

Expanding onion exports from Canterbury

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Abstract

In the past five years onion exports from Canterbury have expanded from 20 to over 4000 t. Exports recommenced in 1989 after a break of several years following the finding of onion smut in the Marshland area which precluded exports to Australia. The area planted has grown from 187 ha in 1989 to 255 ha in 1992, the expansion coming from new growers, mostly experienced arable producers, who sought, received and acted on extension advice from the former DSIR Crop Research, MAF consultants and industry personnel. Favourable production from early season gave confidence to three major Pukekohe-based onion exporters to invest in joint ventures in Canterbury and offer forward contracts for export onions based on Japanese cultivars. In the Canterbury climate, which averages 1973 heat units above 5°C from 1 August to 31 March and is prone to cool summer weather, cultivar choice is defined principally by maturity and bolting resistance. In addition to cultivar choice, early planting, Effective weed, disease and pest control, irrigation and timely harvesting practices are required to achieve export quality onions and profitable yields. Canterbury now has a sound base for future expansion with well adapted cultivars which meet market requirements.

Introduction

Traditional onion production in Canterbury occupied approximately 120 ha annually in the Marshlands area, a market gardening region on the northern boundary of Christchurch, characterised by heavy, fertile, peaty phase soils of the Waimairi and Tai Tapu silt loam series. Pungent brown globe storage onions of the Pukekohe Longkeeper type were grown to supply the domestic market. In addition, small volumes (< 500 tonnes) were exported to Australia prior to the finding of onion smut, *Urocystis cepulae*, in this area in the late 1960's. Further exports to Australia from a gazetted area within Waimairi County were prohibited.

Following deregulation of the wheat industry and a downturn in arable farming returns in the mid-1980's, a number of arable farmers attempted to diversify by growing onions, with mixed success. Inexperience was the major contributor to failure.

Contribution of Research

Onion breeding and selection, evaluation of introductions, and limited agronomic research was undertaken at Lincoln by DSIR Crop Research and Applied Biochemistry Division of DSIR, (now part of NZ Inst. for Crop & Food Research) as an adjunct to its breeding programme based at Pukekohe. Concurrently, trials to examine the potential of autumn sowing for early production in Canterbury were undertaken by MAF

consultancy staff in 1990. Both MAF and DSIR also undertook confidential research on onions for commercial clients during this period.

The re-establishment of exports in 1989 together with an increasing demand for information from new or intending growers prompted DSIR Crop Research to initiate and formalise a number of technology transfer activities.

Technology Transfer

A survey of onion growers in Canterbury was conducted in 1988 by telephone questionnaire (Mitchell *et al.*, 1989). This established an industry database which was used for strategic planning by DSIR and provided a contact list through which information exchange took place, facilitating the identification of industry's research needs.

A guideline for growers was produced and published for sale as one of a bulletin series by DSIR Crop Research (McCartney, 1989, revised 1991). Following the 1989 harvest season, the telephone survey was repeated and extended to new growers. Information on area, yield, cultivars, production practices, markets, and problems was collected.

In June 1989, a public meeting was held in Ashburton, a metropolis serving the farming area containing most of the new growers, to discuss the prospects for enhanced production of onions for export from Canterbury. Presentations were made by

researchers, experienced growers, export representatives, and a Gross Margin analysis was included. More than 90 people attended this meeting, where a high level of interest was expressed in the grower guideline, and a strong indication of support was given for a research newsletter proposed by DSIR Crop Research.

Extension activities in the 1989/90 growing season involved the running of 3 field days (half-days) featuring visits to grower properties, timed and targeted to specific topics such as weed, pest, and disease control, irrigation scheduling and management, and harvesting management. These activities were publicised through the newsletter which was distributed to those on the questionnaire list, including exporters and technical representatives in addition to growers.

The telephone survey, public meeting, and field days were repeated in 1990 and 1991. The public meeting was discontinued in 1992 due to the reticence of speakers who had been approached to offer their expertise. Most believed that either there was nothing new to offer or that their information was intellectual property available for a fee to those farmers subscribing to a consulting service, and thus publicly unavailable.

