

Quality and Environmental Issues of Nutrition, Pest and Disease Control.

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INTRODUCTION

Quality on the nursery is like the red thread that runs through every inch of rope used by the Royal Navy. It should be addressed in every aspect of our work. With consumer environmental awareness increasing, nursery stock growers cannot afford to lower quality standards. The day of the pest-damaged plant being acceptable because it was in a biological control regime is over. In the Eric Gardener Memorial Lecture at BGLA (British Growers Look Ahead exhibition run by National Farmers Union) this year Jonathan Porritt (former director, Friends of the Earth) made the following statement: "Consumer demand for higher quality produce in terms of safety and the phenomenon of green consumerism with its emphasis on higher environmental quality are by no means the negative factors some growers see them as. The key to the future is to be found in adding value." The value added element is primarily a marketing tool but at the production level we must embrace the techniques available—both old and new—and be proud to say so.

GROWING MEDIA

The use of growing media other than peat requires a lot of skill and understanding to maintain quality. We should be trying out the new media to gain experience in the different management techniques necessary to maintain plant quality with them. Pressure by Friends of the Earth to place a levy on peat use should be shown to be unnecessary by our willingness to accept sensible and practical alternatives. Growers have always been innovators and will always rise to an occasion. The pressures won't go away and may increase if we do nothing.

Before using a new mix, find out what is in it and how it behaves. This is fundamental to a quality crop. Learn to live with different products and look for local alternatives, do not just accept national trends.

CHECK LIST FOR GROWING MEDIUM ALTERNATIVES:

- Establish if it needs different nutrient levels. Some products release nutrients over a period of time and interfere with controlled release fertiliser levels.
- Find out what the AFP is of the mix and adjust the watering levels accordingly.
- Will it support capillary watering systems well and does it have sufficient matrix suction for tall pots?
- If you export plants, does the compost have clearance for exporting in containers?
- For edibles like herbs, is the mix free from harmful bacteria and does it need regular testing to prove it?
- Does it shrink over a long period of growing?
- Does it give off unwanted smells when placed in a domestic environment?
- Some mixes include heavy metals; that is not all bad. Copper in low doses will reduce moss and liverwort.

- Does its use require a COSHH health and safety assessment because of possible contaminants, or health risk from dust particles?

NUTRITION

Farmers are one of the biggest polluters of rivers, from badly sited slurry lagoons or silage pits. Horticulture seems to be one of the "good boys" in this respect but cannot be complacent and does have several potential problem areas. Britain's new National Rivers Authority will become more aware of water pollution, and drainage water from container beds must be carefully controlled even in a CRF regime. Already, maps of nitrate sensitive areas are drawn up and nursery stock growing will not be immune from controls.

EEC legislation currently under debate suggests that nitrogen levels in some areas of this country could be limited to 250 kg/ha with no one application to exceed 120 kg/ha. If we consider that nitrogen levels of our present compost may have over 500 kg/ha we need to begin to think hard about what we grow and how we grow it. We currently put sufficient nutrient into a pot to last over 12 months but legislation may make that practice illegal unless we can show that our practices are safe. In principle they are, as the nutrient release is gradual and in fact may be less than a corresponding agricultural application. Belgium will introduce fertiliser legislation in January 1992 that limits N to 400 kg/ha and Germany is looking at "concept measures" or only applying what they can prove will not leach into ground water supplies. This may effectively discriminate against larger plants because of the amount of nutrient added!

With overhead liquid feeding on gravel and 3-litre pots spaced at 18 pots/m² and a Rotoframe sprinkler applying 150 gal/hour/m² only 16% will go directly into the pot, the remaining water going into the gravel. The run off of liquid feed from container beds is an issue yet to be faced but one that brings with it the challenge of recycling irrigation water.

WATER

Ground water levels are falling through increased domestic, industrial and agricultural demand, making it increasingly difficult to obtain new ground water abstraction licenses. So we must look to economise on the quantity consumed. As we turn to previously unused sources we must not allow our quality of product to suffer—which means the control of water borne fungal disease and nematodes.

