



DEPARTMENT OF AGRICULTURE, SOUTH AUSTRALIA

Agronomy Branch Report

OIL SEED RAPE SURVEYS, TRIALS & DEMONSTRATION

RESULTS - 1971-72



Compiled by: Agricultural Advisers

Report No. 42

August, 1972.

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DISTRICT SURVEY ON OIL SEED RAPE PRODUCTION

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Acting Senior Agricultural Adviser

With the introduction of wheat quotas in 1969 and the onset of low wool prices, growers in South Australia have shown increased interest in alternative crops. Diversification has been necessary to offset the loss of income because of low wool prices and reduced wheat acreage due to quotas.

The Agronomy Branch developed an extension programme directed at assessing the potential of alternate agronomic crops in the various agricultural regions of the State. After a preliminary look at the range of alternate crops in 1970 and 1971, it was decided that of the oil seed crops, the one that had the most potential of giving satisfactory economic returns in South Australia was oil seed rape.

The aim of the programme in 1971 was to obtain as much information as possible about factors affecting oil seed rape production in South Australia, with the view of providing growers with technical and economic information relating to this crop. At regional advisers' meetings it was decided that the most efficient method of achieving this objective was to survey as many trial and commercial sowings as possible to assess the performance of the crop over a wide area of South Australia. Eight district agricultural advisers gave this objective high priority, and observations were made on approximately 120 farmer trial and commercial areas in South Australia.

A simple information sheet was designed to record the most relevant data on cultural treatments, yields, rainfall, soil type, fertilisers, weed and pest control and harvesting methods. This report summarises the data collected on these factors.

The main activity associated with this programme was conducted in the northern agricultural areas and on Kangaroo Island, and these summaries comprise the main part of the report.

Some comments have also been added from a smaller number of observations in other districts.

In addition to the survey but as part of the overall programme, district officers have maintained contact with farmer committees associated with growing and marketing oil seed crops. In the northern districts, three leaflets were prepared for local growers on technical and economic aspects of oil seed rape production. Press and radio were used extensively to inform growers of all facets of production and harvesting of oil seed crops in all districts.

Information collected by agricultural advisers during this programme was collated into a special Journal of Agriculture publication, No. 1/72 "Oil Seed Rape - A Promising Crop for S.A." Observations have also been made on other alternate crops and information extended to growers wherever possible.

OIL SEED RAPE SURVEY (NORTHERN AREAS)

D.M. Crawford,

Assistant Agricultural Adviser,
Jamestown

1. INTRODUCTION:

This crop gained attention early in 1971 as an alternative to wheat. This publicity was largely due to one man who had incidental contact with a Japanese company. Details and aspects of this company's interest were outlined to a meeting of 120 farmers at Georgetown in early June, 1971.

Following this meeting, 70 crops were sown in the northern areas, i.e. Upper North, Lower North and Yorke Peninsula. These were farmer trial sowings of 5 acres or more just to see how the crop performed on their farms.

Departmentally, every attempt was made to collate and furnish farmers with the information available. This meant further public meetings, use of mass media and individual discussion. Advisers surveyed and collected data from 70 farmers in order to collate agronomic information on this crop.

2. ORIGIN:

A meeting of persons interested in oil seed rape was held at Georgetown in early June, 1971. All those farmers interested in growing oil seed rape wrote down their names on a list. The list of names obtained from the Georgetown meeting was added to from names supplied by various sources.

3. OBJECTIVE:

To obtain as much information as possible about the factors affecting oil seed rape production.

4. METHOD:

All farmers were contacted by telephone, and as many crops as possible were inspected at various stages of growth. Personnel involved were the district advisers for the Upper North, Lower North and Yorke Peninsula, and myself. Some crops were seen more than once and all information was recorded on an information sheet (Appendix I). Due to the large number of crops involved, it was not possible to see them all.

5. RESULTS:

5.1 Numbers Involved

Of the 122 proposed crops, only 70 were sown. The remaining 52 farmers did not sow for the following reasons:-

- * The season was too far advanced before they had time to sow.
- * Suitable land was unavailable.
- * They were content to observe their neighbours.

5.2 Area Covered

The area surveyed consisted of the Upper North, Lower North and Yorke Peninsula districts.

	<u>No. Crops Surveyed</u>
Upper North	63
Lower North	5
Yorke Peninsula	2

Acreages sown ranged from $\frac{1}{2}$ to 59 acres

Total crop area surveyed - 745 acres

6. SITUATIONS UNDER WHICH THE CROP WAS GROWN:

6.1 Paddock Use Before Rape Crop

The crop was sown on fallow, wheat stubble, oat stubble, pea stubble, barley stubble, good clover pasture and on poor grassy pasture ground. Those crops sown on fallow or good clover pasture did very well, but those on wheat stubble or grassy pasture were poor. Most farmers appreciated that the paddock they had available did not particularly suit oil seed rape.

6.2 Rainfall

Average rainfall areas of 12" to 23" grew oil seed rape. However, most areas had from 1" to 3" more than average and more rain late in the season. So the season was longer and wetter than an average season. Those crops grown in rainfall areas of less than 16" were considered to be uneconomic compared to cereals. These areas are more subject to hot, dry finishes which are not conducive to good yields of oil seed.

6.3 Soils

Sandy loam red brown earth, loamy red brown earth, dark cracking clay, clay loam, loamy mallee, sandy loam, and desert loam soil types supported stands of oil seed rape. The clay and dark cracking clay gave the highest yield.

Soil that became waterlogged wiped out one crop and severely damaged four others.

