ECONOMIC ASPECTS OF THE PRODUCTION AND MARKETING OF HARDY NURSERY STOCK

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ECONOMIC ASPECTS OF THE PRODUCTION AND MARKETING OF HARDY NURSERY STOCK

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Summary

A census of the Nursery Stock industry, carried out in autumn 1997, valued the sales of plants produced by the industry in 1996 at £18.8m. In the period since a previous census in 1994 field production of nursery stock expanded by 17% while the production of container plants shifted towards the greater use of protected cultivation. Employment in the industry rose by 28% to 912 full time equivalent jobs.

Kildare was predominant in the production of containerised plants while Tipperary was the most important county for field production. Together, these two counties produced nearly half the value of the industry. Together with Cork, Dublin, Kilkenny and Wicklow they accounted for three quarters of the value of the industry.

The industry was concentrated in that the largest 10% of the nurseries produced 59% of the value of the industry. As nursery size increased, the value of sales output per person rose sharply. Larger nurseries were also more productive per unit area.

Exports were valued at £3.45m and imports at £2.22m. The main lines exported were ornamental shrubs followed by liners and deciduous trees. Two thirds of the exports were destined for Great Britain with the remainder going to Northern Ireland. Exporting was even more concentrated than production with the largest 10% of the nurseries providing 83% of the exports. The main imports were deciduous trees and liners. Two thirds of the imports originated from the continent and the remainder were from Great Britain.

Small nurseries reported that capital and profitability were the principal factors limiting expansion of their nurseries. Larger nurseries however placed the availability of suitable staff as the main limiting factor. The most common difficulty reported by exporters was the cost of transport and a number of problems relating to the difficulties that individual nurseries or small groups have in supplying a large, discerning and relatively distant market. This underlined the need for increased co-ordination and co-operation in the future.

Introduction

Information on the size and structure of any economic sector is essential if informed decisions are to be made either by the industry itself or by policy makers in relation to it. This is particularly a problem in Irish horticulture where there is a shortage of accurate production statistics especially for recent years.

Against this background, a census of the hardy nursery stock industry was carried out by the Department of Agriculture and Food in 1994. The main results of this census were published in booklet form (Maher et al. 1996). In order to update this information and to obtain extra information on the nursery stock industry, the present census was planned by the Department of Agriculture, Teagasc and the Irish Hardy Nursery Stock Association. Many of the questions in the 1997/98 census were similar to those asked in the 1994 census. This facilitated comparisons between the two years. Additional information about turnover, exporting and importing activity was also included in the 1997/98 census. The census was carried out between September 1997 and January 1998. Preliminary results have been published (Maher et al., 1998a, Maher et al., 1998b) and a more comprehensive account has been prepared (Maher et al., 1999).

The data were collected from the individual nurseries by the Plant Health Inspectors of the Department of Agriculture and Food. As producers of plants which are susceptible to quarantine organisms have to be registered with the Department, this register served as the basis for the list of nurseries surveyed in the first census. Specialist growers of other plants were added to this list with the assistance of the industry and Teagasc nursery stock advisors and it is hoped that no significant producers were excluded from the census. Completed forms were returned from 226 nurseries in 1997 compared with 214 in 1994.

The data were analysed using Microsoft Visual Basic in conjunction with an Microsoft Access database.

Value of the industry

The total sales of produce during 1996, as indicated by the returns for nursery turnover, amounted to IR£21.0m. However of this amount, IR£2.2m came from plants which were bought in and sold without any further growing on. This leaves a net value for plants produced on the nurseries of IR£18.8m. The estimated area and value of the nursery stock industry from 1974 until 1997 are shown in Table 1.

Table 1 : Nursery stock output, 1974-1997 (Source: Department of Agriculture and Food).

Year	Area (ha)	Output per ha (IR£)	Total Value (IR£'000)
1974	134	6,049	808
1977	146	7,166	1,044
1980	177	7,660	1,358
1982	214	13,489	2,888
1984	290	14,237	4,131
1986	413	14,487	5,970
1988	416	15,320	6,368
1990	465	18,779	8,740
1992	502	23,869	11,980
1994	502	37,450	18,800
1994 (census)	354		
1996 (census)			18,772
1997 (census)	391		

Up to 1992, the figures for area of production were provided by the advisory service and the Department of Agriculture then estimated the output per acre following contact with a number of nurseries and ACOT/Teagasc advisors. During this time, only the gross area of the nurseries was recorded and no distinction was made between field and containerised production. The estimated industry value in 1994 was made using the 1992 area with updated information on output per acre.

