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Cauliflower exports show strong growth

By Dennis Phillips, Horticultural Development Officer, Manjimup

Cauliflowers were Western Australia's second most valuable horticultural export crop after carrots in 1993-94 with 11,593 tonnes exported for an estimated FOB value of $12.9 million.

Exports have increased 89 per cent in the last five years with spectacular growth in the January to March period. Western Australian exporters have effectively displaced Taiwan from the Singapore and Malaysian markets in this period to become year-round suppliers.

The crop is exported fresh by air or sea with Singapore and Malaysia accounting for more than 90 per cent of sales. Other traditional markets include Hong Kong and Brunei with small quantities going to the Middle East and a new market opening up in Taiwan.

History of the trade

Cauliflower exports have grown steadily since the mid-1970s despite fluctuations resulting from overproduction and consequent low prices, and an unfavourable exchange rate (see graph).

Trade in cauliflowers and other fresh horticultural products to Singapore dates from about 1936. In the early days fresh produce was shipped as general cargo in cruise liners. Much was destined for ships' stores out of the free port of Singapore as it is today.

With the advent of a container service to Fremantle in the mid-1970s, improved quality opened the doors for rapid trade expansion. At first, our product was used in the elite hotel trade in Singapore but rising living standards coupled with a more favourable exchange rate since the late 1980's, have brought it within wider reach in Singapore and Malaysia.

Harald Hoffman and Dennis Phillips inspecting trial plots at the Manjimup Horticultural Research Centre.

Cauliflower exports from Western Australia from 1972-73 to 1993-94.
Before 1970, export production from Western Australia had been based exclusively in market gardening districts close to Perth such as Spearwood, South Coogee and Balcatta. In that year the first cauliflowers were grown for export in Manjimup. The high quality of curds grown in the South-West encouraged steady growth around Manjimup and Pemberton and that district now accounts for more than 70 per cent of total exports, which in turn are about half of the State's production.

In the mid-1980s more than half of total exports used air freight but the combined effects of shortage of air space and more favourable sea freight rates led to a return to sea freight in the early 1990s.

Season
Our traditional cauliflower season used to be from March to November when our main competitor, Taiwan, was not in the market. Quantities sold reached a plateau between 1985-86 and 1989-90 through unfavourable exchange rates but recession and a falling dollar have stimulated exports since then.

The main growth stimulus has been a more competitive price position against product from Taiwan in its traditional export season from December to February. Volumes packed in Manjimup in January/February have grown from 1037 cartons in 1989 to 70,392 cartons in 1993.

The move to year-round production in the lower South-West has allowed packing sheds to employ their work forces throughout the year and achieve more efficient use of capital and equipment, hence reducing costs.

Production methods
Cauliflower seed is small at around 300 seeds per gram and hence difficult to sow direct in the field. Seedlings are grown by specialist nurseries in 'cell pack trays' using a sterile inert soil-less medium. This is followed by fully mechanised transplanting in the field.

Virtually all seedlings are container grown in the Manjimup district while some field seedling production is still practised near Perth.

Disease control treatments are carried out in the nursery and the most difficult problem encountered is the fungus disease, downy mildew (Peronospora parasitica), which is most prevalent in winter in the South-West.

Seedlings take from four to eight weeks to grow in the nursery with shortest times in summer and longest in winter.

Varieties
Until the mid-1980s the industry was based on a range of short maturity (60-100 days), openpollinated varieties of Australian origin and selections from the long maturing (140-150 days) winter variety, Paleface. The most common of these selections was WA Late.

A revolution in production and productivity occurred in the late 1980s with the introduction and adoption of F1 hybrid varieties.
Transplanting of cauliflower seedlings at Rose Farm, Manjimup.

Harvest normally involves three or four pickers and a packer on the platform. Cauliflowers for export are cut free of leaves and loaded into wooden field bins lined with foam.

Each bin holds about 170-200 cauliflowers in about four or five layers separated by foam pads to prevent bruising.

The number of passes to complete harvest varies from as little as two in summer to nine or ten in early spring when cold weather extends the harvesting period.

**Cooling and packing**

Field bins are usually delivered to packing sheds within half a day of harvest then loaded into coolstore to remove the field heat. Rapid delivery to the coolstore and rapid cooling are essential for high quality.

The Manjimup/Pemberton area is well placed to achieve rapid cooling as most farms are within 15 km of centralised packing houses.

Both forced air cooling and high humidity cooling are used to remove field heat. This phase is normally complete within 24 hours of delivery to the coolstore.

Cauliflowers are packed direct from field bins into cardboard cartons holding around 20 kg. The market insists on each head being individually wrapped in tissue paper.

Packing temperatures are as close to freezing point as practicable but a rise of

Field production

Field cropping is semi-mechanised. Transplanting involves tractor-drawn mechanical transplanter, which plant a twin row under the tractor and require two planters plus a driver.

Seedlings are usually planted in lots of 10,000 according to planting schedules provided by export packing sheds.

In the lower South-West, the crop is usually planted in 10 to 16 row 'lands' separated by a 2.5-3.0 m wide harvest and spray runway. In Perth, continuous planting is practised between permanent sprinkler lines spaced at 12-16 m. Hybrid varieties are normally spaced at 80 cm between rows and 50 cm between plants apart with populations of 20,000-25,000 plants per hectare including runways.

Optimum maturity of cauliflower is difficult to determine and considerable experience is required for harvesting. All harvesting is done by hand with the aid of mechanised harvest platforms, which incorporate a conveyor belt which straddles the crop. Most machinery for this purpose has been custom-built in Manjimup to suit industry practices and to cope with the difficult terrain.

bred in the Netherlands. The most notable is the variety Plana which has proven highly adaptable to a wide range of weather at maturity. Plana is now the most widely planted variety in the South-West. Together with another hybrid, Ravella, which is planted in May and June for September/October harvest, the two varieties account for more than 70 per cent of all seedlings planted in the lower South-West.

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Industry development

The development project now underway is targeting four issues which are limiting industry progress:

Crop loss identification: Statistics collected by the Planning Group show that only about half the cauliflower seedlings planted in the lower South-West go on to produce an export cauliflower. A profile of the reasons for loss is being constructed to guide future research and implement remedial action.

Varieties: The industry relies on two imported hybrid varieties and is vulnerable to seed crop failure. A wider range of suitable varieties is needed. Better varieties are also needed to maintain supply continuity especially for late winter and early spring. On-farm variety trials are being conducted to address this problem.

Harvest predictor: A better harvest predictor is required in order to schedule harvest better and meet the market.

Nutrition: Better plant nutrition information is required to improve uniformity, to maximise yields and improve harvest scheduling. The project aims to develop a set of prognostic and diagnostic tissue test guidelines for commercial practice.

Issues and threats

Further development into new markets is constrained by the lack of air freight space out of Perth and the cost of containerised sea freight where a sea container for a five day voyage costs about as much as its contents.

Our main rivals in South East Asia are United States producers but other southern hemisphere growers may enter the market.

At home, the lower South-West industry could be seriously affected by the soil fungus disease, clubroot (Plasmodiophora brassicae), which is becoming established.

New market opportunities are needed for continued expansion. Problems of lack of direct market access in some countries need to be addressed.

Australian labour costs are higher than potential competitors so packing and limited processing of bulk product at its destinations may need to be investigated.