6.4 Fertilisers

Superphosphate applications ranged from 56 to 250 lbs. per acre. Those crops with higher superphosphate dressings did better than those on the other end of the scale. In four cases nitrogen fertilisers were used with no clear cut result as to their usefulness.

6.5 Sowing Method

Mixing the seed with the superphosphate and putting this through the fertiliser side of the combine was the chief method. A few crops were sown using a small seeds box. It appears that sowing method is not important.

6.6 Weeds

The grassy weeds, Wimmera ryegrass and wild oat, caused the most trouble. Not only did they compete vigorously in the early stages but also made harvesting most difficult. They blocked up the sieves and contaminated the sample. Where Treflan(R) was applied at 1 pint per acre ryegrass and wild oats were not a problem. Avaden(R) at 1½ pints per acre was also used with success. However, Treflan(R) has the ability to suppress seedling weeds such as deadnettle, sheep weed and fumitory.

6.7 Insects

Aphids were found in most crops but only in sufficient numbers in three crops to warrant aerial spraying. The dry October probably reduced the number of aphids whereas a wet, cool October may have resulted in more crops being seriously affected.

Ladybirds (Coccinellidae) moved onto aphid infected plants but too late to seriously affect the aphids. Climbing cutworm, cabbage centre grub, cabbage moth and cabbage white butterfly larvae were seen. In only two cases was spraying necessary.

6.8 Purity of Seed

In three Target crops Arlo plants were growing, with another impurity being a mustard-turnip off-type which was taller and later maturing.

7. HARVESTING:

Particular attention was given to harvesting troubles and seventeen crops were visited during harvesting to see at first hand what problems occurred.

Windrowing was used in four cases with no problems when an open front machine was used to pick up the windrows. Crop lifters on a closed front machine gave good results, but most of these machines had difficulty handling the bulk of material through the thresher. Comb spacings all depended on the thickness of the rape stems. Drum speeds were cut back to as slow as possible with the concave opened out fully in most cases. A half inch lip riddle on top with an $\frac{1}{8}$ inch round hole or punch hole on the bottom, gave good results where weed seeds were not present. Where weeds were a problem, a $\frac{1}{4}$ inch sieve was needed. Travel speed had to be as slow as 1 m.p.h. for sieves to handle the material. It appears that sieve area and time on the sieves is critical for clean samples and maximum seed recovery.

When machines were travelling up hill, seed was tipped over the back, whereas this did not happen on the downhill run.

Those machines designed to handle small seeds were superior to the cereal headers. However, cereal type headers still were able to achieve high yields. Leaks from joints and cracks were a reason for seed loss in some older machines.

Losses at the comb were only sustained when travel speed was too fast. Reaping when it was too hot also caused losses. Those crops reaped during the early morning or on overcast, cool days had little comb losses. Wind was cut back to either nothing or only just open to reduce the amount of seed blown over the back. Where wild oats and ryegrass were a problem, no wind aggravated the overloading of the sieves.

Samples were taken off the header and analysed for purity and oil content. Purity percentages ranged from 99.3% to 87.6% with the better samples being reaped into the screenings box.

Oil contents ranged from 40.5% to 49.1%.

8. SURVEY ANALYSIS:

It is impossible to give all the results of the analysis here, so the main points have been extracted.

	<u>Mean</u>	<u>Range</u>
Acreage	11	$\frac{1}{2}$ to 59
Time sown	June 27	May 21 to July 30
Seeding rate	3 lbs.	3 to 6
Variety	Arlo	Target, Oro
Yield	756 lbs. per acre	211 to 1950
Loss	94 lbs. per acre	30 to 200
Cultivations	4	3 to 16
Fertiliser	123 lbs. per acre superphosphate	56 to 250

9. SUMMARY:

The 1971 season favoured the maturing of all winter sown crops. Moisture was plentiful whilst cool and overcast conditions at harvesting were of special benefit to this crop. Oil seed rape has proved itself to be a profitable crop when grown in suitable conditions. The survey has shown that the most important factors for success are adequate moisture, good drainage, high soil fertility, and effective weed and insect control. Crops yielded more when sown on paddocks with a good history of annual legumes. Those sown on fallow where the rainfall was less than 19" average were better than those on leyland.

Due to wheat quotas it was thought that many farmers would be seeking an alternative enterprise, but this did not prove to be the case. Farmers in this area are generally content to grow those crops they know best, such as wheat and barley. Oil seed rape has interested those farmers with larger than average sized farms and small wheat quotas. Also those who previously relied on income from sheep and thus had little or no wheat quota sowed large areas of up to 60 acres. This latter group on large holdings intend to sow at least 150 acres each in 1972-73.

There have been two main varieties grown in South Australia - Arlo and Target, but other varieties such as Oro were grown to a limited extent. Because higher prices are being offered for those varieties with a low erucic acid content, such as Oro, it can be expected that there will be a swing to low erucic acid varieties.

The fact that oil seed rape is a cross-pollinating plant means that crossing between the true rapes, wild turnip and mustards, can take place. This makes it difficult to produce a true line of seed for subsequent crops.

During this survey "off types" were found in some crops. Care must be taken to prevent "off types" growing in crops to be harvested for seed for sowing in subsequent years.

Normal cereal harvesting equipment can be used so no extra capital outlay is necessary to enter this industry. With proper attention to harvesting techniques, this crop should prove to be a valuable enterprise in suitable areas. The potential acreage of oil seed rape is probably 10,000 acres or more in the northern region.

9. ACKNOWLEDGMENTS:

Miss P. White for survey analysis.

Mr. W.A. Michelmore and Mr. N.R. Matz for the surveying of crops in their areas.

