Agriculture in Williams-West Arthur: report of a survey of farm practices

A W. Hogstrom
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AGRICULTURE IN WILLIAMS—WEST ARTHUR

Report of a Survey of Farm Practices

By A. W. HOGSTROM, B.Sc. (Agric.), Rural Economics and Marketing

THIS article summarises the results of a survey of 81 farms in the Williams and West Arthur Shires, carried out by officers of the Department of Agriculture at the request of the Central South Zone Development Committee. Field work for the survey started in 1961.

These two districts were chosen for study because they were considered representative of a large area along the eastern fringe of the Darling Range with similar problems and potential for development.

The survey looked at:
- Stock and pasture management,
- Stocking rates,
- Crop yields and cultivation methods.

The object was to observe differences from Department of Agriculture recommendations throughout the region and assess the merits of different practices. It was considered that a careful classification and analysis of factual information about farming in these areas would lead to a better-directed and more fully informed research and advisory effort.

THE REGION

The Williams and West Arthur Shires are located in the high rainfall areas on the eastern edge of the jarrah forest country of the Darling Range.

There are 450 properties with more than 400 acres of cleared land. The chief farming enterprises are grazing of sheep and beef cattle on annual pastures consisting of subterranean clover, native and sown grasses.

The annual average rainfall in the area ranges from 30 inches in the west to 20 inches in the east. Most of the rain falls in the growing season which extends from mid April until October.

The winters are cold, with 50 to 60 days of frost (less than 36° F). Summers are hot and dry, with thunderstorms occurring occasionally in the dry months.

SURVEY STATISTICS

The average size of farms in Williams was found to be greater than in West Arthur—3,258 and 2,110 acres respectively.

The average area of land cleared per farm was 2,044 acres in Williams and 1,143 acres in West Arthur. In both areas more than three quarters of the cleared area was sown with pasture.

While there is considerable scope for clearing in both areas, West Arthur with only 54 per cent. of the total area cleared, has the greater potential.

The sheep carried per farm averaged 2,693 in Williams and 1,421 in West Arthur. Cattle were an important sideline on many farms.

LAND DEVELOPMENT

Only 14 of the 81 farms in the survey (seven in each district) had all useful land cleared. The land uncleared on these farms ranged from 5 to 9 per cent. of the total area.

The Williams Shire is more fully cleared than West Arthur; in Williams 84 per cent. of farms were more than half cleared compared with 68 per cent. in West Arthur. Ultimately the proportions cleared should be similar in both districts. The total cleared area on surveyed holdings could increase by nearly 70,000 acres or 58 per cent.
THE SHIRES OF WILLIAMS AND WEST ARTHUR

The map below shows the south-western part of Western Australia, giving the location of the shires surveyed. The inset on the right shows the Shires of Williams and West Arthur in greater detail.

These two Shires were chosen for the study because they are representative of a large area along the eastern fringe of the Darling Range with similar problems and potential for development.
The use of the bulldozer and profitable wool prices have contributed to a high rate of clearing in recent years. Three quarters of the total cleared land in 1961 was cleared after 1945 and more than one-fifth between 1955 and 1961.

The most common period for bulldozing was late winter, with burning eight months later before the winter rains. This was followed by a good initial cultivation to control and reduce regrowth. Two-thirds of farmers favoured the disc plough for this cultivation.

New land was allowed to lie fallow by 37 per cent. of farmers. Others seeded a cereal crop, usually oats, in the same year, with satisfactory results where a good burn was achieved early enough to allow two cultivations.

The reasons given for sowing oats rather than wheat or barley were:
- Higher yields,
- Better burn with heavier crop growth,
- More grazing in the green stage,
- Better establishment of clover when sown with oats rather than wheat.

Experiments in the survey area suggest that wheat crops on new land should be given more consideration. Good vegetative growth can be achieved by using nitrogenous fertiliser with superphosphate and trace elements, and the resulting crop should be more profitable than oats.

The superphosphate recommendation for a cereal crop on new land is 180 lb. of super-copper-zinc mixture per acre with molybdenum for ironstone gravelly soils. In the Williams district one-third of farmers used the recommended mixture at varying rates (the rest used plain superphosphate) compared with 45 per cent. in West Arthur.

For pasture establishment most farmers sowed clover seed with a crop; only two sowed pasture in the year following a crop and five without an initial crop. The present recommendation is to sow pasture without a cover crop or with a light crop which is fed off before the clover starts to seed down.
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older established area, were generally better improved and equipped than in West Arthur. In Williams the main items in need of improvement were fences, whereas in West Arthur opinions were fairly evenly divided between fences, water facilities and plant.

