

SUNFLOWER PRODUCTION AND UTILIZATION TRENDS
AUSTRALIA

By

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Mr. Chairman, distinguished guests, previous speakers, ladies and gentlemen: I should like to preface my paper on sunflower production and utilization trends in Australia with a short resume on agricultural crops generally in our country.

Briefly, wheat is by far our largest crop, occupying in excess of 21,000,000 acres and is grown in Eastern Australia from the Tropic of Capricorn in Queensland and West of the Great Dividing range up to 250 miles from the coast through Queensland and New South Wales, in North Western Victoria, round the central and west coast of South Australia, and along portions of the coast of West Australia. Oats are grown mainly in Southern N.S.W. and parts of Victoria, South Australia, and West Australia. Grain sorghum is grown in Central and Southern Queensland, parts of N.S.W., and latterly in Northern Territory. Safflower growing is confined mainly to Central Queensland, whilst linseed is grown in Southern Queensland and parts of N.S.W. and Victoria. The most intensely farmed area in Australia and the one growing the biggest diversity of crops is the Darling Downs, a plateau 900 - 1,200 feet above sea level. The Darling Downs comprises approximately 8,000 square miles and is 100 miles West from the coast in South Eastern Queensland. This is the area in which I live, and it is here that the growing of sunflower to date has been concentrated. The area of sunflower grown in Australia in the 1965/66 year was 10,653 acres; 1966/67, 12,374 acres. Figures for 1967/68 were not available from the Government Statistician prior to my leaving on the 1st of August.

The crops 1965/66 and 1966/67 would have been wholly of the grey striped birdseed varieties, mainly the variety Polestar, apart from small seed increase areas of black high oil content varieties.

This year, 1967/68 would have seen approximately 250-300 acres of the high oil content types planted with the balance birdseed varieties. Our farm had the only sizeable area of a named variety, Peredovik, which comprised 110 acres of the 250-300 acres total.

This will give you people some idea of how recent the growing of high oil content varieties of sunflower is in Australia. In 1965/66 we had $2\frac{1}{4}$ lb. of seed of Peredovik increased to 964 lb. in 1966/67 producing

140,000 lb. of seed this year. This seed has been purchased by an oil crushing firm who will contract 20 - 25,000 acres for oil production this summer 1968/69.

It is anticipated that with this contract growing, the bulk of our sunflower growing in the future will be of high oil content varieties, the oil from which will be used in the manufacture of margarine. The price of the grey striped varieties used to fluctuate from season to season and little was known about the art of growing the crop for high yields per acre. Indeed, we still have a great deal to learn.

In Australia the growing of soybeans has not progressed far as yet, very largely because of the lack of suitable varieties. Some of the southern most grown U.S.A. varieties are our best to date. A breeding program for soybeans for our own environment is progressing satisfactorily.

The other common edible oil crop, safflower, is grown as previously stated mainly in Central Queensland, but production fluctuates greatly with seasonal conditions. Safflower has been tried in our area in S. E. Queensland, but because of this crop's extreme susceptibility to root rot at any stage due to poor drainage and to rain at flowering, it generally does not suit the area.

This is why sunflower as an oil crop should increase in popularity on the Darling Downs, which consist mainly of fairly heavy black soils of high clay content and reasonably flat in topography. Sunflower being a summer crop can utilize our normal 25"-26" rainfall, two thirds of which falls normally in the October - March period. As well, the crop resists poor drainage and rainfall at flowering very much more than safflower. With regard to the actual growing of the crop to date, we find that under dryland conditions a surviving plant population per acre of 30,000 plants is somewhere near optimum.

Our soils, apart from the very heavy black and the lighter sandy clay types, are naturally high in available phosphate so that to date we have not needed to use this nutrient. Whilst sunflowers are not large users of nitrogen, we find it advisable to have at least 50-60 lb. available to grow the crop under dryland conditions.