OIL SEED RAPE SURVEY - KANGAROO ISLAND - 1971-72

S.G. Williams,

District Agricultural Adviser

1. INTRODUCTION:

Due to low returns for wool, the main farming enterprise on Kangaroo Island, farmers have been looking for alternative ways of supplementing their incomes.

Because oil seed rape appeared to have a reliable market outlet for several years and it appeared to be a promising crop under the climatic conditions of the Island, it was considered that considerable assistance could be given to growers by conducting a survey of as many crops as possible during the 1971-72 growing season.

Thirty-seven crops were surveyed (see Appendix II) during October and details of each were compiled on a prepared survey form. Yield details were collected after harvest.

2. SUMMARY:

The climate on Kangaroo Island is suitable for growing oil seed rape and provided drainage is good, most soil types are capable of growing payable crops.

A weed-free seedbed is essential because oil seed rape is a poor competitor in the early stages of growth. The use of the desiccant herbicides, Reglone(R) and Gramoxone(R), in place of or as an adjunct to cultivation, is worthwhile considering.

Most conventional methods of seeding can be used but the spinner type broadcaster could result in uneven sowing.

Although end of July sowing returned good yields in one instance last season, under normal conditions May-June sowing would be expected to give the highest yields and the highest oil content seed.

There appears to be no need to vary the recommended seeding rates per acre, namely 3 lbs. for small seeded varieties and 5 lbs. for large seeded varieties.

Care is necessary in regulating sowing depth. On heavy soils this should not exceed $\frac{1}{2}$ " with a maximum of 1" for light sands.

Superphosphate is the most important fertiliser. For land which has been well supered in the past a minimum of 160 lbs. per acre is recommended. The use of nitrogen at seeding time could prove beneficial on sandy soils and soils of low fertility. On land which has received regular maintenance dressings of trace elements, no additional trace elements are necessary with the crop.

Red legged earth mite control is essential as the crop germinates and crops should be inspected regularly, particularly from flowering to maturity, to see if other pests are causing any damage.

Diseases are unlikely to be a major problem provided reliable seed is sown, the crop is sown on well drained soil and rape seed does not follow in close rotation on the same paddock.

Direct heading proved satisfactory with Arlo and Target, but varieties such as Oro, which are more prone to shattering, may require windrowing before harvesting to prevent seed losses.

3. RAINFALL:

January and February rainfall was below average and March was slightly above average. The first half of April was dry and exceptionally hot, the second half was very wet; the month finishing with recordings three times above normal. May recordings were $\frac{1}{2}$ " to $\frac{3}{4}$ " above average. June was slightly below average and July was about 30% below average. August was some 30% above, October 30% below average and November and December recordings were about double the normal monthly rainfall. The total rainfall for the year was about 33% above average.

4. SOIL TYPE:

The laterite soils were the most common but light sand over clay, sand over limestone marl, and mixed soil types were used. In one instance Arlo yielded over 1,000 lbs. per acre on a very light sandy soil in the Hundred of Haines. It would appear that most soil types on the Island are suitable for growing oil seed rape, provided they are well drained.

5. DRAINAGE:

Good drainage is no doubt one of the most important features to look for in selecting a site for growing oil seed rape. On all badly drained soils crops were poor and in some cases a complete failure. Although 1971 was abnormally wet

right from the "break" of the season, it did show many weaknesses in drainage which normally would not be expected.

6. PADDOCK HISTORY:

During the previous five years the following rotations were the most common:- 5 years pasture 11 crops, 2 years pasture-oats-2 years pasture 8 crops, and pasture-oats-3 years pasture 5 crops.

Yields obtained indicate that any of these rotations are suitable prior to sowing oil seed rape.

Cereal crops either wheat, oats or barley, either one or two years before the rape, gave relatively poor yields but this result is not clear cut as complicating factors such as poor drainage and weed problems cloud the issue. It appears that good drainage and effective weed control are more important than the previous paddock history but there are indications that rape, where possible, should not follow a cereal crop in the previous year unless the soil is highly fertile.

7. SEEDBED PREPARATION:

Soil preparation varied between 3 and 6 workings prior to sowing and 1 or 2 harrowings after seeding. The highest yielding crop was sown on land which was disc ploughed, harrowed and scarified and harrowed again after sowing - the whole programme was done during May.

The main aim with seedbed preparation work is to effectively kill weeds. Although the highest yielding crop was sown on pasture land which was not worked at all until early May, it is considered that better weed control would be obtained in most situations if the first working could be done much earlier, that is following summer rain or the first good rain in autumn.

On soils which are inclined to pack down easily there seems to be some advantage in having the surface fairly rough rather than too fine when the crop is sown. Soils in this condition absorb the rain better and compaction is minimised.

The herbicide desiccants, Reglone(R) and Gramoxon(R), used at recommended rates in place of cultivation or as an adjunct to cultivation, were used for 3 crops. In two cases the land was sprayed but received no cultivation before seeding. These two crops failed because the soil was badly drained. The third crop which was sown on ground which received two cultivations and a spray treatment before seeding, proved highly successful.

There are indications that the use of herbicide sprays could be of considerable benefit on Kangaroo Island where it is often difficult to kill weeds by cultivation under showery weather conditions.

8. METHOD OF SOWING:

A great variety of sowing methods were used for the 1971 crop. The most common being:-

- * Mixing the seed with superphosphate and sowing through the fertiliser box of a combine or drill, dropping the seed on the soil surface and harrowing.
- * Sowing the seed on the surface of the soil through a small seeds box of a combine, drill or spreader and harrowing.
- * Mixing the seed with superphosphate, sowing with a spinner broadcaster and harrowing.
- * Using a sod seeder drill sowing $\frac{3}{4}$ to 1" deep.

