Agriculture in the Lakes District: report of a survey of farm practices

A W. Hogstrom
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AGRICULTURE IN THE LAKES DISTRICT

— Report of a survey of farm practices

At the request of the Central South Zone Development Committee a survey which covered 58 farms in the Lakes District was carried out by officers of the Department of Agriculture. Field work for the survey started in 1961.

The survey aimed to:

- Establish facts about farming methods and practices in the area.
- Evaluate the extent and importance of several known problems.
- Determine any further problems affecting production in the area.
- Provide a basis for determination of the potential of the area.

Several important problems which had arisen since the first development of the Lakes District prompted the survey. It was aimed at defining farming practices and problems as a guide to the potential of the area.

The major problems encountered in the area since its early development were:

- The utilisation of salt affected and morrel soils.
- Transport difficulties.
- Low market value for properties.

Facts of interest relating to the type of farming carried on in the area and applicable to other eastern wheatbelt districts were also obtained in the survey. These included the extent of improved pastures; the types of cultivation machinery used; the rotations practised on the heavy and light soils; changes in the importance of pests such as rabbits and the potential for intensified production from existing areas, or expansion of areas.

A complete report of the survey was compiled by Mr. A. W. Hogstrom of the Rural Economics and Marketing Section. The published report—"Agriculture in the Lakes District"—is available from the Department of Agriculture. This article is a summary of the report.
The Lakes District supports about 70 holdings adjoining a chain of salt lakes to the east of Newdegate and Hyden but west of the No. 1 Rabbit Proof Fence. The chain of lakes is about 70 miles long running in a N.N.W. to S.S.E. direction. The lakes are O'Connor, Carmody, Hurlstone, Varley, Gulson, Fox, Camm, King, and Pallarup.

Most of the farms are east of the lakes locations surveyed in 1927. Recently land has been taken up to the west of the lakes. The location of the area and boundaries of existing holdings are shown in the map.

Climate
The climate of the Lakes District is typical of the eastern wheatbelt areas with the exception that the south end is cooler in summer because it is closer to the
Southern Ocean. The seasons are a hot and dry summer—November to April—and a cool wet winter—May to October.

Occasional summer thunderstorms in the area add to the annual rainfall but also cause the deterioration of dry pastures. The annual rainfall ranges from 1,112 points at Lake Carmody to 1,348 points at a recording station near Mt. Madden.

Frosts occur often in the winter but no records are kept of them.

Background

Most of the development of the Lakes District took place from 1928 to 1940. However, since the war, good prices for wool, the use of large machines such as bulldozers, the discovery of the value of trace elements and taxation concessions have led to another wave of development and the extension of holdings onto soil types not previously considered suitable.

When the area was first thrown open in March, 1928, apparent prospects for wheat farmers attracted many settlers and all available holdings were quickly taken up.

However, with the depression and the withdrawal of the Australian and British Governments' support of the 3,500 farms scheme—which would have had an important influence on the Lakes District through transport and communications—the State Government abandoned plans for railways and agricultural development in the area. Instead it instituted a transport subsidy for cartage of grain and superphosphate to and from the area.

By 1938 there were 101 settlers still in the area under the Agricultural Bank and eight free settlers. Four wheat silos were erected in the area in 1938 and the growers contributed to the cost of transport from the bulk bins to the rail head at Newdegate. Facilities to handle coarse grains were provided at the Lakes District bins in 1958.

The pattern of farming established in the area by 1938 consisted of running sheep on unimproved pastures—including saltbush and Wimmera rye grass—and the sowing of limited areas of cereals on suitable soils on an extended rotation. Barley grass on the saline soils was recognised as valuable early feed and it was seen that occasional cropping of these soils was beneficial to the pastures. Returns from the crops were best in wet seasons.

This pattern of farming has been followed up to the present day with little change. The proportion of crop sown on fallow has decreased and the production of coarse grains has increased over the past 10 years. Associated with this has been a large expansion in area of cleared land per farm. Farm size has more than doubled since the 1930's.

Farm Size

Farms in the area are larger than the average W.A. wheatbelt farm. The total area of the 58 farms surveyed was 240,977 acres, with 61.7 per cent. cleared. The average farm was 4,155 acres of which 2,565 acres were cleared. Only eight of the surveyed farms were fully cleared, but
most of the farmers intended to clear more land to increase their production area.

**New Land**

At the time of the survey an average of 127 acres of newly cleared land had been prepared on each farm for the next season. This indicated that there is considerable development going on in the area.

**Soils**

The soils of the Lakes District carry vegetation consisting mainly of morrel, yorrel, blackbutt, salmon gum, gimlet, merrit and mallee. It is on these soil types that most of the agricultural development has taken place. The soil-vegetation types can be described as a sequence of soils as they occur on the upward slope to the east from the lake floor—shown in the diagram.

