Peanuts in the Ord

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Shelling peanuts at the Kununurra mill.

By D. L. McNeil, Research Officer and D. W. Bennett, Technical Officer, Tropical Legumes, Kununurra Regional Office

The peanut industry on the Ord River Irrigation Area is expected to gross about $1.9 million at the end of this decade, a tidy return for an industry that only started truly commercial plantings some six years ago.

At present the Ord River Irrigation Area produces about 2.5 per cent of Australia's total peanut production, but it hopes to increase this to 7 per cent. High yields and plantings on non-staining soils make peanuts one of the most successful crops grown on the Ord.

Commercial history

Peanuts (Arachis hypogaea) were recognised as a suitable crop for growing under irrigation in the Ord River area in the Kimberley some 40 years ago. The peanut is a leguminous low bush which buries its fruit or pods (the nuts) under the surface of the soil. Trial plantings of peanuts were made in 1947 and semi-commercial areas were first planted in 1970. Initial plantings were on the heavy clay soils which produced good crops, but harvesting problems could not be solved.

It was only when peanuts were grown on the slightly acid Cockatoo sands adjacent to the central irrigation area that their true commercial potential was realised (see graph). This change began with the clearing and planting of a Department of Agriculture trial area in 1977-78, and the first commercial production in 1979-80.

The harvested area of peanuts has increased by about 75 per cent each year until 1986 when 450 ha were planted to give an estimated gross return of $653,280.

Individual growers confirmed their faith in the crop when they installed two new centre pivot irrigators to cover 140 ha of peanuts. The Ord River District Co-operative reaffirmed its strong belief in the peanut industry when, in 1985, it took over complete control of the peanut mill at Kununurra. Substantial improvements were made to treble the mill's present processing capacity of about 700 tonnes of peanuts per year.

The peanut industry has also expanded into non-irrigated production. As a result of good yields of 2.5 t/ha of Nut In Shell (N.I.S.) on a 20 ha commercial area in the 1983-84 season, the area sown to non-irrigated peanuts doubled in 1984-85. Despite the poor season caused by above average temperatures and below average rainfall, yield averaged 2.2 t/ha N.I.S. Further plantings of non-irrigated peanuts are likely.

Yields of non-irrigated peanuts were 2.02 t/ha in 1985-86, but for the first time the dry finish to the season produced quality problems.

A combination of peanuts grown with and without irrigation may produce an optimum output for the market. The large premium grade nuts (used for Nut In Shell and beer nuts) do not seem suited to production without irrigation, whereas production for the smaller kernel trade (used in salted peanuts and mixed nuts) from such crops will ease the pressure on the limited amount of Cockatoo sands available for irrigable peanuts.
Peanut bushes are dug and allowed to dry before the nuts are harvested.

In the graph, the 1986-87 figure represents the 292 ha harvested in the wet season. Dry season area is not available.

However, the quality of nuts produced under non-irrigated conditions will have to be carefully monitored and this may restrict their expanded production.

Research programme
Research has concentrated on selecting the best varieties, nutrition, disease control, planting layout and dry season rotations on the irrigated sands. A programme has also started to determine the viability of growing peanuts without irrigation in the East and West Kimberley.

The Department's Frank Wise Institute of Tropical Agricultural Research produced a semi-commercial crop of 4.8 t/ha N.I.S. off seven hectares in the 1984-85 wet season. This crop gave a farm gate return of $22,500, indicative of what can be achieved with the present varieties and optimal management. A semi-commercial crop grown over the same area in 1985-86 produced 47 t from 14 ha. Further substantial increases in yields are possible through the application of research results.

Varieties
Peanut seed and plants must pass strict quarantine checks before being brought into the Ord River Irrigation Area. These checks have effectively kept out many diseases of peanuts, but have also slowed the introduction of the newest improved material.

The two varieties grown under irrigation are Florunner, suitable for the standard kernel trade, and Virginia Bunch, suited to the Nut In Shell and fancy kernel trade. Both varieties originated in the U.S.A. and are also grown in Queensland.
A new variety, NC 343, was released in the 1985-86 season as a potential replacement for Virginia Bunch. In four years of trials NC 343 has out-yielded Virginia Bunch by 26 per cent with no loss of quality. NC5 is another variety showing potential as a replacement for Virginia Bunch.