Other methods included mixing the seed with superphosphate and sowing through the fertiliser box $\frac{3}{4}$ to 1" deep and sowing through a small seeds box fitted to a trash seeder.

In two cases the seed was mixed either with trace element superphosphate or superphosphate and ammonia mixtures. These practices are not advocated as trace element and nitrogen fertiliser materials in direct contact with rape seed can have a depressing effect on germination.

Of the other methods used, all appeared to be successful although spinner broadcasting cannot be generally recommended as a suitable seeding method.

9. DATE SOWN:

The main sowings were done from the beginning of May to the end of June. Smaller sowings were made from the beginning to the end of July and 4 acres which failed, due to waterlogging, were sown at the beginning of September.

Yield results indicate that good weed control, good drainage and effective red legged earth mite control were more important than the actual sowing time in 1971.

Under normal seasonal conditions, it would be expected that the highest yielding crops would be obtained from sowings from mid-May to mid-June.

Wet soils and weed problems made sowing under ideal conditions difficult in 1971, nevertheless the highest yielding crops were produced from mid-May to end of June sowings.

The table below shows the sowing time in relation to the area sown and the yields obtained.

Sowing Time, Area Sown & Yield Results

Time of Sowing	Area Sown Acres	Yield Range lb./acre	Average Yield lb./acre	Remarks
Beginning May	113	214 - 470	326	Weedy and wet
Mid-May	185	300 - 360	330	Weedy and wet
End May	417	353 - 1,512	671	
Beginning June	150	448 - 1,120	971	
Mid-June	237.5	59 - 1,280	671	59 waterlogged
End June	164	611 - 1,094	851	1,094 well drained sandy soil
Beginning July	20	187	187	
Mid-July	11.5	243	243	
End July	20	1,120	1,120	Well drained soil
Beginning September	4	-	-	Failed - wet
Total	1,322			

Variety & Area Sown

Variety	Area Sown acres	Yield Range lbs./acre	Avg. Yield lbs/acre
Arlo	962.5	243 - 1,512	700
Target	314	59 - 1,120	669
Oro	45.5	- - 1,280	620
Total	1,322		

All three varieties performed well when grown under good conditions. With its early vigour, Arlo appeared to cope better with weeds and to a certain extent, wet soils than did Target which is less vigorous in the early stages of growth.

Oro is capable of yielding well but due to difference in sowing times, direct comparisons with the other two varieties was not possible.

At this stage no preference can be given for any one variety.

10. SOWING RATE PER ACRE:

Sowing rates varied between $2\frac{1}{2}$ and 5 lbs. for Arlo, 5 and 7 lbs. for Target and 5 and 6 lbs. for Oro. There appears to be no evidence to suggest that the standard recommended rates of 3 lbs. for the small seeded varieties such as Arlo and 5 lbs. for the larger seeded varieties such as Target and Oro should be varied under Kangaroo Island conditions. Increasing seeding rates under weedy conditions is not an effective method of overcoming a weed problem.

11. DEPTH OF SOWING:

Surface seeding to sowing up to 1" deep gave good results. One small area sown 2" deep on a sandy soil type established very poorly.

Sowing up to $\frac{1}{2}$ " deep on heavy soils and up to 1" deep on light soils is recommended.

12. FERTILISER & RATE PER ACRE:

Plain super. This was the most popular fertiliser. Nineteen crops were sown with rates varying between 1 cwt. and $1\frac{1}{2}$ bags per acre with 1 bag per acre the most general.

Plain super with 2 ozs. lindane. Eight crops were sown with 1 bag of super plus 2 ozs. of lindane per acre.

Other mixtures used per acre. 1 bag 3:1 super and ammonia plus 2 ozs. lindane; $1\frac{1}{2}$ cwts. super plus copper $3\frac{1}{2}$ lbs., zinc $3\frac{1}{2}$ lbs. molybdenum 1 oz.;

1 cwt. super plus copper $3\frac{1}{2}$ lbs., zinc $3\frac{1}{2}$ lbs., topdressed and $\frac{1}{2}$ bag 1:1 super and ammonia applied at seeding; $\frac{1}{2}$ bag super plus manganese 14 lbs. and copper 7 lbs.; 1 bag super plus copper $3\frac{1}{2}$ or 7 lbs., and 1 cwt. super plus copper $3\frac{1}{2}$ lbs. and lindane 2 ozs.

The highest yielding crops had the following fertiliser treatments:-

Fertiliser	Variety	Yield lb. acre
143 plain super topdressed March No fertiliser at sowing	Arlo	1,512
187 plain super	Oro	1,280
112 super plus $3\frac{1}{2}$ copper, $3\frac{1}{2}$ zinc topdressed & 90 of 1:1 super and ammonia at sowing	Arlo & Target	1,120
187 super plus $3\frac{1}{2}$ copper	Arlo & Target	1,120
160 plain super	Arlo	1,094
187 plain super	Arlo	1,053
187 plain super	Arlo & Target	1,008

The average annual super application rates on the above properties during the previous 5 years varied between 112 and 175 lbs. per acre. All these properties received regular maintenance dressings of either copper or copper and molybdenum. The land topdressed with 143 lbs. of super in March and received no fertiliser at sowing time had received an average of 175 lbs. of super during the previous 5 years.

13. WEED CONTROL:

Except in three instances where the desiccant herbicides, Reglone(R) and Gramoxone(R) were used prior to sowing, weed control depended only on cultivation.