On the western edge of the lakes, granite outcrops occur with the scrubplain soils extending nearly to the lakes' edges. The soils are sandy and gravelly and carry scrub up to four feet high. Samphire and saltbush form the vegetation around the lakes and in depressions near the lakes. To the east of the lakes on the sandy dunes, Kondinin blackbutt and yorrel are scattered through ti-trees and boree scrub.
Saltbush forms the chief ground cover. The heavier soils bordering the dunes carry an open stand of Kondinin blackbutt and a thick ground cover of saltbush with scattered boree patches.

On the valley floors to the east of the dunes are the fluffy morrel soils. These are grey-brown to dark brown sandy loam to clay loam with a very fine powdery surface. Red and black morrel, boree and sometimes merrit dominate the vegetation of these soils. Undergrowth includes saltbush and bluebush.

Soils carrying salmon gum, gimlet and silver salmon lie to the east of the morrel-boree and morrel associations. The main features of the profile are a grey-brown to brown loamy surface with a calcareous, sandy clay subsoil. These soils are best suited to agriculture in the Lakes District. On the valley slopes to the east of the salmon and gimlet soils lie the grey and brown sandy surfaced soils which carry mainly mallee scrub, often with an undergrowth of ti-trees. Patches of heavy soils occur through the mallee and may carry salmon, gimlet or merrit.

Surrounding the lakes to the west, and to the east of the mallee soils, are the sandy and gravelly soils known as sandplain or scrubplain. These soils are often of a sandy texture throughout the profile with a grey-brown to yellow surface carrying low scrub generally less than four feet high. Other soils have ironstone gravel in the profile reaching to the surface in some places.

Scrubplain

Scrubplain soils vary from sandy surfaced to ironstone gravel and rock at the surface and they carry low scrub. There is considerable potential for the increased utilisation of scrubplain soils both on holdings and adjoining them. The development of this land will determine the upper limit of development in the area.

Farmers in the area agree that the scrubplain soils improve with age and superphosphate - trace element applications, but that crop yields will not equal those of the mallee or salmon gum soils. Scrubplain soils are worth developing, especially in conjunction with already-developed heavier soils when the delay in returns can be shielded by the returns from the established land. A suitable legume in the pasture would make a big difference to the rate of development and the productivity of the scrubplain, as well as the mallee soils. The recommended legume is the Geraldton strain of subterranean clover.

It is generally recommended that barrel medic would be most suitable for the heavier soils—salmon, gimlet, merrit and morrel—in the Lakes District.

Cropping

An average of 364 acres was sown to wheat, 179 acres to oats and 152 acres to barley on the surveyed farms. The total area of crop—nearly 700 acres—was 27.3 per cent. of the cleared land.

Fallow is of some importance in the area, and the average of 276 acres indicates that about 40 per cent. of the crop is sown on land which lies in fallow from six to nine months.

Grain yields on surveyed farms in 1960-61 were: Wheat, 16.2 bushels an acre; oats 20.9 bushels an acre and barley 21.8 bushels.
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an acre. The State average in that year was 15.9, 16.4 and 15.7 bushels an acre respectively. During recent years there has been a considerable swing towards growing more crops—mostly coarse grains. Because there is little improved pasture, crops are sown on non-clover land. The frequency of cropping is higher and less importance is attached to income from stocking than in areas with improved pastures.

Rotations vary from two to seven years although most fall in the three to four year range. Successive cropping is not general practice in the area, but some farmers sow coarse grains as a second crop, mainly on wheat stubble.

**Rate of Sowing Cereals**

Seeding rates for wheat varied between 39 and 60 lb. an acre with 88 per cent. of the farmers using 40 to 50 lb. an acre. Oats were sown at 40 to 60 lb. an acre. More than three-quarters of the farmers used a seeding rate of 40 to 50 lb. an acre for barley.

At the time of the survey the most popular wheat variety grown in the Lakes District was Bencubbin. This was followed by Insignia, Koorda, Gabo, Bungulla and Wongoondy.

The most popular oat variety was Ballidu and other oat varieties were Kent and Avon. Six-row Beecher was the only barley variety grown.

First crops in the area are usually sown on ploughed fallow after working back with a disc drill, and the seeding rate is higher than normal. Poison plants are a problem in the area and grazing off crops on new land is not usual because of the danger of stock poisoning. Often the first crop is followed by a second crop of either oats or barley to control regrowth and poison, and to provide some grazing and grain.

**Rate of Superphosphate Application**

Superphosphate at the rate of 90 lb. an acre on wheat crops was used by 40 per cent. of the farmers in the survey. Other common rates were 100 lb., 112 lb. and 120 lb. an acre.