Florunner is the only variety grown without irrigation at present. However, a new variety, Early Bunch, has out-yielded Florunner by 16 per cent in three trials. Its growing season is seven to ten days shorter than that of Florunner. Small, semi-commercial areas of Early Bunch were grown in the 1985-86 season and the yield was consistent with that of previous years.

Introduction of improved varieties from the U.S.A., Queensland, India, Africa and Israel will continue, and is likely to lead to increased yields.

Crop rotations
Peanuts make good vegetative growth during the wet season. Up to 9 t/ha of above-ground dry matter containing 150 kg/ha of nitrogen may be left after harvest. This nitrogen is readily available for use by subsequent crops. During the dry season maize and sunflowers were planted into an area immediately after the peanuts were harvested. Yields of up to 9.3 t/ha of maize and 2.9 t/ha of sunflower seed were produced without added nitrogen. Phosphorus applied to the preceeding cereal crop has been sufficient to give maximum yields from a following peanut crop.

Crop rotations are sought which will increase returns to growers. An economically profitable rotation is essential to stabilise the sandy soil and to make optimum use of expensive irrigation equipment. It may also lead to improved weed and disease control. In the 1985 dry season, maize and horticultural crops were grown in commercial rotations with peanuts. In 1986, dry season crops of peanuts were sown.

Disease control
Rust (Puccinia arachidis) and leaf spot (Cercospora aradicola, Cercosporidium personatum) are serious leaf diseases of peanuts which can totally defoliate bushes and severely reduce yields.

A fungicide trial conducted during the 1983-84 season showed that plants sprayed with the optimum treatment of four Bravo® and four Baycor®/Agridex® sprays yielded 4.9 t/ha N.I.S., representing a return of $5.80 per $1.00 invested in control measures. Unsprayed plants yielded only 1.3 t/ha N.I.S.

Trials continue to establish a fungicide spraying schedule that gives maximum economic returns according to seasonal conditions and the amount of leaf damage. Trials conducted in the 1985-86 season indicate that basing spray decisions on a climate index could halve disease control cost. Substantial yield improvements are likely as low levels of damage appear to reduce yield significantly.

Weeds
Weeds have not yet proven a serious problem. Many pre-plant and post-emergent chemicals are available and these are used with inter-row cultivation to control weeds. The development of peanut and horticultural crop rotations involving cucurbits may require future research into weed control.

Nutrition
The major nutritional requirements of peanuts grown on the Cockatoo sands are calcium, phosphorus, sulphur and boron. Pot trials indicate that the trace elements zinc, copper and molybdenum may be needed, but this has not yet been confirmed in the field. In the West Kimberley applying calcium as 600 kg/ha of gypsum doubled the yield of Florunner grown without irrigation. Yield increased by 44 per cent when phosphorus was applied as 140 kg/ha of double superphosphate.

Nutritional trials are concentrating on monitoring the nutrient levels in soils, and the changing yield responses of peanuts and rotational crops as a stable rotation system develops. In this way less fertiliser may need to be applied and yield may be less affected by naturally poor nutrient levels in the soil.

Harvesting and milling
About 118 days after planting the crop has matured and is ready for harvest. The kernels have turned pink, the shells brownish and the kernels are free of the shell. The crop is dug, the bushes windrowed and allowed to dry for several days before being harvested. The peanuts are stripped from the bushes and taken to the mill for cleaning and grading.

The farmers co-operative markets the peanut crop to several buyers, mainly in Western Australia. High quality Nut In Shell lines are also sold to the eastern States.
Future prospects
After a long development phase peanuts have become a major income earner for the Ord River Irrigation Area. Production is expanding rapidly and growers are highly optimistic. Previous peanut research has been extremely productive. Soils suited to peanuts have been identified, new varieties released and good nutrition, planting layout and weed and disease control methods established. Future gains should be made from research into establishing profitable crop rotations, defining the requirements for peanut production without irrigation and further improving varieties and disease control.