The weed control programme for a small area of Oro, which yielded 1,280 lbs. per acre following sowing on the 11th June, consisted of two cultivations and one spraying with 8 ozs. Reglone(R) and 5 ozs. Gramoxone(R) per acre prior to sowing.

On another small area weed control was effective following the use of the above herbicides but the area became water-logged soon after sowing and the crop failed.

In the third instance, Reglone(R) and Gramoxone(R) were used without any prior cultivation for a crop sown in mid-July. At this late stage weeds were too large for effective chemical control and to make matters worse, the area was badly drained. This crop yielded poorly.

Good weed control is essential with oil seed rape. Because good weed control under showery weather conditions, which are common on the Island, is difficult to obtain with cultivation, it appears that the use of Reglone(R) and Gramoxone(R) could be very useful provided the weeds are sprayed when small.

The use of other herbicides could also be of benefit. These are outlined in the Departmental bulletin 1/72 "Oil Seed Rape - A Promising Crop for S.A."

It should be stressed that a boom spray is considered to be the only effective machine for reliable weed spraying work.

Where cultivation only is relied upon for weed control the first cultivation should be done much earlier than was generally the case this season.

14. PEST CONTROL:

The main pest this year was red legged earth mite. This was generally effectively controlled by using lindane super, lindane spray, Imidan spray and DDT spray. In one case retreatment was necessary following heavy rain after sowing with lindane super.

With oil seed rape it is vital to control red legged earth mite during the germination stage of the crop. On one property where treatment was applied too late, the crop was a complete failure and had to be resown.

DDT is not recommended on account of its residual problem and neither DDT or lindane are effective against lucerne flea which is often found in association with red legged earth mite.

Cutworms coming in from adjoining pasture paddocks caused damage to the outside edges of several crops during August-September. Where this pest is troublesome spraying the perimeter of the crop with Dipterex(R) should prove effective.

Aphids clustered on flowers were seen in some crops but in no case was the outbreak severe enough to warrant treatment. This pest is capable of causing severe damage and regular checks should be made during the flowering stage of the crop.

Other pests caused little or no damage this season.

15. DISEASES:

White rust, often associated with downy mildew, was present at flowering time in all crops of Arlo. Although this disease appeared to be fairly prominent in some crops the overall percentage of affected plants was not high. White rust in Target and Oro was not recorded during the survey.

Black leg was seen in isolated crops of Arlo and Target. This disease was associated with waterlogged soil conditions.

Very odd Target plants affected with downy mildew were noticed in one crop near Parndana.

Diseases could become a problem where oil seed rape is grown in close rotation. To avoid any sudden build up of soil-borne diseases it is advisable not to grow two successive crops of oil seed rape on the same ground.

16. HARVESTING:

Direct heading with both open and closed front machines caused little difficulty with Arlo and Target, but severe shattering was reported when direct heading Oro.

Experience so far indicates that provided Arlo and Target are harvested at the right stage of maturity and during cool weather, direct heading is quite satisfactory but because Oro appears to be more prone to shattering, windrowing prior to harvesting may be necessary to avoid seed losses.

17. SEED STORAGE ON THE FARM:

High humidity caused many problems with seed in bulk storage, seed on the top of the compound was the worst affected. Where seed was dried and stored in bags no further problems occurred.

It appears that farm storage in bags rather than in bulk may be necessary under Kangaroo Island weather conditions.

OIL SEED RAPE OBSERVATIONS - LOWER SOUTH EAST

1971-72

P.L. Marrett,

District Agricultural Adviser,
Mt. Gambier

Excellent crops of oil seed rape were grown in the Lower South East. Yields ranged from 5 cwts. to 30 cwts. per acre.

Rainfall was above average for the year with good falls in January, 1972 enabling the later sown crops to finish very well.

The windrowing method of harvesting was widely used.

1. SOILS:

The bulk of the crop was grown on solodized solonetz and mixed terra rossa and red brown earth soils in the Padthaway district to the rendzina soils in the Penola-Millicent district. Good crops were also grown south of Mt. Gambier on the flinty terra rossa types.

Some trouble was experienced on soils which became waterlogged. Waterlogging led to reduced yields in three situations:-

- * Complete loss of the crop.
- * Abandonment of sowing.
- * Reduced yields within the crop due to "wet feet".

In the last case this was most apparent on the solodized solonetz soils.

2. FERTILISER:

The majority of growers used at least 1 bag of super per acre. No growers reported any possible fertiliser deficiencies nor were any observed. The exception was nitrogen deficiency which could be expected because of the very wet year.

3. SOWING:

Times of sowing ranged from May to November. However, the bulk of the crop was sown in July and August. Three years'

experience with the crop indicates that time of sowing should be May-June in the northern part of the district and mid-July to mid-August in the southern part.

Most farmers mixed the seed with the superphosphate and then drilled the crop. This works quite well with large seed varieties but is not entirely satisfactory with the smaller seed varieties. The problem is caused by granulated super allowing the small seeds to work through. Adding lime or dolomite limestone to the superphosphate reduced the problem.

The majority of farmers used combines for seeding.

4. WEEDS:

Problems were experienced with weeds (capeweed, barley grass and Wimmera ryegrass), with early sowings and buchan weed with later sowings.

Only one grower used trifluralin (Treflan(R)) at 1 pint per acre as a pre-emergent spray. Weed control was good.

Where pre-sowing weed control was a problem, diquat and paraquat were successfully used at recommended rates.

Although buchan weed can be present in a crop, it is doubtful whether it is a very great problem. Harvesting methods properly used, can offset problems that could be caused with this weed. Most of the seed from buchan weed is shed after a few days in the windrow.

