

The Importance of Sustainable Inputs in Plant Production®

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INTRODUCTION

Horticulture should be an environmentally beneficial industry but is it? Are horticultural businesses always operated with environmental awareness?

The industry's customers perceive growers as producers of products with a good environmental image. We must do all we can to propagate and grow this fragile image. "Environmental friendliness" is a vital part of our products' appeal.

Growers need to look in detail at the impacts production processes have on the environment in the widest possible way, including use of utility supplies such as energy and water but this paper concentrates on some of the more unique horticultural inputs.

TRAYS AND CONTAINERS

Container-grown plants dominate the market. The pots and seed trays in which the plants are currently grown and sold have a high-energy input and high CO₂ emission during manufacture. They become waste products once used, requiring increasingly costly disposal. Expanded polystyrene products pose the greatest environmental problems. Any environmental audit would highlight a problem in this area on most nurseries.

Re-use of returned pots and trays is an option. However, there are problems with this approach in gaining the support of the customer; with the coordination of the process, and with cleaning the pots and trays for re-use. Cleaning itself may be environmentally unacceptable too, depending on how much energy and water is used. Collection for recycling as re-manufactured containers may be a better option but again much depends on the energy used for transport and remanufacture.

Degradable containers should be another way forward. Grass fibre, straw, hemp, wood fibre, and peat fibre have all been made into pots in various countries. These are either planted with the crop or are disposed of as degradable green waste. Customers will need to be informed to expect some change of appearance during product life while the supply chain will need to exercise greater care in handling than is necessary for plastic pots. Biodegradable plastics are becoming available but these do not break down very rapidly. Many degradable pot materials also bring increased production costs into the equation and in some cases these have proved prohibitive to their widespread commercial use.

Packaging poses the same problems as containers. Key actions must be to use less packaging and, where it is used, it must be biodegradable and energy efficient through manufacture and transport.

GROWING MEDIA AND FERTILISERS

In the U.K. the use of peat in growing media continues to be frequently, loudly, and usually inaccurately discussed in the media. Of course growers must avoid using peat from Sites of Special Scientific Interest and other officially recognized environmentally important locations. Peat bogs under threat must be left to prosper

as wild places. Large areas of Finland, Estonia, Russia, and other Baltic states are covered in peat bog that is unexploited and although extraction generates much employment, local damage during mining and production will occur and this can be locally environmentally catastrophic. However, if there is a sympathetic extraction and correct re-instatement of the wetland this will result in regeneration of the bog, with increased biodiversity and an increased absorption of CO₂ by the rapidly growing, re-introduced sphagnum. Growers should ask their suppliers how their bogs are managed and what re-instatement procedures are planned. Mono-crop forestry on the wetland is not as kind to the natural flora as is planned peat extraction and reinstatement.

Market perceptions are resulting in gradual phasing out of peat use. Bark, wood fibre, clay, vermiculite, perlite, coir-pith, husks, and shells, etc. can all make adequate peat substitutes. However, sustainability of the resource, the input of energy during production and the transport miles incurred must all be considered before making any assumption that the alternative is more environmentally acceptable than peat. Composted green waste will be increasingly used in growing media as a means of re-cycling. Reliably produced green compost will become an important, beneficial component of many growing media in the near future. Potting media containing composted forestry residues mixed with composted green waste are already available in the U.K. market (e.g., Sylvamix potting medium).

Fertiliser use makes fewer headlines in the U.K. than growing media. However there is pressure to use organic products in some markets. Re-use of existing waste has to be environmentally sound practice. The production of inorganic fertiliser from minerals from the land and sea is locally damaging but globally insignificant, apart from the power used and CO₂ produced. Greener power generation is the issue here, not direct damage from the processes.

Fertiliser run-off with resulting eutrication of water supplies has to be controlled by timely and accurate application of the products. Drip irrigation, sub irrigation, closed systems, and controlled-release fertilisers can all be used to reduce or eliminate polluting run-off from nurseries. Water recycling not only saves water but also retains nutrients on site. Organic products are no more environmentally friendly than inorganic products overall. Using the minimum amount of product effectively, without run-off or waste, is the way forward.

PESTICIDES

Pesticides are dangerous and the public — the industry's customers — are very aware of this. Growers have to use pesticides very carefully to keep within the law and to comply with stakeholder protocols. Pesticide reduction is a priority and replacement with less risky products is part of this process. Many pest and disease control products available today are based on beneficial organisms. Biological control of pests is well established. Most glasshouse pests can now be held in control by a variety of predators such as two-spotted mite control by *Phytoseiulus persimilis*. Products containing beneficial fungi and bacteria can be introduced into living growing media to exclude and predate pathogens, or to give a symbiotic benefit.

CONCLUSION

The industry now has the technology to produce a quality product that is not polluted by chemicals. Growers can reduce or eliminate local pollution of air, water,

and soil and minimise risks to wildlife. The industry needs to further reduce its dependence on products that have high energy input during their manufacturing and transport chain. This may increase production costs but the industry must promote its green image and publicise the steps that it takes to achieve a more environmentally safe product. This may help those customers who demand a greener approach to understand the impact on prices.

The Effect of European Union Pesticide Legislation in Ireland[®]

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INTRODUCTION

The Pesticide Control Service (PCS) of the Department of Agriculture and Food is responsible for developing and implementing the regulatory systems in Ireland for plant protection products (PPPs) and biocidal products (BPs). It also implements regulations controlling pesticide residues in food.

Plant protection products may be herbicides, fungicides, insecticides, nematocides, molluscicides, growth regulators, etc. intended for use in agriculture, horticulture, forestry, home gardens, and amenity areas, on stored plant products and on land not intended for cropping. Biocidal products are substances intended to destroy, deter, render harmless, prevent the action of, or otherwise exert a controlling effect on any harmful organism by chemical or biological means. There are 23 different biocidal product types, including wood preservatives, antifouling paints, rodenticides, disinfectants, and public health insecticides.

The most important pieces of European Union (E.U.) legislation involved are Council Directive 91/414/EEC (marketing and use of plant protection products), Council Directive 98/8/EC (marketing and use of biocidal products), and Council Directive 1999/45/EC (classification, packaging, and labelling of dangerous preparations). In relation to PPP residues, the main regulatory instruments are Council Directives 76/895/EEC, 86/362/EEC, 86/363/EEC, and 90/642/EEC. These Directives have been transposed into Irish law by means of Statutory Instruments made under the European Communities Act of 1972.

CLEARANCE, CLASSIFICATION, PACKAGING, AND LABELLING OF PESTICIDES

Statutory Instrument (SI) 370 of 1985 introduced the first statutory registration system in Ireland for pesticides. It included provision for the "notification" of all pesticides. Any person wishing to place a "new" product on the market was required to seek and obtain clearance from the PCS. Data supporting applications were evaluated to determine risks to human health and the environment and provided a basis for hazard classification and selection of appropriate packaging and labelling phrases relating to safety precautions. The clearance procedure introduced under these regulations did not address product efficacy.