In the1994 census the production area of the various plant categories was recorded. So the area shown is the cropping area and not the total nursery area. In addition, nurseries exclusively involved in the production of forest transplants were recorded in the earlier figures but not in the 1994 census. This would explain the reduction in area between 1992 and the 1994 census.

If the output used in the 1994 industry value estimate was based on the performance of efficient growers, then the application of this figure across the whole industry is likely to over-estimate the industry value. The data in Table 8 demonstrate the variation in output efficiency between the segments of the industry. The larger nurseries have a much higher output per unit area than do the smaller nurseries. Moreover, the area used in the 1994 calculation included the forest transplant nurseries. All this indicates that the value for 1994 is probably an over-estimate and that the picture it gives of a very rapid expansion between 1992 and 1994 and then stagnation between 1994 and 1996 is not correct. The increase in crop area and the large increase in employment in the industry between 1994 and 1996 also indicate expansion between 1994 and 1996.

Industry location

The areas for nursery stock production by county, were broken down into field cultivation, mainly trees, and containerised production of ornamental plants. Although Cork has the greatest number of nurseries, in terms of area of production, Kildare is pre-eminent in container production and Tipperary has the largest area of field production. Other counties important for container production include Dublin, Tipperary, Waterford and Limerick although the areas in these counties are small compared with Kildare. Important counties for field production include Cork, Wicklow and Kildare.

Table 2 : Value of nursery stock sales by county, 1996

County	Value of sales (IR£m)
Kildare	6.39
Tipperary	3.39
Cork	2.00
Dublin	1.78
Kilkenny	1.14
Wicklow	1.03
Other counties	5.29

Table 2 shows the sales value of the industry by county. Because of its domination of intensive containerised production of nursery stock, Kildare has a much larger sales value than any other county. Tipperary, the leading county for field production is in second place for sales value. Together, these two counties account for nearly half the industry value and if Cork, Dublin, Kilkenny and Wicklow are included, then the top six counties together account for three quarters of the industry value.

Production areas

The areas of production for the range of nursery products for 1994 and 1997 are shown in Table 3. The area of field crops has increased from 227 ha in 1994 to 266 ha in 1997 mainly due to an increase in the area dedicated to the production of young trees. The area of forest transplants reduced. Nurseries which specialised in forest transplants were not included in this census.

Table 3 : Production area (ha) of outdoor nursery stock products, 1994 and 1997.

Product	Open ground		Containers	
	1994	1997	1994	1997
Deciduous trees	151	196	8	9
Conifers	34	26	10	7
Other ornamentals	42	44	81	72
Total	227	266	99	88

The area of container production has reduced by 10 ha and most of this is accounted for by the drop in liner[1] production and plants in the ‘Other’ category. The area devoted to the production of containerised shrubs remained the same.

[1] Liners are young plants to be potted and grown on.

The figures in Table 3 refer only to outdoor production and during this time the area of protected production increased significantly. This is shown in Table 4. The area under protection has increased by over one third between the two censuses. This indicates that some of the production of containerised plants has been transferred from outdoors to protected cultivation.

Table 4 : Area (ha) of nursery stock under protection in 1994 and 1997.

	1994	**1997**
Glass	8.2	11.4
Poly/Shade	19.2	25.7
Total	27.4	37.1

Taken together, the figures indicate that between 1994 and 1997 there has been an increase in the production of field crops, particularly young trees and that there has been a greater emphasis on the use of protected cultivation for the production of containerised shrubs. In this context, it is quite logical that, for example, the area of liner production outdoors would be reduced. Nevertheless it appears that for containerised production, the last few years have been a period of consolidation after rapid expansion.

Concentration of the industry

In order to gain an insight into possible differences between segments of the industry, some of the data were analysed by nursery size. We divided the nurseries into three categories on the basis of the value of their sales. Those with a sales value of under IR£50,000 were designated as small, those whose sales were between IR£50,000 and IR£200,000 were classed as medium and nurseries with sales of over IR£200,000 were classed as large.

Table 5 : Number of nurseries and sales value in three size categories.

