



Agriculture & Horticulture
DEVELOPMENT BOARD



New Project

FV 394

Vegetable crops: Development of a screening programme for plant growth enhancement products

Project Number:	FV 394
Title:	Vegetable crops: Development of a screening programme for plant growth enhancement products
Start and end dates:	1st April 2011 to 31st March 2012
Project Leader:	Dr. Pat Croft, STC Research Foundation
Industry Representative:	Martin Evans, Fresh Growers Ltd.
Location:	Main site: STC Research Foundation
HDC Cost:	£28,200

Project Summary:

There are increasing pressures on growers to produce larger yields for less cost and with fewer inputs. As a consequence growers are faced with an increasing list of yield enhancing products that have a range of claims varying from increased yield with reduced nitrogen to maintaining yield using lower traditional inputs. These products claim to be meeting growers' needs for better yields and crop quality at reduced costs and inputs. The products exploit old and recent information on non-N, P, K macro- nutrients (eg. magnesium, sulphur and calcium) and micronutrients (copper, manganese, boron, molybdenum).

There is currently no screening programme for these products to provide information on the efficacy of plant growth enhancers. This project aims to act as a first step towards understanding the role that these products can play towards helping growers achieve increased yield and better quality crops. Thus, testing the claims of the products for vegetable crops, specifically.

The specific objectives of the project, in chronological order, are:

- 1) Identify products for an initial screening
- 2) Identify crops to be screened
- 3) Establishment of selected crops and application of test products
- 4) Determine the efficacy of selected products in crops
- 5) Monitoring disease and pest (observations throughout)
- 6) Project review with FV Panel

Aims & Objectives:

(i) *Project aim(s):*

- The project aims to provide growers with a first step in gaining independent and quantifiable data from the use of plant growth enhancement products in horticultural crops. It will provide a simple assessment of selected products, enabling growers to understand if there is a value to using such products as part of their crops agronomy.
- The project will be designed to develop and initiate a screening programme with the aim to provide growers with independent information on the ability of the products to

increase/maintain quality and quantity in yields compared to standard uses of N,P and K.

- These products will include non-N, P, K macronutrients (eg. magnesium, sulphur and calcium) and micronutrients (eg. copper, manganese, boron, molybdenum).
- This first screening programme of a selection of products would compare and determine effects on plant quality, yield, disease and pests in three crops: carrots, lettuce and peas/beans.
- The project would also aim to provide a regular system for growers to test efficacy of new products. A key to developing this system will be communication with growers, manufacturers and project consultants through telephone conferencing and meetings etc. both during and at the end of the first year.
- To fully understand the effects of these products would require further projects with a more scientific design and are not within the scope of this project.

(ii) *Project objective(s):*

1. The first objective would identify products for an initial screening for use following discussions with growers and industry manufacturers (eg. Yarra, Headland Agrochemicals Ltd., Safagrow Ltd. and Omex). A list of products to be recommended by the FV panel
2. It is anticipated that in the first year three crops, peas/beans, carrots and lettuce will be screened. Thus selecting crops that present a varied element in terms of agronomy, crop duration and canopy. However this will also be advised by the FV panel and an adjusted list of crops will be recommended by the panel prior. It is agreed that a work-plan based on the advice of the FV panel will be put in place in the first weeks of the contract and will be agreed by the HDC Technical manager – Cheryl Brewster.
3. Establishment of selected crops and application of test products. It is important that the crops will be grown to commercial standards in order to measure the efficacy of the tested products. Products will be applied to crops following product manufacturers and project advisor guidance. It is anticipated that 12 products will be screened per year however after FV Panel consultation if less than 12 products can be identified then the list of test crops will be increased.
4. Determine the efficacy of selected products in crops. It is proposed that key efficacy assessments would include yield, quality and if applicable shelf-life. Agronomy assessments will be compared to standard growing systems.
5. In addition to yield and quality, the project will monitor disease and pest issues that occur. Observations will be made using standard methods that will enable a reliable quantitative assessment of P+D incidences. These observations provide an initial assessment of claims that are frequently advertised with such products. They will offer a chance for observations to be made in a replicated trial, but they will be observations and not pest and disease trials per se.
6. At the end of the first year of the project, results and a report will be presented to the Field Vegetable Panel and associated growers. This will allow for discussions and a review to be held as to the value of the screening programme. This will facilitate a full

review of the project and its achievements and lead to discussions about the usefulness of continuing the screening programme.

7. An optional objective for consideration, which would be subject to further discussions and costings, would be to look at the nutritional content of crops following the use of micronutrients, against claims that some products can improve crop nutrition (see Background section for further details).

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