New Project

HNS 189

Study to review and improve nutrient management in container-grown hardy nursery stock

Project Number:	HNS 189
Project Title:	Study to review and improve nutrient management in container-grown hardy nursery stock
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Start Date:	01/07/2012
End Date:	31/03/2013
Project Cost:	£22,461

Project Summary:

Key aspects of our review will be:
4:1 Review information from HDC's back catalogue and incorporate/integrate the information generated with that from other sources.

4:2 Revisit and review information from previous Efford EHS R&D programmes to incorporate appropriate information applicable to current and future container production challenges.

4:3 With little UK government R&D funding of nutritional aspects of production in recent years, other than that generated from HDC funded work, updating information will need to rely on data from overseas (principally The Netherlands, Belgium, Germany, Australia and the USA). Contacts in these countries will be used to enhance information found in published journals and ensure practical experience is captured where possible.
4:4 Growing media and fertiliser manufacturers in the UK and else where, will be contacted, usually through our existing contacts, and where possible their data added to the review

(bearing in mind the limitations of commercial sensitivity of some of this information). Information from these sources will be used in an unbiased and impartial manner for growers benefit. Our strong links with commercial organisations will facilitate this activity.

4:5 We propose to develop key groupings for nursery stock crops to enable data to be assembled which can develop the specialist guidelines needed for the crops and aid application of nutrient management information. Initially the groupings will be:

- Conifers
- Ericaceous plants
- Herbaceous Perennials, Alpines and Ornamental Grasses - grouped long cycle and short cycle crops
- Deciduous Shrubs and Roses – grouped long cycle and short cycle crops.
- Evergreen Shrubs - grouped long cycle and short cycle crops
- Non coniferous Ornamental Trees and Fruit Trees

Within each grouping cases of plants having particular problems e.g. Lavender and Cytissus, will be highlighted. During the course of the review it is likely that these groups will be modified in the light of information available.

4:6 Review nutritional deficiencies in nursery crops and ways of effective diagnosis and provide information on appropriate remedies on the nursery.

4:7 Refine nutrition guidelines for young plants – cuttings/liners and nursery stock grown under protection (where high electrical conductivity can be a problem, particularly when temperatures are high) using information from the review process.

4:8 Collate information on nutrient management in peat, peat–free and reduced peat media, particularly the balancing of nitrogen draw down that occurs with bark and wood fibre and the relevance of pH in media with a higher degree of chemical buffering than peat. Review nutritional implications for the range of peat alternatives that are available for use in substrates for hardy nursery stock.

4:9 Incorporate BOPP Growing Media and RHP –Horticulture accreditation details within the review as they impact upon nutrition.

4:10 Discuss existing laboratory analytical procedures with those laboratories actively engaged in providing this service for growers and where possible seek access to data which may add to the information base being created for the project.

4:11 Review the analysis of growing media and leaf samples, including methods more suited to non-peat substrates than the standard water extraction method, the interpretation of growing media and leaf analysis and the use of liquid feeding and foliar feeding to adjust nutrient balance. Increasing use of liquid feeding could have implications for nutrient leaching compared to Controlled Release Fertiliser systems (which have a very low risk of nutrient leaching) and this will be examined.

4:12 Review available leaf analysis data to see if guidance on interpretation of leaf analysis can be given for some key crops (for example maximum phosphate levels for P sensitive crops such as Azalea) as another aid to nutrition management.

4:13 Review the potential use of sap analysis for plant tissues and assessment of nutrient status using both laboratory techniques and nutrient meters for practical application in aiding nursery management.

4:14 Review the models for nutrient use currently available and assess their usefulness and comment on the need for any further development in this area which may benefit growers.

4:15 Review the use of portable meters for measuring substrate EC on nurseries to see if they are a useful tool for checking nutrient status of plants. We will assess if any of them are robust/reliable enough and how the readings relate to a laboratory test results for a 1:5 water extract.

4:16 Review the interaction of nutrition with irrigation systems and modify recommendations appropriately.

4:17 Review information on run-off from container beds and standing grounds, assess wastage and pollution risks and outline measures which could be used to minimise these.

4:18 Review the possible effects of climate change on nursery stock nutrition in the UK (e.g. hotter/drier springs, colder periods in winter and more intense rainfall events) and how these may be managed or mitigated to optimise production and minimise pollution risks.

4:19 Place information presented within the wider legislative framework within which growers must operate.

4:20 Provide summary of advice to growers on nutrient management in the main types of growing media currently being used and how a move to low and zero peat mixes will affect this.

4:21 Recommendations for any further research which may be needed to improve nursery stock nutrition in the UK.

4:22 Recommendations for appropriate knowledge transfer activities for the nursery stock sector, such as the production of fact sheets, demonstrations, road-shows, workshops and talks to local nursery stock discussion groups which will effectively transmit information on nutrient management to growers to facilitate practical uptake to enhance crop production.

Aims & Objectives:

(i) Project aim(s): Improve the ability of the HNS container-grown sector to match nutrients more closely to crop requirements.

(ii) Project objective(s): To review existing information on nutrient management and create evidence-based messages that can be communicated to, and realistically adopted by, HDC Hardy Nursery Stock levy payers

Benefits to industry

The industry would benefit from the review by improving it's the ability to match nutrients more closely to crop requirements by;

(i) improving plant growth
(ii) optimising nutrient utilisation with potential costs saving from reduced use
(iii) achievement of higher, more consistent plant quality, potential for reduced wastage
(iv) improving compliance with legislation and enhancing sustainable growing systems by controlling risks from run-off
(v) improving understanding of the nutritional requirements of reduced peat and non-peat substrates.

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