Nursery size	**Number of nurseries**	**Sales (IR£M)**	**% of all sales**
Small	138	2.7	13
Medium	66	5.9	28
Large	22	12.4	59

The number of nurseries in each category, their total sales value and their sales value expressed as a percentage of the total industry value are shown in Table 5. Over 60 % of the nurseries in the census fell into the small category, approximately 30% of the nurseries were medium sized with the remaining 10% classified as large nurseries.

Although the small nurseries constitute 60% of the number of nurseries, they only sell 13% of the produce. In contrast, the large nurseries, only 10% of the total, produce nearly 60% of the industry value. The medium sized nurseries sell in proportion to their number. This shows that nursery stock output in Ireland is concentrated on larger nurseries. A relatively small number of large nurseries generate most of the sales from the industry. A similar concentration has been noted in the nursery stock industry in England and Wales.

Employment and productivity

There were 1,388 people engaged in the nursery stock industry in 1997. (Table 6), of which 665 were full time and 723 were part time. When the part time workers were converted into full time equivalents, the number of full time equivalent jobs in the industry came to 912.

Table 6 : Employment in the nursery stock industry in 1994 and 1997.

Category	**1994**	**1997**
Full-time	545	665
Part-time	478	723
Full-time equivalents	715	912

This represents a 28% increase over the 1994 level of employment and indicates a buoyant level of activity in the industry. The employment increase is in line with the increase in area of field production but is much greater than the change in the area of container plant production would indicate. It is likely that there has been some intensification of production in the shift towards greater use of protected cultivation for container plants.

Table 7 shows how employment is divided between the nursery size categories and also shows the value of sales generated by each employee.

All three categories of nursery provide a significant part of the total workforce. The large nurseries although few in number, actually employ slightly more people than the other categories. Employment on the small nurseries is influenced by the fact that many of them are part time.

Table 7 : Labour inputs and productivity by nursery size.

Nursery size	**Work force[1]**	**Output per person (IR£)**
Small	276	9,853
Medium	298	19,888
Large	338	36,623
	912	23,045

[1] Full time workers plus full time equivalents of part time workers

When we divide the value of the sales by the number of workers to calculate output per person, we find large differences in labour productivity (Table 7) . The medium sized nurseries are twice as productive as the small nurseries and the large nurseries are almost twice as productive as the medium nurseries. These are very large differences and presumably represent economies of scale, investment in labour saving equipment and in staff training. The fact that many of the smaller nurseries are part time and run in association with other enterprises may also influence the productivity.

Table 8 : The percent of sales value and of the production area by nursery size category.

Nursery size	**% of sales**	**% of production area**		
		Field	**Container**	**Protected**
Small	13	21	25	28
Med.	28	26	32	29
Large	59	53	43	43

Table 8 also indicates that the large nurseries are more productive per unit of production area than smaller nurseries. The large nurseries generate 59% of the industry value but have less than that percentage of the production area. The small nurseries produce 13% of the industry value from a much larger percentage of the production area. These differences in productivity indicate the difficulties in using areas of production to calculate the value of the industry.

The fact that many of the smaller nurseries are part time and run in association with other enterprises may also partly explain the differences in productivity between the nursery size categories.

Exports and imports

The value of exports is estimated to be IR£3.46m and that of plant imports by the nursery stock industry to be IR£2.22m (Table 9).

Table 9 : Estimated exports and imports of plants by the nursery stock industry.

Exports				Imports	
Destination	**IR£'000**	**Nursery size category**	**% of total exports**	**Source**	**IR£'000**
N. Ireland	1,262	Small	1	N. Ireland	15
G. Britain	2,158	Medium	16	G. Britain	762
Other	36	Large	83	Other	1,467
Total	3,456		100		2,224

Ornamental shrubs is the biggest category of export but liners and deciduous trees are also important. Herbaceous plants are also significant. The U.K. is the only market of importance at present. Approximately one third of the exports are destined for Northern Ireland with the remaining two thirds being sold to Great Britain. However, this proportion varies between plant categories. For instance the majority of trees being exported and half of the herbaceous plants go to Northern Ireland. By contrast, nearly all the liners being exported are destined for Great Britain. The quantity exported to other countries is minuscule.