FARM ENTERPRISES

Of the 81 farmers in the survey, 25 grazed sheep alone, 37 sheep and cattle together, 15 sheep, cattle and pigs, three sheep and pigs, and one had no stock at all.

Only two farmers in West Arthur did no cropping. The others all grew oats and 46 of them grew wheat or barley as well. It is estimated that more than 90 per cent. of farmers obtained 60 to 100 per cent. of their gross income from sheep.

PASTURES

All properties had established clover pastures on most of their cleared land. Dwalganup subterranean clover had been sown on 77 of the 81 farms and would comprise over 90 per cent. of all pastures. Yarloop was sown on 65 farms. Other varieties found less frequently were Bacchus Marsh, Mt. Barker, Geraldton, Woogenellup, and Tallarook.

All farmers, found Wimmera rye grass easy to establish by including a few ounces of seed when sowing cereals. Although a number of perennials had been tried, no suitable and productive plant had been found.

One-third of the farmers in the survey considered that most (75 to 100 per cent.) of their pastures were well balanced with grasses and clovers. Only 12 out of 81 farmers said clover dominance was widespread on their farms although three-quarters of them reported it in some degree.

Topdressing each year, using a spinner, was the usual practice and was carried out on nearly all farms. Rates of application of fertilisers varied widely; most farmers were aware of the need for higher rates on new land with a gradual reduction as pasture becomes older. Fertiliser was applied from January to May, with
March by far the most popular month. The farmers considered it important, especially with new land, to topdress just before the opening rains.

More than half the farmers interviewed mowed and baled hay to feed back to stock during the summer and winter months. Others in the survey were able to manage their pastures efficiently and maintain good numbers of healthy stock without the expense of hay-making.

EROSION
Two-thirds of the farmers interviewed reported soil erosion. Fire-breaks had been washed to some extent on one farm in three, and a quarter had scoured tracks and gateways. Only 10 per cent. had taken positive action on erosion. The remainder either felt there was no need for erosion control work or that clover pastures would provide the answer. Most farmers agreed that clover without other measures would not cure existing erosion.

SALT LAND
While 50 out of the 81 farmers reported salt land, only seven considered the problem serious enough to fence off affected areas. Fourteen out of 34 farmers with salt areas that were wet in summer had tried *Paspalum vaginatum*, mainly with success. One had also tried strawberry clover with success, and another kikuyu unsuccessfully.

Salt was a greater problem in water supplies than on land.

WATER SUPPLIES
Few farmers said that the lack of suitable stock water was hindering development. Only one-third, however, had water in every paddock. A number of farms had very large areas of cleared land without facilities for watering stock. This was not generally related to any difficulty of finding or storing water.

Three-quarters of all water supply points were dams (earthen tanks) and only a few properties were without them. About half the farmers had had some difficulties in finding suitable dam sites.

Nearly one third of the farms had one or more water supplies too salty for use. These included creeks or rivers on ten farms, wells or soaks on seven, dams on five and bores on three.
Lamb marking percentages ranged from 25 to 95 per cent. The higher percentages were usually from wheatbelt ewes. Most of the sheep in the area were Merinos.

**STOCK**

When sheep and cattle numbers were calculated on the basis of ewe equivalents it was found that sheep comprised 84 per cent. of the total stock and cattle 16 per cent. The average stocking rate for both Williams and West Arthur was 1.2 breeding ewe equivalents per acre of cleared land. One farm ran stock at the rate of 2.7 breeding ewes but only 12 per cent. carried more than the equivalent of 1.7 breeding ewes.

Most of the farmers said they could carry more stock and planned to do so. The shortage of feed (variously described, for example newness of pastures, insufficient area), was the reason given by more than half the farmers for not carrying more stock. The other reasons in order of importance were finance, water and subdivision. A number of reasons can be advanced for those cases where shortage of feed actually restricted stock numbers:

- New pastures were not well established,
- Poor clearing and land preparation,
- Low seeding rates of subterranean clover,
- Inadequate fertiliser.

The lack of water facilities was probably a more important bar to increasing stock numbers than was generally realised. Two thirds of the farms in the survey did not have water in all paddocks and this often meant the best use was not made of available feed.

**SHEEP**

Most of the sheep (98 per cent.) were Merinos. Amongst the others, Corriedales predominated. Ten farmers had Merino ewes which they mated to British Breed rams for the production of fat lambs.

For more than 20 years clover disease has had an important bearing on farm plans. There are two main effects:

1. A high proportion of dry sheep are run—about half of all adult sheep.
2. Many woolgrowers buy some or all of the ewes they mate from the outer wheatbelt.

The farm lamb marking percentage ranged from 25 to 95, with the average 68 per cent. (1960 and 1961). The high percentages were usually from wheatbelt ewes. There were not enough farmers lambing in the spring to allow comparisons between autumn and spring lambing. High marking rates occurred in flocks lambing in both periods.

Wool production per cleared acre, an important yard-stick of productivity, was rarely referred to by farmers, although most knew the cut of wool per head. Most were operating at well below the 30 to 40
lb. wool an acre known to be practical in the region. In Williams, wool production per cleared acre ranged from 4 lb. to 27 lb. an acre, and in West Arthur, from 7.5 lb. to 22 lb.

Shearing was generally in August, September or October, four farmers had changed to March or April since 1955 and were well satisfied with the change. They claimed they had less trouble with weather, it fitted in better with spring lambing, there was less tender wool and the cut of greasy wool was increased.

**BEEF CATTLE**

Of the 51 properties with cattle at the time of the survey 19 had been carrying them for more than 10 years—up to 50 years on one property. Breeding cows in use were beef crossbred (31), beef grade (10) and dairy grade (10). The Hereford was the most frequently used bull (18 properties) and other main breeds were Angus (9), Poll Hereford (7), Beef Short-horn (7), and Poll Beef Shorthorn (3).

Replacement breeding cattle were purchased by 16 of the 51 farmers and others planned to allow herds to gradually build up. Calving all the year round was practised on 18 properties while calving months ranged from February to August on the remaining 33 farms. Twenty farmers mated heifers at 12 to 15 months of age, generally in an unregulated and haphazard way because all beef cattle were run together all the year round. The remainder chose 18 months to two years for mating heifers.

Young fat stock were sold at varying ages from six months to two years with eight to 12 months the most common ages. The months of sale and ages of cattle sold were examined for a market policy. No time or age was particularly favoured and it seemed that cash requirements were more important to owners than maximum returns.

Two managerial features are worthy of note:

(a) Cattle were usually fed hay on the ground at some stage during the autumn and winter but, by and large, there was little attempt to regulate food intake on a daily basis.

(b) About half the farmers grazed cattle in separate paddocks; the others grazed them either before or with sheep.

Grazing cattle presented few problems. There were virtually no disease or breeding complications, although more than three-quarters of the farmers who ran cattle considered that some extra improvements to yards, fences and water supplies were desirable. Most farmers were convinced that cattle were an economic proposition but no systematic accounting had been done to test the theory.
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CROPPING

While cereal cropping is not a prime income earner in the region (see "Enterprises") it is still important in land development (see "Development"). The majority of crops were grown for other purposes and while the reasons can be listed the logic is often questionable. In a number of cases cropping seemed to be more a matter of custom than essential for profitable farming.

Farmers on shorter rotations said they cropped for a cash return, to renovate or stir up pastures, or maintain clover in a pasture. Those on longer rotations cropped for sheep feed and sold very little grain.

Oats were grown more than other cereals, the average area of oats per farm was 272 acres in Williams and 121 acres in West Arthur. The average farm area of all crops in the respective Shires was 325 and 159 acres.

Only about one-tenth of the total cropped area was new land. About three-quarters of all crops were sown on old clover pastures. Rotations varied from one year in three to no cropping; about half the farmers crop every four or five years.

Fifteen per cent of the total area of the farms in the survey was cropped. This indicated an average rotation of six to seven years.

During the decade 1950-59, 22 farmers increased their cropped areas to take advantage of the soil fertility build-up under clover. Wool prices had declined relative to wheat prices towards the end of the decade and were depressed during the survey. This was mainly responsible for planned crop increases by 25 other growers.

Only slightly less than half the total area sown with cereal crops was for stock feed—either fed off green, cut for hay or fed back as grain. Yields per acre were highly variable with the number of years since the previous crop having the greatest influence. Farmers claimed average yields as high as 22 bushels for wheat, 35 for oats and 25 for barley. Yields on new land were generally 5 to 10 bushels an acre lower.

While successive cropping, to retain pasture for six to eight years, would seem to be worthwhile, it was only practised by one farmer. He obtained a satisfactory yield of oats in the second year by using nitrogenous fertiliser.

The most favoured cultivation implement was the scarifier. This was so for both initial and subsequent cultivations. Farmers said the scarifier enabled them to get their crops in quickly and obtain better clover recovery. Others who used the plough, however, achieved substantially higher yields and greater freedom from disease.
Wheat and oats were commonly seeded at 60 lb. an acre and barley at 45 lb. to 50 lb. The varieties, in order of popularity, were:

Wheat—Kondut, Insignia and Gabo.
Oats—Avon, Ballidu and Fulmark.
Barley—Beecher.

The superphosphate rates for cereals ranged from 90 to 360 lb. an acre, with 112 or 120 lb. the most usual.

GENERAL

The major factor hindering increased production was finance. In Williams, 21 farmers listed this as an item and in West Arthur 45 farmers mentioned it—either directly or through limited labour, water, pasture, machinery, clearing or stock. Many of these farmers had not attempted to get credit from banks or stock firms.

The problems on which farmers would like advice covered a wide range of topics, including weaner ill thrift, soil conservation, veterinary advice and poison eradication. Very few mentioned pasture management, set stocking techniques and higher stocking rates. These avenues are the most likely to increase farm income with little cost to the farmer.

In Williams, 23 of the 31 farmers had had some contact with the Department of Agriculture and 24 received the Journal of Agriculture. In West Arthur 36 out of 50 had been visited and 45 received the “Journal.”

STATISTICS OF THE WILLIAMS AND WEST ARTHUR SHIRES
1961-62 and 1964-65

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<th>Unit</th>
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<td>No. of farms</td>
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<tr>
<td>Total area of holdings</td>
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<td>Average area oats</td>
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<tr>
<td>Average area barley</td>
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<td>Total crop—Per cent. of cleared</td>
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<td>Average established pasture</td>
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<td>Per cent. of cleared</td>
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<tr>
<td>Average number of sheep</td>
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<td>Average number of cattle</td>
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<tr>
<td>Total breeding ewe equivalent</td>
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<td>Sheep equivalent per cleared acre</td>
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Suggested improvements to the Department of Agriculture services usually involved more advisers so that personal farm visits would be more frequent.

DEVELOPMENT SINCE 1961

The number of farms in each Shire has increased by 85 since 1961. The average size of holding and area cleared remained almost unchanged in Williams while the average area cleared in West Arthur has increased by 160 acres or 8 per cent. The total cleared area in the Williams and West Arthur Shires increased by 22,000 acres and 58,000 acres in the four-year period, indicating that development of new land on both older and newly allocated farms has continued.

Cropping remains less important than grazing; only 14 per cent. of the cleared area of Williams and 10 per cent. of West Arthur were cropped in 1964-65. Cropping of new land with oats or wheat using nitrogenous fertiliser has become more common, chiefly because of the good cash returns.

Since 1961 there have been marked changes in stock and pasture management and considerably increased stocking rates on many farms. Breeding ewe equivalents have increased from 1.1 to 1.3 per acre in Williams and 1.0 to 1.3 per acre in West Arthur. These average stocking rate increases for the two districts do not
represent the full changes achieved, because of the newly allocated and newly cleared areas. A better realisation of carrying capacity, of improved pastures, and the demonstrations of higher stocking rates and continuous grazing techniques made this increase possible.

The trends toward increased cleared area, increased proportions sown to improved pastures, and improved stocking rates, are likely to continue for many years before the full productive potential of these two Shires is reached.

ACKNOWLEDGMENTS

The late Mr. R. P. Roberts, Officer in Charge, Rural Economics and Marketing was responsible for the planning of this survey. Under his supervision the field work was carried out by Messrs. T. E. McDowell, J. A. C. Smith and the late B. F. Carlin of the Wheat and Sheep Division. These latter officers and Mr. J. Carder of the Soil Conservation Service assisted in the preparation of the original report on the survey.

Messrs. G. D. Oliver and F. A. Saunders of the Rural Economics Section contributed by discussion and critical comment on the draft of the report and in preparation of this article.

Grateful acknowledgment is made of the assistance given by all these officers.

EXPORT LAMB COMPETITION

THE ROYAL AGRICULTURAL SOCIETY will again conduct an Export Lamb Competition in conjunction with the Australian Meat Board this year.

The competition is for lambs submitted from July 1 to October 31. Entries need not be restricted to first quality carcasses.

The classes are similar to those of previous years:

Class 1—Lambs sired by Southdown rams.
Class 2—Lambs sired by other British breed rams.

The number of lambs per entry remains at three and as before the grower may submit five, the best three to be selected at the works.

Lambs will be judged locally, but prize-winning entries will be sent to London for display. Prize money, donated by the Australian Meat Board, will be: Class 1—First prize, $100; second, $40; third, $30; fourth, $10. Class 2—First prize, $80; second, $30; third, $10. There will be no State Championship.

A display of carcasses and presentation of prizes will be held at the West Australian Meat Export Works, Robbs Jetty, on 27th January, 1967.

Full particulars and entry forms are available from the Royal Agricultural Society, the Australian Meat Board, stock agents and the regional and central offices of the Department of Agriculture.