



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

FV 307b

Vining and podded peas:
control of potatoes by vision
guided spot spraying

Annual 2014

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Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

HDC is a division of the Agriculture and Horticulture Development Board.

Project Number:	FV 307b
Project Title:	Vining and podded peas: control of potatoes by vision guided spot spraying
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Industry Representative:	Richard Fitzpatrick, Holbeach Marsh Co-operative, Fleet, Holbeach, Lincs
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Further information

If you would like a copy of this report, please email the HDC office (hdc@hdc.ahdb.org.uk), alternatively contact the HDC at the address below.

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Headline

Timely vision-guided spot applications of glyphosate to volunteer potatoes in vining peas can avoid labour-intensive and costly removal by hand (£60/ha) to ensure a contaminant-free product.

Background

Vining peas occupy between 26-30 thousand hectares in the UK and have crop value of £41M. Crop production is a mechanised and carefully planned operation so that the processing factory receives a continuous supply of vined peas which, for freezing, often takes place within 150 minutes of vining. Each crop load received at the factory is sampled for quality which includes an assessment of extraneous vegetable matter (evm). Many varieties of potatoes produce berries and these can contaminate the vined peas during harvesting. Potato berries are toxic and their presence in a delivered sample of peas to the factory results in rejection of the whole load.

A survey carried out in 1992, showed that 20.2% of vining peas were affected by volunteer potatoes. This was an increase on data produced in a similar survey in 1974 and although a more recent survey has not been undertaken, there is no evidence of a reduction in potato incidence in vining peas at the present time.

Processors must exercise due diligence to avoid contaminants in produce. Potato berries and all parts of the plant contain toxic glycoalkaloids and are therefore one of the most serious vegetable contaminants. Potato berries are similar in shape size and colour and density to vined peas and they may pass through all the processes in the factory up to final inspection. Removal of low levels of contaminants is sometimes possible with 1 or 2 passes through an electric eye colour sorter and frozen peas can be re-sorted at an additional cost. However this is not possible for peas for canning. Such removal processes add additional processing costs and the loss of good peas is inevitable. If the contamination is too high, the produce is rejected.

Control of volunteer potatoes in the field is difficult to carry out in practice. Herbicides applied after drilling and pre-emergence have the potential to suppress the growth of the volunteers (imazamox + pendimethalin) but the effect can be reduced where the potatoes emerge from depth. Post-emergence broad leaf herbicides are ineffective in either suppressing potato growth or suppressing flower and berry developments. Currently an EAMU is in place for the application of flumioxazin which gives some control of potato foliage and subsequent flowers but application is very dependent on weather conditions after application and the active

ingredient is scheduled for withdrawal. There is often little opportunity for cultural control before peas are planted and the final chance of reducing possible contamination is by hand weeding at a cost of £60/ha.

Alternative means of control are a priority and this has been highlighted by the Processing Legumes Industry Panel in the Research Strategy Document held by AHDB (HDC).

Recent and current work in leeks, onions and carrots have demonstrated the potential for a vision-guided sprayer which delivers a small amount of glyphosate precisely to the targeted volunteer potatoes. The ideal time for such an application is when the potato plants can be identified within or between the crop rows. Vining peas are often grown at row widths which will often be too narrow to provide a sufficiently long window prior to canopy closure at which point detection becomes impractical. However if such a system is effective then a widening of these row widths would not be impracticable for large scale pea growing.

This project is designed to evaluate the potential for the use of the guided weeder in vining peas. It is proposed that the study takes place over two years, the first year with small plot replicated trials being closely monitored throughout and if successful, in the second year it is proposed to extend the trial in commercial crops of vining peas.

Currently there is no approval for the use of glyphosate in vining peas and it is proposed that this study includes the collection of crop adjacent to treated potatoes for chemical residue analyses in order to support a case for an EAMU.

Summary

At the moment there is an effective selective chemical material which can be used to control volunteer potatoes in vining peas post crop emergence. The approval of the effective materials used in the past was withdrawn some years ago and this is the likely fate of the current option (flumioxazin). There are no other known selective materials to control potatoes in vining peas. Work in onions, carrots and leeks has demonstrated the usefulness of the vision-guided sprayer which delivers a low dose of glyphosate precisely to target.

Without any chemical control options, increased acreages of vining peas will have to be hand-weeded to remove potatoes. This will add significant cost to growing vining peas where potatoes are an issue. In 1992, when a chemical option was available, it was noted that 20%

of vining peas were affected by volunteer potatoes: with no chemical means of control we can expect this proportion to increase significantly.

Removing potatoes by hand is an option but is expensive (£60/ha), time-consuming and the level of success achieved is dependent to some degree on the individuals 'walking' the field. Having to pay this added cost increasingly regularly will make many growers seriously consider whether producing vining peas is economical.

The ability of using targeted glyphosate applications via the vision-guided spot weeder look as though they would give growers a useful option in some situations and help protect UK vining pea production.

Financial Benefits

Worst case scenario:

In a relatively short space of time, the inability to control volunteer potatoes would cause widespread crop rejection due to increased contamination issues. This could lead to a collapse of the £41 000 000 UK vining pea industry. The availability of a feasible chemical option could avoid this.

At best scenario:

Vining peas are an expensive crop to grow with seed costing up to £1000/tonne. This combined with pesticide inputs and the costs associated with the logistics of the harvesting operation could mean the increased need and cost of removing potatoes regularly by hand (£60/ha) may well make production unfeasible for many. It is predicted by industry this could reduce the UK acreage by perhaps 30% (7-10000 hectares).

Action Points

Without a successful application for an EAMU for the glyphosate product used (Roundup Flex) growers are unable to consider this guided spot application option.

Presuming this is forthcoming, then growers would benefit from considering growing vining peas on wider spacing's. This would leave the crop open for a longer period of time and give a longer 'window' of opportunity for guided spot applications of glyphosate to be made.