Exporting is done mainly by the large nurseries who generate 83% of the exports which makes the exporting of nursery stock even more concentrated than the production. The small nurseries export very little and when they do they are almost all destined for Northern Ireland. The medium size nurseries export to Northern Ireland and Great Britain in roughly equal amounts while the large nurseries export predominantly to Great Britain.

It should be noted that the import figures are not an estimate of the total imports of nursery stock into Ireland. They represent only that fraction imported by the nursery stock industry. Very little nursery stock was imported from N. Ireland, about one third of the value came from Great Britain and the remainder from other sources. Although they were not asked to specify the other sources, a number of nurseries did so and it seems from this that the other sources are predominantly the Netherlands and Belgium.

The main categories of imports are deciduous trees and liners, with the trees coming principally from continental sources and the liners being split between Great Britain and the continent. The shrubs for retail that are imported are mainly of continental origin.

Barriers to expansion

The nurseries were asked to rank the seven factors listed in Table 12 in order of importance in so far as they were acting as a barrier to expansion of the nursery business. To facilitate comparison between the nursery size categories, we have converted the scores to a relative basis where the highest scoring factor in each nursery size category has been assigned a value of 100 and the other factors expressed as a percentage of the highest factor. The results of this exercise are shown in Table 12.

Table 12 : Results of ranking of barriers to expansion by different size nurseries.

Barrier	**Nursery size**		
	Small	**Medium**	**Large**
Capital	100	100	71
Land	51	42	39
Staff	66	76	100
Markets	66	68	54
Profit	80	66	45
Advice	39	39	51
Research	26	31	38

Nurseries in the small category were stating that capital and lack of profitability were the main obstacles to the expansion of their business. In the case of the medium sized nurseries, capital is still the principal barrier but profitability has been replaced by staff as the second most important barrier. The large nurseries were emphatic in choosing the non-availability of suitable staff as the major barrier to expansion.

Conclusions

- The overall picture of the nursery stock industry in the period of 1994 to 1997 is one of buoyancy. Field production of nursery stock has expanded by 17%, the production of container plants is intensifying and shifting towards the greater use of protection and employment in the industry rose by 28% to 912 full time equivalent jobs.

- In 1996, the net value of the industry was £18.8m. This cannot properly be compared with previous estimates of the industry value because these were calculated from the production areas using assumed levels of output and prices. The data showing the variations in productivity between nurseries in different size categories (Table 8) illustrate the dangers in performing this type of estimation.

- Kildare is predominant in the production of containerised plants while Tipperary is the most important county for field production. Together, these two counties produce nearly half the value of the industry. Together with Cork, Dublin, Kilkenny and Wicklow they account for three quarters of the value of the industry.

- The industry is quite concentrated in that the largest 10% of the nurseries produce 59% of the value of the industry. Conversely the smallest 60% of the nurseries produce only 13% of the sales value. As nursery size increased, the value of sales output per person rose sharply. Larger nurseries were also more productive per unit area.

- The industry is a net exporter with exports being valued at £3.45m and imports at £2.22m. The main lines exported are ornamental shrubs followed by liners and deciduous trees. Two thirds of the exports are destined for Great Britain with the remainder going to Northern Ireland. Exporting is even more concentrated than production with the largest 10% of the nurseries providing 83% of the exports.

- The main imports are deciduous trees and liners. Two thirds of the imports originate from the continent and the remainder from Great Britain. Most of the trees come from continental sources while liners are split between Britain and the continent. The largest 10% of the nurseries account for 73% of the imports.

- Small nurseries reported that capital and profitability were the principal factors limiting expansion of their nurseries. Larger nurseries however selected the availability of suitable staff as the main limiting factor. As this is the most active sector of the industry, this has important implications for our training strategies in the future. It also underlines the importance of automation and increasing labour productivity in order to be able to provide attractive careers in the nursery stock industry. The importance of this problem was also highlighted by the response of the exporters, mainly large nurseries, when prompted, in selecting the lack of professional staff as a major problem in servicing their export markets.

- The most common difficulty reported by exporters was the cost of transport. After this however there were a number of related problems, There was the difficulty of maintaining quality and continuity of supply, the need for more investment to expand the nursery size, the lack of promotion and co-operation. This all points to the difficulties that individual nurseries or small groups have in supplying a large, discerning and relatively distant market. If the industry is to continue to expand in the future it will need to develop export markets. The problems outlined above indicate that increased co-ordination and co-operation will be necessary if this development is to take place.

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