The rate of super usage has increased and more farmers are now using rates of 100 to 120 lb. an acre and less are using 90 lb. an acre. These rates are satisfactory except on new land where higher rates are recommended. Most of the remaining country, although more than 20 years old, would have had less than half a ton total super an acre. This would not be enough to allow any reduction in rate of application.

**Trace Elements**

Trace elements should be used on all the scrubplain and much of the light or mallee country in the Lakes District. Copper-zinc-super is used by most farmers at varying rates from 90 to 120 lb. per acre. The recommended rate, especially on new land, is 120 lb. per acre or higher.

**Pasture**

Legume pastures in the Lakes District cover less than one per cent. of the cleared land. More than half the cleared land is used for grazing on either volunteer or Wimmera rye grass pastures.

The problem of persistence of legume pastures in the area seems to be most important. Only seven farmers considered they had established pastures. Legume pastures in the area should be grazed fairly heavily early in the season to reduce grass competition and grazing should be avoided when the clover plants are flowering. This unfortunately coincides with the flowering of grasses when it is necessary to graze these to reduce the grass seed problem.

Many farmers in the area intended to sow more legume pastures. However, the survey results suggested that before starting a full scale programme of pasture establishment it would be worthwhile trying to determine and overcome the difficulties in establishment. In the past many farmers have spent large sums on improving pastures but with little success.

Most farmers in the area attached little importance to topdressing pastures. It was estimated that about 52 per cent. (76,000 acres) of cleared land had received a total of 500 to 1,000 lb. of super an acre while the rest had received less than 500 lb. an acre.

The most important pasture plant in the area is Wimmera rye grass—77 per cent. or 115,000 acres of cleared land are sown to this grass. Wimmera rye grass is easy to establish in the area and persists well.
Saltbush and bluebush make excellent summer green feed and can be maintained by careful grazing. It has undoubtedly increased the carrying capacity in the area, especially on the lighter mallee and scrubplain soils where volunteer pasture is slow to establish. Barley grass is the chief volunteer pasture species in the area.

**Stock**

At the time of the survey there was an average of 1,363 sheep, five cattle and 21 pigs on the surveyed farms. Total sheep on the farms was 79,000 and they are the most important enterprise in the Lakes District. None of the farmers who had cattle considered they had the experience of sufficient numbers to decide whether cattle affected sheep carrying capacity or altered pasture composition.

Stock numbers in the area have increased rapidly during the past 10 years—the main reason being the increase in land development and cleared land.

The average stocking rate in the area was 44 breeding ewe equivalents per 100 acres with a range of 14 to 102. (Breeding ewe equivalents were taken as: Rams, 1 B.E., other ewes and wethers, ¾ B.E., lambs, ½ B.E., cows, bulls and steers, 8 B.E., heifers and calves, 6 B.E. and horses, 12 B.E.).

All the sheep on the surveyed farms were Merinos. There was no fat lamb production or stud breeding and very few sheep other than rams were brought into the area. Sheep were bred for wool production and the sale of surplus sheep to other areas of the State.

Farmers in the survey agreed that the Lakes District was excellent sheep country and produced good framed, good breeding, good wool and disease free stock. Surplus sheep from the district are eagerly sought after by buyers from all parts of the clover areas and especially the Great Southern and South-West.

Wool yields ranged from 6.8 to 12.5 lb. per head of sheep and lambs shorn.

Lamb marking percentages in the district ranged from 27 to 98 per cent, with an average of 73 per cent. in 1960-61. The State average at that time was 68 per cent. Accurate records of lamb losses were not kept but estimates ranged up to 50 per cent. of the lambs born. This indicated that conception rates were satisfactory and that neo-natal lamb mortality was the chief sheep problem in the area.

The most common mating time was from mid-October to mid-November. Nearly all the farmers used two per cent. rams or less and left them with the ewes usually from six to 10 weeks.

More then three-quarters of the farmers in the survey fed their sheep a supplement during the summer and autumn. The survey showed that even in cases where
all sheep were fed there did not seem to be any correlation between supplementary feeding and wool weights. A better knowledge and use of recognised feeding programmes could allow more sheep to be carried through the summer as well as increasing the lamb marking percentage.

Sheep Diseases

Urinary calculus was considered by about a quarter of the farmers to be a problem in their sheep flocks. Enterotoxaemia was the only other disease of any consequence in the area. Apart from this, sheep diseases are not a serious problem in the Lakes District.

Salt Land

A soil survey in the area in 1930 indicated that soil salinity could be a major problem. Several soil types were listed as potential saline soils and caution in their development was advocated. The morrel soils are the worst affected. Other potentially saline soils are those nearer the lakes carrying a cover of saltbush. These areas deteriorate unless care is taken in grazing them.

