

tural potential from the southern hemisphere are being propagated in tissue culture laboratories.

Hydroponics for propagation: The Ein Gedi system is used for growing-on of tissue-culture derived plants. Market size plants of philodendron, for example, were obtained in a shorter time than under conventional growing-on conditions. Furthermore, the system is used for growing of mother plants. The number of dieffenbachia or dracaena cuttings produced per unit time and area is considerably larger than under normal greenhouse conditions. Rooting of cuttings has also been found to be faster.

I have said nothing so far about nurseries producing garden plants or forestry nurseries. We, of course, have these too and progress is being made in their production methods. However, developments here are generally slower and perhaps less dramatic. This is probably due to the fact that to date, their products have not been geared to export and they are not part of horticultural food production.

Israel's nursery industry is dynamic. It is continually changing with progress in horticultural practice and with the need to adapt to changing attitudes to our environment, and changing trends in our export market.

ORNAMENTAL NURSERY STOCK PRODUCTION — WHAT IS ITS FUTURE?

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MARKET POTENTIAL

We must first consider what is the market potential of our industry. I firmly believe that this can be described as good, as so many factors point to an increased size of market. A number of factors will increase the size of the market:

- a) Increased leisure time.
- b) Increased awareness of the environment and the role of plants in that environment.
- c) The introduction of fashion to gardening, which will make the public want to change their gardens to keep up with the Jones's.
- d) Introduce new dimensions to the garden, such as night lighting and tub gardening. The recent introduction of peat

growing modules for the growing of tomatoes and other vegetable plants is a very good example, where a total market has been expanded.

e) Our continued desire to have something new and, therefore, the continued potential for new plants.

CAN WE REALISE THIS MARKET POTENTIAL?

If the existing industry (and I particularly refer to the existing Nursery and Garden Centre industry), does not realise the potential of this market, other sectors of the retail market will certainly capitalise and develop the potential if we do not; I, of course, refer to the giants of the retail trade, who are only now just starting to be active in the British Isles. The market potential will be realised in a number of ways, including:

a) Expansion of sales outlets and also the expansion of places where hardy plants are sold.

b) Better presentation of products

c) Improvements in servicing of retail outlets

d) Promotion of new plants

e) Introduce fashion to gardening

f) Introduce new dimensions to gardening

CAN THE INDUSTRY PRODUCE THE GOODS?

I am quite confident that our industry will have the technology and ability to produce the goods but my biggest fear is that we will be tempted to over-produce, with the inevitable adverse effect on pricing. It is most important that we, as an industry, try and plan together and avoid falling into the trap. I am sure our fellow IPPS members from the U.S. will be able to illustrate the disastrous effect of over-production that junipers has had in the States and the effect on pricing in recent years.

However, we have yet to experience the full effect of massive dumping by third parties. This is now beginning to significantly effect prices in Scandinavia and Western Germany and it will be inevitable that we will also be affected by cheap production coming into this country from Eastern Block countries and possibly from the new European Economic Community members.

It is appropriate to mention at this point that during the past decade, British nurserymen have made more progress in improving quality and adapting to the needs of the market, than any other country in Europe. Our Research & Development services have made important contributions to this progress and the industry has taken full advantage of their efforts.

WHAT ARE THE MAJOR CHANGES THAT WILL OCCUR IN OUR INDUSTRY TO ENABLE US TO MEET THE DEMAND OF THE FUTURE?

a) The larger nurseries will get larger to maximise the potential of saving by scale of production.

b) The small specialist nurseries will continue to survive by growing either a few lines exceptionally well, or a reasonably wide range of rare plants or specialising in young plants.

c) While labour costs will continue to rise ahead of selling prices, the industry will continue to take advantage of new technology as well as utilising new equipment and modern management techniques.

The role of new technology. New technology will enable us to increase yields and reduce costs. The role of micropropagation has already been discussed early in the Conference. I consider it has a positive long-term role for our industry, although inevitably we will misuse the technique and almost certainly, it will be blamed for over-production at some stage.

Mycorrhiza offers exciting potential for accelerated growing and increased yields.

Biological control is already being used with good success in the glasshouse industry and, no doubt, its potential will become greater in our industry as we get near to the monotype of cropping of the glasshouse industry. Behaviour controlling chemicals (BCCs), which are those subtle, volatile chemicals which insects produce themselves and use to communicate alarm, food supplies, or sex. Rothamsted Research Station is actively involved in this work and is already playing its part in the control of codling moth in orchards and pea moth in vining pea.

The Use of New Equipment. No doubt new equipment will be developed which will continue to reduce the amount of manpower required in labour intensive areas. New materials will no doubt enable us to exploit the potential for further energy saving by increase of double glazing, etc. Alternative sources of energy must be exploited as alternatives to oil and one assumes that in the relatively near future, solar energy will be much more economically used.

Improvements in Management — Business Equipment & Communications. During the past decade, training has become a regular part of the nursery scene; there is, of course, still much greater potential in training and one can only see its role increasing. A few of us are already gaining the benefits of computers in stock control and production planning. They will inevitably continue to play their role. Probably the major

changes in the next ten years will be in communications which will enable us to speed up order processing and shorten delivery delays.

Stricter environmental control will inevitably push up our growing costs and we must face up to the fact that in the future we will be expected to treat effluent and reduce the nitrogen that is being poured into our water courses.

Changes in Propagation Techniques. My impression is that our approach to propagation is polarising; on the one hand some of us are increasing the use of simple methods of propagation for mass production of cheaper plants, while at the other end of the spectrum, the use of micropropagation demands more precision and strict environmental control.

In this country, we are at last acknowledging the role of mother plants in not only improving the health status and yields of our crops but also in reducing cost of collection of cuttings. In recent years, we have also begun to realise the folly of poor grading at the liner stage and the trend of using larger, well finished liners will continue to increase the resulting improvement of the finished plant.

Introduction of New Plants. The scope for the introduction of new plants and improved cultivars is still immense. Micropropagation will probably facilitate the re-introduction of a number of difficult to multiply plants.

Repeating one of my earlier comments, the future of the industry is indeed good; it will be up to the industry whether we take advantage of the situation, by attaching significant importance to the effect of supply and demand and avoiding the temptation of over-production.

CUTTINGS FROM CONIFEROUS SPECIES — TYPES AND ROOTING FOR CONTAINERS

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In Bulgaria our current studies with vegetative propagation of conifers are based on an examination of the following factors: (1) rooting potential and plant form as affected by the maturity of the mother plant; (2) seasonal physiological and anatomic features of the cutting as affecting quantity and