5. PESTS:

Most farmers carried out preventative sprays for red legged earth mites.

Climbing cutworm was present in some crops and spraying was carried out. However, it is doubtful whether very much damage to the crop is really done by climbing cutworms. One disturbing feature of this pest was the recommendation of the contracting company to use DDT. There appeared to be no justification for the recommendation.

Aphids were present in the later maturing crops. Some spraying was done. A problem with this pest is to estimate the break-even point to justify spraying costs. It was noticed that edges of crops were more severely infested than centres of crops. It is doubtful whether spraying for this pest is really justified.

6. HARVESTING:

Nearly all of the crops were harvested by the windrowing method. A problem that exists with windrowing is that in the heavy crops (more than 15 cwts./acre) currently available windrowers make windrows that are too large. The opinion is that in heavy crops, 6 feet of crop is ample for a windrow.

Seed losses from windrows are minimum excepting when hail storms occur. Hail storms can dislodge a lot of seed.

The real problem in windrowing is judging when the crop is ready to windrow. It appears that experience will be the best teacher.

Moisture content of the seed was thought to be a problem. However, testing by biting the seeds with the teeth is a good guide. If the seed is hard to the bite it is safe and will not cause moisture problems. Conversely, if the seed is soft to the bite there will be problems. This has been borne out by moisture meter tests.

7. VARIETIES:

Only odd crops were not of the Target variety.

8. YIELDS:

Average yield was 15 cwts. per acre. Range in yields 5 cwts. to 30 cwts. Millicent district had the best average, 22 cwts. per acre.

Oil content was up to standard and in some cases the oil level was above standard, resulting in a premium to the grower. The later sown crops had the better oil content. This is interesting as overseas work indicates later sowings leads to lower oil levels.

There is little doubt that the better crops were grown on the more fertile soils, e.g. Millicent and Penola rendzina. This point is worth noting.

The increase in freezer pea acreage in the Millicent district suggests that oil seed rape could very well fit into the cropping rotation.

OIL SEED RAPE DEMONSTRATION RESULTS - 1971-72

UPPER SOUTH EAST DISTRICT

P.D. Fairbrother,

District Agricultural Adviser.

Keith

Five oil seed rape demonstrations were sown in the Upper South East district in 1971.

1. SUMMARY OF RESULTS:

<u>Location</u>	<u>Area</u>	<u>Yields (lbs./acre)</u>	
		<u>Arlo</u>	<u>Target</u>
Culburra	1 acre	1,388	1,680
Sherwood	1 "	997	-
Wirrega	1 "	1,568	-
Keith	1 "	1,383	1,386
Brimbago	1 "	1,360	1,310

2. COMMENTS:

All the plots were 1 acre in size. The sites were well drained and ideal for rape.

The main insect problems were red legged earth mite, lucerne flea and aphids. No weed problems arose as the rape grew above any weeds.

The plots were harvested under ideal conditions, i.e. during cool weather or late in the evening. No shattering problems were encountered with Arlo under these conditions. The heavy crop at Wirrega would have best been handled with an open front machine.

Target shattered readily. Higher yields may have been obtained if the crop was windrowed.

The green Arlo pods passed through the machine, however green Target pods were thrashed. This and the tendency to harvest early to avoid shattering may result in a high moisture level. For these reasons Target may best be handled by windrowing. The Victorian Department feel that it is essential to windrow in the later areas to reduce moisture.

The screen could not handle all the rape seed. The seed which passed through the screen and filled the screenings box was clean. However, the screen was overloaded and most passed into the main box together with some trash - mainly brome grass and broken stem.

Green stems are also a problem as they tend to jam the machines during harvest.

Best yields have been obtained on the better soils of high fertility which are well drained.

Weeds have not been a severe problem this year.

It appears that nitrogen may be useful on the poorer soils.

Above average rainfall was received for the year and there were no frosts.

OIL SEED RAPE SURVEY - 1971
SOUTHERN MALLEE DISTRICT

T.R. Dillon,

District Agricultural Adviser
Lameroo

Oil seed rape yields in the southern mallee district this year have been very promising. Yields have been influenced by a good "growing season rainfall", but have been achieved despite unfavourable weather in October and quite severe aphid attacks in the spring.

Aphids have been particularly bad and control measures would probably have been payable on most sites. No other insect pests caused noticeable damage.

Weeds were not generally a problem, crops yielded well despite Wimmera ryegrass competition; this again could have been due to the lack of moisture stress. Where Treflan (R) at 1 pint per acre was used at Coonalpyn, control of the ryegrass was excellent in the sprayed area and the weeds were numerous in the control strips. No visual difference in yield was apparent and unfortunately it was not possible to harvest these separately.

On a gross margin basis the trial yields at Yumali were \$8 more profitable (\$88 per ton Melbourne) than the 11 bags of No. 4 barley which the remainder of the paddock yielded. Similarly 900 lbs. of rape at Coonalpyn was equivalent in profitability to the average yield of his barley acreage, 15 bags of No. 4 grade.

Harvesting presented few problems. Some losses occurred over the back of the machines, some refinements in amount of draught and/or "shake" could possibly minimise losses. The most serious loss was from the front of the machines. The design of the comb front machines meant that any seed that thrashed out, at the comb, fell back onto the ground; conversely in the open front machines this seed fell back into the machine.

Loss from wind damage was negligible, for this reason it is doubtful if windrowing is essential in this district. There were the usual windy conditions at times during late spring.