Under irrigation, and I come from an area where a percentage of our country is irrigated - mainly from underground screened bores, we find that a surviving plant population of 45-50,000 plants is near optimum. However, growing of sunflowers under irrigation is relatively new in Australia. Row crop planters using popcorn plates are used in 40" rows to give this population. From this year the tendency will be to narrower rows, and I certainly will be using some 20" rows with the plant population still at 45-50,000 plants per acre.

For irrigation we find it advisable to have 90-100 lb. of nitrogen per acre available for the growing of the crop. We have found that irrigating when the crop is one foot to 18 inches high gives a much better yield increase for water used than when 2½ - 3 feet high; and, if only one irrigation can be given, this is the time to do it. Row cultivating after irrigation helps the crop also.

The maturity of Peredovik on the Darling Downs has varied from 112 days to 138 days from planting to harvesting and yields have varied from 1,000 lb. per acre up to 2,200 lb. per acre. However, we feel confident that under irrigation and fertilization that yields should not be below 1,700 - 1,800 lb. per acre in the future.

Harvesting of sunflowers in Australia is performed in a similar manner to what I have read in brochures kindly sent to me by the Canadian Department of Agriculture. Our trays attached to the cutting platform of the header may be a foot or so longer. No one to my knowledge has used the convex shield arrangement, described and illustrated in the Canadian publication. We remove the conventional reel completely. Sometimes, if the stalks are very brittle we put the reel back on in as high a position as possible. Then with either two or three bats only in the reel, and the reel turning very slowly, we have encountered no trouble in harvesting even the most brittle stands.

We have to contend in Australia with all the diseases you seem to have, the two main ones being Sclerotinia wilt or stem rot and sunflower rust; the latter, if planted too late in the growing season. Downy mildew affects the crop in varying degrees if conditions are present to promote the disease.

Pest problems up to this stage do not present a great problem although cutworms and wire worms at the seedling stage and what we call the Rutherglen bug, prior to and at flowering time, can cause varying degrees of damage. I notice that in Canada blackbirds can be a problem. In Australia various members of the parrot family, notably the grey and red galah, the white cockatoo, and the quarrion can wholly devastate a crop of sunflowers in a very short time, particularly if the crop is planted too close to trees bordering on a river or stream. This factor alone excludes a lot of potential land from growing the crop in Australia. These attractive birds, that is attractive to all but a sunflower or corn farmer, are as intelligent as they are destructive and the normal scare gun does not worry them after they observe it is not fatal.

Whilst economically sunflowers in Australia do not yield as high a return as a good grain, sorghum or corn crop, they fit into our cropping program as a quick cash crop, relatively inexpensive to grow. They can also be used in a double cropping program, or to alternate with irrigated sorghum. We have a problem in our particular area with excessively alkaline soil, pH being 8.5 to 9 plus, which makes optimum corn yields hard to obtain. Sunflowers are untroubled by this soil problem. As Australia

is a large importer of edible vegetable oils, all sunflower oil produced for many years hence will be consumed internally and will help our trade balance of payments, and benefit us economically as a nation. It is most gratifying to see here today the interest in sunflower on a world basis as a crop, for it certainly deserves this interest. It was pleasing to read in a recent edition of World Farming the article "Crops on the Move" applying to sunflower, for the crop is surely the most efficient user known to man of sunlight and moisture. We in Australia have a great deal of research to do with breeding varieties to suit our latitudes of shorter day length for, up until now, all the high oil yielding varieties available in our country have been developed in latitudes of 45° - 50° North.

In conclusion, Mr. Chairman, I convey to you and your organizing committee my sincere thanks for the invitation to be present and your wonderful hospitality whilst here at Crookston and in your country. My very best wishes to you for a successful conference, and may it do all that each of us here desire in the furtherance of the crop, Sunflower.

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DISCUSSION

Panchenko: You introduced Russian varieties of sunflowers. Where did you get them from and what year were they introduced?

Lemon: We got them from the Canadian Department of Agriculture in 1963.

Question: Do you have anyone in research institutions working on the crop?

Lemon: It is only this year that any of our Department of Agriculture people have shown any interest.

Larson: Was the yield you mentioned of 1220 with dry land or with irrigation?

Lemon: That was a dry land yield.

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