide 62.5 g/l	Translaminar+ systemic	1.6 L/ha	€210+/10L	Bayer/Farmco	200-400	7 days	7 days	6.4 L/ha	4	2*	3.8	2 1/2*	2*
Consento	Propamocarb 375 g/l + Fenamidone 75 g/l	Translaminar	2L/ha	€162/10L	Bayer	200-400	7 days	7 Days	12Lt/Ha	6	2*	2.5		11/2 *
Valbon	Benthiavalicarb 17.5 g/kg + mancozeb 700 g/kg	Translaminar + Protectant	1.6 kg/ha	€150/9.6kg	Whelehans	200-400	7 – 10 days	7 days	9.6 kg/ha	6	1 1/2*	3.7	2 1/2 *	-

Note Euro blight 2015 (Green) 1* = reasonable effect; 2* = good effect; 3* = v good effect

Slide 1

Foliar Phosphate

Stuart Wale

SAC Consulting is a division of Scotland's Rural College
Leading the way in Agriculture and Rural Research, Education and Consulting

Slide 2

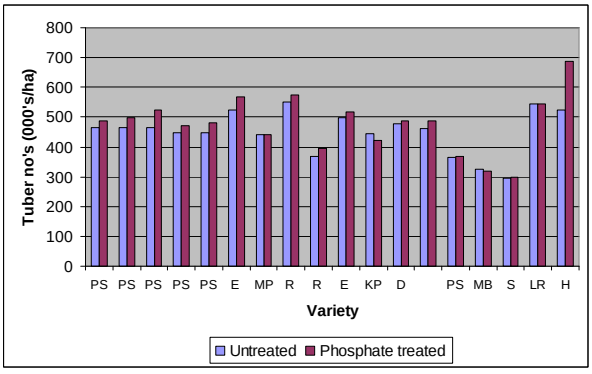
Foliar Phosphate

- Advocated as a means of increasing tuber numbers by application around tuber initiation
- Work at Harper Adams suggested best applied in conjunction with normal base dressing in seedbed and increases of tuber yield of ca 5%. Where no basal P -ve response in ware yield
- But more through tuber size than number
- Responses highly variable
- Old SAC trials found foliar P could be used to replace some of the seed-bed P

Slide 3

Old SAC trials on response to foliar phosphate

Average response 5.6% - 50% responses > 5%



SAC Foliar P Trials -1990

Seedbed P (kg/ha)	0	90	180	Mean
Tuber Nos (000s)				
- Foliar P	456	459	464	460
+ Foliar P	470	495	502	489
SeedYield (t/ha)				
- Foliar P	16.1	16.8	15.9	16.3
+ Foliar P	18.0	20.0	19.3	19.1

Soil P Status = Mod (Index 2)

SAC/ADAS findings on Foliar P

- Trials mainly on index 2/3 sites (Mod-High). Some lower
- High frequency of positive yield responses - not all significant
- Average response:
  - Seedbed P - 1.9 t/ha
  - No seedbed P - 2.7 t/ha
- Too few sites to determine whether higher response at low P status
- CUF found no increase in tuber numbers with foliar P where no seed bed P applied (Index 3 site)

Foliar Phosphate - Issues

- Variability of response
- Less likely where seedbed P placed?
- Wide range of products – are they equally effective?
- Are adjuvants required?
- Timing of application
- Generally, lack of confidence in its use
- Possible to use low cost products
  - 2.5% solution of technical grade MAP (12.61.0)
  - Apply at 220 l/ha at Ti - 7days, TI, TI + 7 days
  - Applies 10.5 kg P/ha over 3 applications
- Check soluble P concentration in each product!!!

Foliar Phosphate

- Conflicting evidence that a mix of phosphate types plus wetter/penetrant helps uptake
- Warm, humid, slightly breezy weather best for uptake - early evening before dew sets in is optimal
- Moist soils increase uptake - P uptake from soil also increased under these circumstances
- Varietal differences in uptake - linked to leaf morphology