Details of results of the replicated trials are as follows:-

Oil Seed Rape Trial - Yumali

Sown: 15/6/71

Plots: 4 chns. x 24 rows

Arlo: Harvested 30/11/71

<u>Replicate</u>				
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Total</u>
83 lbs.	90 lbs.	89 lbs.	54 lbs.	316 lbs.

Actual yield 931 lbs./acre

Harvested with MF 585 set up to harvest barley.

Replicate 4 was possibly a little too green to reap. Some loss from the header also affected weight of Replicate 4.

Loss from wind damage was estimated at a maximum of 5% in worst area of Arlo plots.

Total loss would be 50 lbs. per acre.

Target: Harvested 22/12/71

<u>Replicate</u>				
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Total</u>
90 lbs.	80 lbs.	88 lbs.	76 lbs.	334 lbs.

Actual yield 984 lbs./acre

Replicate 4 was worst affected by emu damage.

Total loss from wind and harvest estimated at 100 lbs. per acre.

Oil Seed Rape Trial - Coonalpyn

Sown: 2/6/71

Plots: 4 chns. x 20 rows

Arlo: Harvested 25/11/71

<u>Replicate</u>				
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Total</u>
64 lbs.	71 lbs.	71 lbs.	67 lbs.	273 lbs.

Actual yield 965 lbs./acre

Plots were direct headed with negligible loss. Header setting $\frac{1}{8}$ " round bottom screen, $\frac{1}{2}$ " lip riddle with sheet concave, open at front with $\frac{3}{8}$ " clearance at rear.

Speed: $2\frac{1}{2}$ m.p.h.

Thrasher: 600 r.p.m.

Target: Harvested 16/12/71

<u>Replicate</u>				
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Total</u>
70 lbs.	84 lbs.	70 lbs.	61 lbs.	285 lbs.

Actual yield 1,008 lbs./acre

Plots were direct headed with little loss.

OIL SEED RAPE SURVEY - 1971

EYRE PENINSULA DISTRICT

LOWER EYRE PENINSULA

K.J. Holden,

District Agricultural Adviser
Pt. Lincoln

Four oil seed crop sowings were observed and information recorded. A summary of the yields are set out below.

<u>Location</u>	<u>Area</u>	<u>Variety</u>	<u>Yield</u>
Green Patch	18 acres	Arlo	900 lbs. (approx.)
Louth Bay	15 "	Target	940 "
Kadinnie	16 "	Arlo	600 "
Wanilla	8 "	Arlo	1,000 "

The 1971 season had well above average rainfall and recordings at the above sites were from 23-26". Wet conditions prevailed early and delayed sowing of crops, sowing dates were from the 16th June to the last week in July.

It was however, a late finishing season.

Some pest problems were encountered, with red legged earth mite, lucerne flea and aphids. Slight wind loss occurred, and the main weed problem encountered was with Wimmera ryegrass.

EASTERN EYRE PENINSULA DISTRICT

R.C. Hagerstrom,

District Agricultural Adviser
Cleve

Five sites were sown to oil seed rape in 1971 and observations were made on one other commercial sowing. Generally, results were disappointing, due to a poor finish to the season in this district.

Yields were only of the order of 250-300 lbs. per acre. Storms and winds severely affected some plots, and these were not reaped. The only commercial sowing in the area, 100 acres sown at Yadnarie, finished with an average yield of only 320 lbs. per acre. Barley on a similar area averaged 22-25 bushels per acre, which would have been a much better paying proposition.

HARVEST DETAILS OIL SEED RAPE TRIAL AT
SANDERGROVE - MURRAY PLAINS

S.G. Williams

1. DATE HARVESTED:

Arlo: 29/11/71

Target: 21/12/71

2. AVERAGE YIELD PER ACRE:

Arlo: 1,002 lbs.

Target: 2,472 lbs.

3. WEATHER CONDITIONS:

3.1 Arlo

Light drizzle early morning. Cloudy with intermittent sun, light south west breeze, temperature about 68^oF. during harvest.

3.2 Target

15 points of rain overnight. Hazy sunshine, steady north west wind, temperature about 70^oF. during harvest.

4. CONDITION OF CROP:

Both varieties badly lodged following an exceptionally strong wind early in October.

5. HARVESTING MACHINE:

M.F. 585 P.T.O. drive, closed front, 12 foot comb, crop lifters fitted, seed collected in screening box.

6. HARVESTER SETTINGS:

Comb spacing: $\frac{7}{8}$ "

Top sieve: $\frac{3}{8}$ " standard wheat sieve

Bottom sieve: Home made fly wire mesh for Arlo. Same sieve with larger holes punched for Target (not really satisfactory).

Concaves: Fully open back and front

Drum speed: Originally chain drive but changed to belt drive. Actual speed not available.

Draught: Cut right off.

Flat tin replacement for rake on back of sieve.

7. AREA OF EACH PLOT:

0.072 acres

8. NUMBER OF SEED PER POUND:

Arlo: 198,339

Target: 97,320

Plot No.	Variety	Yield Lbs./plot	Yield Lbs./acre	Average Yield Lbs./acre
1	Arlo	78	1,083	
2	Arlo	66	917	
5	Arlo	33	458*	
6	Arlo	71	986	
7	Arlo	85	1,181	
8	Arlo	68	944	
11	Arlo	68	944	
12	Arlo	69	958	1,002 Arlo
3	Target	166	2,306	
4	Target	166	2,306	
9	Target	184	2,555	
10	Target	196	2,722	2,472 Target

* No. 5 plot run over with tractor before reaping. Results disregarded in calculating average yield.

N.B.: Four buffer strips of Arlo were harvested as plots as no alteration to machine was necessary during harvest.