- Using less water and putting plants under stress can result in pesticide damage previously not seen
- Splitting a water application into two and applying two periods of 15 min separated by one to two hours can often be as effective on containers as one continuous application of one hour.
- Irrigate at night where possible, it uses off peak electricity, ensures minimal evaporation from sprinkler jets and generally there is less wind distortion of sprinkler patterns.
- Collecting rainwater and supplementing abstraction is worthwhile.
- Check the conductivity of bore hole water regularly as salt water ingress is becoming more frequent, even inland.
- Winter storage for summer consumption should now be considered a normal part of any nursery development.

- Water collected from rivers, streams or ponds should always be sterilised with UV light or chlorine before being used in mist and fogging systems.
- Consider ways in which water can be recycled or stored for reuse.

Drainage water too is now under the scrutiny of the legislators. Dirty water from some farm activities is now no longer suitable for discharging straight into a ditch or water way. We must consider whether the quality of water from our container beds or glasshouse is of reasonable quality to be put into natural water courses. Those companies doing export plant washing or washing down the propagating shed floor into a stream may have to prove it is safe to do so. With the use of recycled water, collecting rainwater and re-scheduling of irrigation, quality need not suffer. We should be aware of current practices that may put us in conflict with ever changing legislation.

PESTICIDES

The biggest issue here is the loss of many very effective and widely used products. What is needed is a harder look at prevention rather than cure. Pesticide applications have been curative rather than preventative by nature. To maintain quality and reduce a dependence on pesticides is not easy. Most countries in the EEC subscribe to the theory of this statement but little is being done by way of any major research. Successes in the industry mainly come from within it and we must continue to experiment, refine and review our practice so that the pressures that will only increase are already overcome by the time they arrive.

Weed Control.

- Chop down weeds on uncropped land to reduce seed pressure on cropped areas.
- Trim seed heads before they mature if you cannot get round to hand weed. After a seed head is removed many of the ephemerals will die and not return.
- Increase the use of mechanical cultivations on field grown crops. Growth and land will improve as a result. Make sure the job is done on time or things can get out of hand quickly.

Insect and Disease Control.

- Persevere with the use of biological control. It does work well. Get used to the patterns predator and pest naturally create. Understand life cycles and breeding habits. If the predator hatches from eggs make sure that its larvae coincide with the pest.
- Watch temperatures in tunnels and glasshouses. High temperatures and humidity caused by a tunnel not opened up at the weekend can be the cause of pests and diseases emerging that may otherwise be dormant.
- Be more aware of vent control. Botrytis can be controlled by increasing ventilation or by spacing plants a little wider in one direction just as effectively as by spraying.
- Get to understand weather conditions and the type of pests and diseases that are encouraged. Hot and dry for two weeks? Watch out for red spider, rusts and leather jackets. Warm and humid conditions will bring in aphids, powdery mildews and bacteria. Heavy rainfall on outside beds will bring many soil borne pests out of the sand or gravel and into the pot where it may be drier.

- Watch out for your crops that may resist a particular disease. If certain plants regularly are free from mildew, propagate from them and build up your own resistant clone.

Residues. Legislation may reduce acceptable pesticide residues on plant material, particularly herbs and similar edibles. Using harvest intervals may not be sufficient to guarantee minimum levels and routine residue tests might become necessary on edible crops. As far as I am aware no routine tests are carried out on container grown herbs but many are on vegetables and the linking of herbs to lettuce in respect of off-label recommendation may mean it is only a matter of time before residue levels follow. Check that products sprayed onto herbs have completed their harvest interval before dispatch

Disposal of Excess Pesticide. The current process of disposing of excess pesticides onto suitable low value waste land may not be allowed for ever. Again the NRA is nervous about the practice and have the power to stop you doing it. Some authorities are promoting the use of a pesticide disposal scheme where waste is collected by a contractor who then takes on the obligation of disposal. Alternatively you can buy a system such as the Allman Sentinel which contains a carbon filter to remove pesticides from tank washings and pot, bulb and cutting dipping solutions. A recent government draft document on water goes into great detail on sheep dip disposal but the disposal of materials used for sterilising pots and dipping bulbs, whilst not mentioned, will no doubt be included in the future. These processes as we know them are under threat unless we ensure we dispose of the end product legally. Get used to mixing the right amount of pesticide for the job. It not only avoids waste, it saves time and money.