There were more than 13,000 acres of salt-affected land on the 58 surveyed farms, representing 5.5 per cent. of the total area on the farms. Only 3,699 acres of land have gone salty since development and most of this is still cropped. Only three of the farmers in the survey considered salt a major problem on their properties. More than half the farmers with salt-affected land had attempted some control measures to reduce the problem.

Water Supplies

Water supplies in the Lakes District are practically confined to excavated earth dams. Underground water of low salinity is unobtainable, except on some of the scrubplain or lighter soil areas.

The Country Water Supply Department has six rock catchments or earth dams in the area. The total capacity of these is 3,500,000 gallons. Farmers can use these to supplement poor farm supplies.

There are 401 dams in the area—an average of one to every 371 acres or 197 sheep, including lambs.

Much use has been made of roaded catchments for directing water into dams and farmers were emphatic about the improvement they gave in water intake.

Most farmers in the area considered that water supplies were not a limiting factor in development. However there are still many paddocks and large uncleared areas in the district which have no immediate water supply available.

Vermin

Vermin are a big problem in the Lakes District and more time and money is spent
in controlling pests there than in most other districts in the agricultural areas. Rabbit numbers have been reduced in recent years, mainly by myxomatosis. However because of the large areas of inaccessible land around the lakes and surrounding country, control measures have to be carried out continually to keep the rabbit population down. “1080” poisoning, warren ripping, fumigation and poison baits are the most popular methods of control.

Foxes and dingoes are considered a serious problem in the district. Kangaroos, emus, crows and eagles are also said to be a problem. However, insect pests are of little importance,

**Weeds and Poison Plants**

**WEEDS:** Saffron thistle is the only noxious weed occurring in the Lakes District. Other than this the two most important weeds are wild turnip and mustard. Several other weeds grow in the area but no attempts are made to control them.

**POISON PLANTS:** Poison plants of some type grow on most of the surveyed properties. Because they restrict grazing in affected areas for up to four years, poison plants are considered by most farmers to be a problem during development. Burning stubble of the first crop, ploughing and grubbing plants and small patches where they appear has proved the most successful way of getting rid of the poison plants.

**Plant Diseases**

Chief among the plant diseases reported by farmers in the survey were take-all, root-rot, septoria, frost damage and barley loose smut of cereals.

**Land Values**

Farmers’ estimates of the market value of their land varied considerably but all agreed that prices were much lower than those ruling in neighbouring districts.

The market values in neighbouring areas ranged from £5 to £12 a cleared acre. Land values in the Lake District have risen during the past 10 years since transport over long distances is not the problem it was several years ago. It is expected that with the improvement of roads and facilities such as off-rail bins for coarse grains, that land values will continue to rise much faster in the next few years.

**Transport**

Farmers in the survey were satisfied with the subsidy for road transport from the nearest railhead and considered it comparable with a railway. With the provision of off-rail bins in the district, none of the farmers in the survey has more than 13 miles’ cartage.

**General**

Only a quarter of the farms in the Lakes District were producing at full capacity at the time of the survey. The chief reason
for this was uncleared land on most properties. Most farmers however were satisfied with the level of production for the stage of development they had reached.

Finance was listed as the biggest limiting factor by farmers in the district. They also claimed that suitable farm labour was extremely hard to get and most farms are worked almost exclusively by family labour.

Technical problems requiring advice varied from animal husbandry and disease problems to advice on farm credit and availability of finance. Fertilisers, insect pests, weeds and suitable pasture species were other subjects on which farmers said they needed advice.

Sources of Information
More than half the farmers in the area had had some contact with the Department of Agriculture. The Journal of Agriculture was received by nearly all the farmers. Farmers attended field days in the district—mostly at the Newdegate Demonstration Farm and many also listened to rural broadcasts.

Future of the Lakes District
The future of the area seems brighter than it did in the past. However the rate of expansion will depend on the development of other surrounding areas as well as the Lakes District itself. There is opportunity for increased production from existing cleared land and from uncleared areas on holdings.

The opportunities for the alienation and development of land are almost limitless on the scrubplain soils of the area and on patches of heavy timbered soils in the country east of the Lakes District.

New legume pastures such as Cyprus barrel medic and Geraldton sub. clover will be widely sown in the area as the problems of establishment and maintenance are overcome. As a result of the farming experience gained in the area and the knowledge from experiments with scrubplain soils at Newdegate, there is no reason why the 3,500 farms scheme area should not be developed for cereal and sheep farming when the demand arises.

THE LAKES DISTRICT

The Average Farm—Land use and production (1960-61)

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