A negative outcome of this technology transfer was the alienation of the traditional Marshlands area growers whose vehement public opposition was expressed by the Canterbury branch of the NZ Vegetable and Potato Growers Federation through their publication, the Commercial Grower, and directly to the Minister of Science by correspondence. The inference was that both the export and domestic markets were of finite size, and a surplus of perhaps lower quality production from new growers would severely depress local prices. This has not proven to be the case, and as traditional growers have benefitted from an increased demand for export product, this criticism has been somewhat mollified.

Industry Investment

As a result of successful production of export quality onions on a limited scale in 1989, three Pukekohe-based exporters established agencies in Canterbury, and one formed a consortium with a local seed company and a Japanese importer to invest in a large grading facility. These companies provided technical support for their contracted growers, particularly in harvesting and handling practices where inexperience was most acute. Individuals and groups of growers invested considerable sums in planting, lifting, and grading equipment, indicating confidence in onions as a crop and a commitment to ongoing production.

As a consequence of these initiatives area, production,

and exports rose substantially from 1989 to 1993 (Tables 1 and 2).

One indicator of the inexperience among newer growers is the average yield difference between established (Nth Christchurch) and newer (Plains) growers in 1989 (Table 2). The marked improvement in 1990 together with the higher yields from both areas in subsequent years could arguably be taken as indicators of the impact of the extra technology transfer effort.

Grower turnover is small, with 4 and 3 new growers entering the industry in 1990 and 1991 respectively, and 4 growers withdrawing in 1991.

Optimum Production Practices

The Canterbury climate is at the cool end of temperate, accumulating 1973 degree days above 5°C (August 1-March 31), compared with Pukekohe where 2457 degree-days above 5°C accumulate over the same period. Additionally, bulb initiation is later than at Pukekohe (20 December vs. 18 November, Lancaster *et al.*, 1986) and weather conditions during the normal curing period of March-April are variable, frequently cool, and moist.

With this climatic backdrop, best practice indicates precision seeding as early as possible in spring to achieve a target population of 60-80 plants/m², and effective weed and pest (thrip) control which is readily and safely achievable with currently registered chemicals (McCartney, 1991). Control of diseases such as damping off (*Pythium*), downy mildew (*Peronospora destructor*), white rot (*Sclerotium cepivorum*), and *Botrytis* is also necessary and possible with registered chemicals. Fertiliser and irrigation application according to monitored needs, soonest possible lifting at 50-60% tops down, and adequate field or artificial curing will ensure highest possible yields and quality within climatic constraints.

With latitudes of 43-45°S, Canterbury may be classified as a long-day environment for onions, but with a thermally shorter season than equivalent latitude northern hemisphere onion cropping regions. Thus,

Table 1. Volume and value of onion exports from Canterbury 1987-1993.

	1987	1988	1989	1990	1991	1992	1993
Tonnes	20	1162	575	2485	4317	4300	3800
\$m FOB	-	-	- ¹	1.20	1.80	1.66	2.13

¹ no data available

Table 2. Onion production statistics from Canterbury 1989-1992. Data from annual telephone survey of growers.

	No. of growers	Avg. area planted (ha)	Total area planted (ha)				Average yield (t/ha)			
			1989	1990	1991	1992	1989	1990	1991	1992
Nth Christchurch	17	6.75	105	121	110	125	32	33	43	41
Plains	18	6.40	82	110	113	130	19	30	42	42
Total	35		187	231	223	255				

cultivar type and adaptation is an overriding consideration. A combination of a long-day type with early-mid maturity, and a high or complete resistance to bolting is a prerequisite for production. Current production is based largely on brown globe storage onions of the Pukekohe Longkeeper type. Several strains of New Zealand and Australian origin are commercially available and most meet these criteria. The ability to meet export market specifications for quality at a profitable yield level is the other major selection criterion for cultivar choice.

Conclusions

The successful expansion of onion exports from Canterbury was achieved through the adoption of both existing and new technology and information by new growers. The technology transfer programme had a measurable impact on onion production. The synchrony of research, extension, and industry investment may be seen as a role model for the development of other new crops.

References

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