9. SEED LOSS:

9.1 Arlo

It was originally estimated that 5½ lbs. of seed per acre was on the ground after harvest but after noting the germination of seed behind the walker strip and finding a fault in the leader while repairing the Target, it was estimated that this loss was

at least 40 lbs. per acre. Less than 1% of pods had shattered before harvest and seed loss at the comb was not significant.

9.2 Target

Very little loss occurred through pods shattering before harvest. The loss at the comb was very light but a small percentage of seed was riding over the back of the machine considered due to using an unsuitable bottom sieve. Seed being lost due to the fault mentioned when harvesting Arlo was collected when reaping Target.

10. HARVESTING DIFFICULTIES:

10.1 Arlo

Blockages at comb occurred:- (1) where Arlo adjoined green Target, due to lodging and the two varieties being tangled together; (2) when reaping direction was opposite to lay of lodged crop.

10.2 Target

Due to the crop being lodged and tangled an occasional blockage occurred at the comb.

N.B.: Little difficulty with combing likely of lodged crop, on a paddock scale, if reaping is done in the direction of the lay of the crop.

11. GENERAL COMMENTS:

Seed loss at the comb surprisingly light.

Bottom fly wire sieve satisfactory for Arlo but not for Target.

Provision should be made for collecting seed in other than the screening box when reaping on a paddock scale.

Stubble almost complete weed free. This means that pasture establishment under a crop of oil seed rape would be unsatisfactory.

Red legged earth mite was controlled by spraying with 5 fl. ozs. per acre of Imidan one week after sowing. As a precaution 25 fl. ozs. per acre of lindane was added to the Imidan as cockchafer grub activity was evident in adjoining areas. Barley grub was seen in the crop at the time Arlo was ready to reap but no damage to either varieties was evident.

12. GROSS MARGIN ANALYSIS:

The table attached has been prepared to give an indication of the likely economics of growing oil seed rape compared with wheat and barley in the Strathalbyn district. A more realistic comparison could be made by using average yields on individual farms.

1971 Rainfall - Sandergrove

January	14
February	50
March	180
April	367
May	290
June	122
July	129
August	384
September	216
October	138
November	195
December	<u>124</u>
<u>Total</u>	<u>22.09 inches</u>
<u>20 year average:</u>	<u>21 inches</u>

GROSS MARGIN ANALYSIS

	Wheat	Barley	Arlo	Target
1. <u>Income:</u>				
Yield in bushels/acre x price/bushel	21 x \$1.10 \$23.10	25 x \$0.65 \$16.25	18 x \$2.20 \$39.60	44 x \$2.20 \$96.80
2. <u>Variable Costs:</u>				
A. Seed	1.10	0.52	0.60	1.00
B. Fertiliser	1.00	0.80	1.00	1.00
C. Normal workings	4.25	4.25	4.25	4.25
D. Additional workings	0.90	-	0.90	0.90
E. Weed spray	-	-	-	-
F. Pest control	-	1.00	1.00	1.00
G. Insurance	0.23	0.16	0.40	0.97
H. Freight	0.22	0.22	9.90	24.28
Total Variable Costs	\$7.70	\$6.95	\$18.05	\$33.40
Gross Margin (1-2)	\$15.40	\$9.30	\$21.55	\$63.40

Wheat and barley yields are average yields County Hindmarsh, Hundred of Bremer 10 years 1958-59 to 1967-68.

N.B.: Wheat and barley yields for the Hundred of Bremer not available for 1971 harvest. Using a 10 year average for these two crops and comparing this with one year for oil seed rape could be misleading, consequently this gross margin analysis should be used only as a rough guide.

Gross Margin Analysis (Contd.)

2. Variable Costs:
- A. Seed (wheat 60, barley 40, Arlo 3 Target 5 lbs./acre) Oil seed rape 20c./lb.
- B. Fertiliser (90 lbs. barley, 112 lbs. wheat & oil seed rape)
- C. Tractor & implements, workings, seeding, harvesting, medium soils (barley)
- D. Additional workings to barley 2 cultivations, 1 harrowing
- E. Weed spray
- F. Pest control, chemical plus application
- G. Insurance 1% of value of crop
- H. Freight (10c./ton mile wheat & barley. \$22/ton oil seed rape to Melbourne)
- Barley grub 1 year in
3. Oil seed rape red legged earth mite

APPENDIX I
SURVEY FORM
OIL SEED RAPE
INFORMATION SHEET

NAME:

ADDRESS:

SECTION:

HUNDRED:

PHONE:

VARIETY:

SOIL TYPE:

ACREAGE:

DATE SOWN:

SEEDING RATE:

VARIETY:

SOWING METHOD:

AVERAGE RAINFALL:

YIELD:

LOSS:

ESTIMATED TOTAL YIELD:

FALLOW:

CULTIVATIONS:

FERTILISERS:

WEEDS:

PESTS:

METHOD OF HARVESTING:

COMMENTS:

Economics of Growing Minor Crops on Kangaroo Island (Contd.)

DEPTH OF SOWING:

FERTILISER & RATE/ACRE:

WEED CONTROL:

PEST CONTROL:

DISEASES & CONTROL:

METHOD OF HARVESTING:

MAKE OF HARVESTER:

HARVESTER SETTINGS:

Drum speed:

Concave clearance:

Top sieve:

Bottom sieve:

Draught:

Comb spacing:

Other:

ESTIMATED PRE-HARVEST LOSSES:

ESTIMATED YIELD/ACRE:

HARVESTING PROBLEMS:

CROP INSPECTION REPORT:

GENERAL COMMENTS: