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Dairying in W.A.

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DAIRY FARMING IN WESTERN AUSTRALIA

Western Australia has a small dairy industry compared with its other rural production. However, the industry has consolidated over recent years.

Tree clearing and pasture development on existing holdings and the amalgamation of small dairy farms has led to a rapid increase in the area of pasture per farm. The trend in Western Australia is towards bigger herds, more efficient dairies, more fodder conservation and increasing production per cow and per hectare.

LOCATION

Commercial dairy farming in Western Australia is confined to the south-western corner of the State, south of Perth, extending in a 50-kilometre-wide strip along the coast to 50 kilometres east of Albany. This area has high winter rainfall and dry summers.

DISTRIBUTION OF DAIRY FARMERS

- Market Milk Farm
- Manufacturing Milk, Cream Farms

DISTRICTS

1. Upper West Coast
2. Irrigation Area
3. Lower West Coast
4. Inland Area
5. South Coast
Flood irrigation from Government dams is practised along the coastal strip between Waroona and Dardanup, and dairying is most heavily concentrated in this region.

This bulletin gives a general outline of dairying in Western Australia. Specific district information is available from the district offices of the Department of Agriculture located throughout the South-West, at Kelmscott, Harvey, Bunbury, Busselton, Bridgetown, Manjimup, Denmark and Albany.

Technical aspects of dairy farming are covered by various publications in the Department of Agriculture Bulletin series.

**ORGANISATION OF THE INDUSTRY**

*The Dairy Industry Authority*

In 1973 a new Dairy Industry Act was passed. It set up the Dairy Industry Authority which is responsible for the overall planning and organisation of the industry.

By licensing all producers and people who manufacture dairy produce or treat milk and by issuing permits to import from other States the Authority is able to organise the supply of dairy produce.

The Authority consists of a Chairman, who also acts as the consumers' representative; four producers' representatives; two manufacturers' representatives; one vendors' representative and a non-voting representative from the Department of Agriculture.

The Department of Agriculture is responsible for the supervision of quality for all dairy produce from the time the milk leaves the cow until the product reaches the consumer. All dairies and dairy factories are registered with the Department whose officers help factories and farmers to overcome problems of quality that arise from time to time.

*Marketing*

The Dairy Industry Authority is responsible for the organisation of the supply of milk and dairy products but does not enter directly into marketing. It sets producer and retail prices for market milk and cream, and also wholesale prices for some dairy products. Milk or cream is acquired by the Authority from producers, and is re-sold to the commercial dairy companies.

*Equalisation*

The Commonwealth Dairy Produce Equalisation Committee Limited enters into agreements with manufacturers to secure for them equal rates from all sales of butter, cheese, skim-milk powder and casein of equivalent quality. Manufacturers thus receive the Equalisation Value for their produce irrespective of the price actually obtained.

The difference between the price obtained and the Equalisation Value is paid into or recouped from Equalisation where the price is above or below the value respectively.
The major disadvantage of this scheme is that it enables butter or cheese to be produced and sold for export at prices which may be below the cost of production, but for which the producers receive the equalised price. In recent years, the low export prices have depressed the Equalisation Value, due to some States in particular increasing their production of butter despite the very low returns received from the extra production.

The cessation of butter export by most States has necessitated a review of the operations of the Equalisation Scheme.

Within each State, Directors of the Dairy Produce Equalisation Committee guide the equalisation operations in that State.

**Dairy Produce Board**
The Australian Dairy Produce Board controls the sale of Australian dairy products on overseas markets. The Board also conducts research into industry problems and sales promotion activities in Australia.
Dairy Farmers

Broadly, dairy farmers can be considered under three categories, determined by the licences issued to them by the Authority. They may supply milk for bottling (market milk licence), milk for production of dairy products (manufacturing milk licence) or operate under a cream supply licence.

Farmers who hold licences to supply market milk and who must maintain production throughout the year under a daily quota system obtain a greater return for their product. The remaining dairy farmers supply milk for manufacturing purposes only, or supply cream and retain the skim milk for their own use.

Manufacturing milk suppliers

All dairy farmers supply at least some milk or cream for manufacturing purposes.

Dairy farmers who supply manufacturing milk or cream only usually arrange for their cows to calve from April to June so that the lactation coincides with the time when green pasture is available.

Many separate the milk on the farm and send only the cream to butter factories. These farmers retain the skim milk to feed to calves or sometimes pigs. Others send the milk whole (not separated) and this may be used for butter or other manufacturing purposes such as cheese, yoghurt, icecream, flavoured milks, skim and wholemilk powders, and casein.

The return from manufacturing milk or cream supply is not large but farmers gain additional income from beef by-products of the dairy herd. The beef by-products can be in the form of calves, baby beef, steer beef or cull cows.

Market milk suppliers

The main area of wholemilk production extends from Perth to south of Busselton. It takes in the South-West irrigation area and also a large number of dry land holdings. There is also an area on the south coast in the Albany-Denmark region.

A market milk supplier must produce at least his contract quota each day throughout the year, for which he is paid market milk rates. Each licence is issued to a particular person and is not necessarily transferred with the farm.

A person wishing to enter the industry as a market milk supplier can do so only by purchasing a property from a licensed farmer with a market milk licence, unless the Dairy Industry Authority grants or sells him a quota for a property which he has obtained.

The average quota is about 550 litres per day. To allow a safety margin, the farmer must produce at least 10 per cent above this quota.

Most market milk dairy farmers produce a considerable surplus to their quota, at least for part of the year. This is normally sold for manufacturing purposes, at manufacturing milk rates.
Factories and transport
A listing of the factories and their functions is given in the statistics supplement to this bulletin. There is a daily pick-up of milk from farms in the dairying season, but when production is at a low ebb some refrigerated milk supplies are collected every second day and cream supplies may be collected two or three times a week.

The trend is towards milk being transported from farms in insulated bulk tankers, which collect it direct from refrigerated storage vats on the farms. However, many farms still supply milk in cans.

THE FARMING ENVIRONMENT
Soils and vegetation
Soils of the South-West have a naturally low fertility and need regular applications of phosphate. Potassium and various trace elements are also required on all but a few soil types. Nitrogen levels are low.

There are no natural grassland areas. The vegetation originally consisted of eucalypt forest with some areas of smaller native trees and heath.

In the early years of development, in the 1920s and the 1930s, the land was cleared with few mechanical aids. Trees were ringbarked and the smaller undergrowth was removed by grubbing.

With the advent of the bulldozer in the late 1940s it was possible for large areas to be totally cleared before the pasture was sown. Normally the bulldozer pushes the native vegetation into windrows up to 100 metres apart. The areas between the rows are more or less levelled and sown to pasture. Next summer the windrows are dry enough to burn and, with further stacking, can be disposed of completely. The remaining area can then be levelled and pastured.

In many areas only a small percentage of land remains to be cleared.

Climate
The growing season for the annual pastures, on which farmers are very dependent, varies from six and a half months near Perth to nine months on the south coast. Opening rains are very reliable, beginning between mid-April and early May in the north and earlier in the south.

The annual rainfall of the region varies from 1 200 to 1 500 millimetres on the south coastal strip to below 750 mm east of Bridgetown. The climate is Mediterranean, with cool, wet winters and warm, dry summers.

Pasture species
Subterranean clover (*Trifolium subterraneum*), an annual clover which buries its seed, forms the basis of almost all newly-sown pastures. A number of strains of clover are available for different
A group of young heifers while away the summer months. The provision of adequate watering facilities in each paddock is one of the first developmental jobs for the farmer.

soil types, moisture conditions and growing seasons. The selected strain is usually sown with an annual rye grass but it is also often sown with a perennial grass such as perennial ryegrass, kikuyu, currie cocksfoot or phalaris.

There is no perennial legume suitable for general sowing, although perennial white clover, strawberry clover and lucerne are grown to a limited extent in suitable situations.

The summer-irrigated pasture consists of a perennial grass usually kikuyu or paspalum (Paspalum dilattatum) and white or strawberry perennial clover.

Fertilisers

The main fertiliser required is superphosphate, which supplies phosphorus and sulphur. Sulphur deficiency may limit production in spring, especially on sandy soils.

On new land, 350 kg of super per hectare is applied. The trace elements copper, zinc and molybdenum are nearly always included.

Established pasture receives a dressing of about 160 kg of superphosphate per hectare each autumn. Muriate of potash is
applied annually to most soils but the level of application varies with the soil type. Higher rates of potash are required on the sandier soils and rates of up to 120 kg per ha are necessary on paddocks cut for hay.

Nitrogen in the form of ammonium nitrate is often used on grass-dominant pastures, but generally legume plants, mostly clovers, are relied upon to supply nitrogen from the atmosphere.

Trace elements are available in special mixes with superphosphate and the use of one of these mixes every six to nine years is considered adequate for the trace element requirements of pasture.

On irrigated summer pastures an average of 750 kg of superphosphate, 370 kg of potash and 250 kg of ammonium nitrate (34 per cent nitrogen) is used per hectare per year.

**Water supply**

Summer rainfall averages less than 12 mm per month in northern districts and about 25 mm per month along the southern coast.

Some districts and farms are well supplied with permanent creeks or springs and so have no water shortage. In other areas

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The fertiliser bill is the largest single item of expenditure for most dairy farmers.
underground water is available at shallow depths and drag-line holes 3 to 5 metres deep are sunk to give a good supply. In other areas larger dams are necessary to store water for several months.

The relative cheapness of polythene piping has enabled the reticulation of water to troughs in each paddock.

Water for the dairy and household consumption is often taken from dams or underground supplies; although rainwater tanks are preferred, especially where the farm is low-lying and ground water could become contaminated.

**Irrigation area**

Flood irrigation is practised on the coastal plain 110 to 180 kilometres south of Perth, an area of some 12 150 hectares being irrigated.

Several Government weirs store the water, which is supplied to the farms through open channel systems.

Water is applied at 12 or 16 day intervals from November to March to perennial pastures sown on graded paddocks. In most of the irrigation area water is allowed for only one-third of the area of each holding.
When available, surplus water is used to germinate annual pastures from late February onwards. This enables a prolonged growing season for the annual pasture and provides feed when the irrigation pasture is declining in productivity towards the end of summer.

Many farms outside the irrigation area have installed sprinkler irrigation systems. These use water from permanent creeks or from dams built where there is some inflow of water in summer, or where large storage capacity is possible. This system applies particularly to farmers who grow other crops such as potatoes, or have orchards. The cost can then be spread over several activities.

Fodder

While occasional frosts occur in most districts, winter temperatures are not severe and pastures continue to grow, though at a reduced rate, throughout the winter.

By late October or early November pastures mature. Annual pastures die before the end of December and do not grow again
until the autumn rains. Many pastures contain some perennials which may provide a green pick in the summer months, either in summer-moist areas or when summer rains occur.

Dry annual pastures can maintain the condition of dry cows and followers until mid-summer, provided stocking rates are not too high. From late summer until green feed is available hay or silage needs to be fed. Smaller quantities of hay are fed until August because the lush winter pastures lack fibre.

Hay making is the most common form of fodder conservation. Pasture for hay is mown, windrowed (raked into rows), and baled (usually by a pick-up baler). More recent methods include the fodder roller and large single stack machines. These machines save labour by handling hay in bulk and are increasing in popularity. It is unusual to get enough prolonged rain in spring to interfere seriously with the hay making.

Some pasture silage is made, usually with forage harvesters. It is stored in pits or clamps, or in stacks covered with plastic sheeting, the stack being laid on hard ground.

Summer crops, including sudax, sudan grass, sorghum, Japanese millet and maize are grown on a limited scale as additional feed.
These crops are usually grown on summer-moist land but may also be sprinkler-irrigated. Irrigated lucerne is a popular fodder supplement, providing green chopped fodder, grazing for the dairy herd, or hay for sale.

**THE DAIRY HERD**

**Premises**

All cows are milked by machine, using the pipeline system where milk goes direct from the teat cup through the milk pipe to the milk or separator room.

In most dairies the milk line is above the cows but the modern low-line system is gaining favour in new sheds as it requires less vacuum to transport the milk. The milk passes from the cups through a pipeline below the level of the cows to a receival tank, from which it is pumped into the bulk tank or can-filling system.

Walk-through bails, where the cow walks into a milking stall and, after milking, walks through a gate at its head, are giving way to herringbone dairies. In a herringbone dairy, the cows are milked in batches on elevated cow-platforms on either side of a lower level manway. The operators do not have to stoop to attend the cows. For compactness and ease of movement, the cows are placed on an angle.

Interest is increasing in various types of rotary dairies where the cows are moved around on a rotating platform past the operator. Some of these systems lend themselves to automation and thus reduce the time and effort required in the dairy, enabling up to 100 cows to be milked per hour per man without difficulty.

Structural and hygiene standards in dairy premises are generally good, as they must conform to minimum standards laid down under the Dairy Industry and Health Acts.

**Breeds**

Dairy cattle are either European breeds or breeds derived from them. Friesians are by far the most popular breed because of their higher milk and fat yields and the value of their calves for meat purposes.

Other breeds are Jerseys, Guernseys, Dairy Shorthorns, Ayrshires and Australian Illawarra Shorthorns (A.I.S.). The A.I.S. is a breed developed in Australia, based on the Dairy Shorthorn.

**Diseases**

Australia is free of the three major infectious diseases of cattle—foot and mouth disease, blue-tongue and rinderpest. Rigid quarantine regulations have kept these and other diseases from entering Australia. The importation of cattle, sheep, goats or pigs is prohibited except under specified conditions from New Zealand. The entry of deep-frozen semen is permitted under stringent conditions which includes its storage for 12 months from collection to time of importation.

Brucellosis has been reduced to a very low level by vaccination of heifers. Eradication schemes for both tuberculosis and brucel-
loss is well under way and eventually it is hoped that Australia will be declared free of these two diseases. The programme involves both vaccination and test-and-slaughter methods to rid herds of the diseases.

As in most dairying countries, mastitis and infertility are diseases of considerable importance. Acetonaemia, milk fever and grass tetany are of lesser importance.

Mastitis is being tackled vigorously with the aid of the Wisconsin Mastitis and Rapid Mastitis Tests to identify herds and individual cows with high levels of the disease. Control and cure is effected by correct maintenance of the milking machine, the use of a teat dip antiseptic solution, antibiotic treatments during lactation for infected animals and the use of long-acting antibiotics infused into the udder at the end of lactation.

The use of artificial insemination is controlling some infectious infertility problems such as vibrios.

Bloat is rare and is not a major problem in Western Australia.

Stocking rate
Irrigation farms are capable of supporting one milking cow plus replacements to every 0.6 to 0.8 hectares of cleared land. The actual irrigated area on the farms can support one milking cow
to 0.3 hectares for seven to eight months of the year. Many irrigation farmers have additional dry land properties, perhaps several kilometres away, and use these for dry stock, young stock or beef farming. Hay may also be cut on the “dry” farm to feed the milking cows in winter.

Carrying capacity on dry-land farms is limited by the length of the growing season and inability to conserve sufficient fodder. This limitation is gradually being reduced by research and farmers’ ingenuity. Typical farms run a milking cow plus replacements on about 1.5 hectares but the better holdings support a cow and replacements on 1.2 hectares.

Production
Average production of cows tested under the Dairy Herd Improvement Scheme, and based on cows completing a lactation of 120 to 300 days, reached a record level of 3676 kg of milk of 3.9 per cent test and 142 kg of butterfat in 1972/73. Production has been maintained near this level. In a less favourable season,
in 1966/67, cows averaged 2,760 kg of milk, 4.2 per cent test, and 115 kg of butterfat.

On manufacturing milk farms, production per hectare averages about 77 kg butterfat and often exceeds 100 kg per hectare. This is produced almost entirely from pasture and hay with little or no purchased concentrates.

**Feeding management**

Dryland farmers, producing manufacturing milk only, rarely use grain to boost yields. They rely on conserved fodder and begin feeding as early as February, continuing until August. The amount fed varies according to the month, the season, and the amount of conserved fodder available. A rule of thumb is 1.5 tonnes of hay or hay equivalent per milking cow. A protein supplement such as lupins, meatmeal or a urea/grain mix may be used to supplement the hay diet.

Farmers producing market milk face a different situation. They must supply their daily quota throughout the year and the milk must comply with the required standards of composition. On dryland farms this requires the feeding of substantial amounts of grain and protein supplements in addition to hay, especially over the summer months. From mid-November to mid-April it is common for farmers to feed 0.5 kg of lupin or meatmeal and up to 5 kg of grain, usually barley or oats, per cow per day. During the rest of the year smaller amounts are fed.

Irrigation farmers rarely need a protein supplement, as green grass provides adequate protein, but most still need to feed grain, in addition to hay during summer. Feeding rates are lower than those of dryland farmers but they can be as much as 3 kg of grain per cow per day.

In addition, market milk suppliers often use crops such as lucerne, maize, sudan grass, sudax or some other summer fodder crop to help fill the shortage of growing feed from November to May.

Grains and concentrates are often fed in the dairy shed, partly because it tends to encourage cows to enter the shed. However, the modern trend is to feed all grains and hay outside the shed. This keeps the dairy clean, encourages good milking routines and allows easier handling of feedstuffs which are usually fed in troughs near the dairy.

Hay is fed in tombstone feeders, feeding racks or is simply thrown out in the paddock.

**SIDELINES AND RELATED ACTIVITIES**

Although dairying is a specialised activity, there is scope for complementary or supplementary activities.

**Calf rearing**

Almost all dairy farmers rear heifers as replacements for their milking cows. Many are also increasing their beef production by
raising the male calves to steers and using reject dairy cows as beef mothers. This is usually done by artificially inseminating dairy cows with beef semen, but often the farmer may have his own beef bull, or rely on the beef qualities of the Friesian breed. Not only are dairy farmers rearing their own calves for sale as baby beef or two-year-olds, but they often buy in calves and store cattle and fatten them for re-sale.

In many cases the income for beef production is as much, if not more, than the income from milk production. The dairy herds, however, have provided the starting point for this sideline.

**Pigs**

Until recently, most cream producers kept a few pigs as a profitable means of disposing of surplus skim milk. This practice has now declined to a small number of farms. Pig raising is becoming more of a specialised activity, with larger sow numbers and intensive or semi-intensive housing.

Most pigs are reared to the baconer stage and sell at a liveweight of about 90 kg, although there is a market for weaners and porkers. Berkshire, Large White and Landrace are the main breeds.
Sheep
Some of larger dairy farms run sheep as a sideline, generally using British breeds for prime lamb production.

Pasture seed
Subterranean clover seed, harvested in mid-summer, has been a profitable sideline for many dairy farmers. However, with a trend towards the use of expensive machinery and larger acreages for pasture seed production, the number of dairy farmers actively engaged has declined.

In some districts it is possible, when a good stand has been obtained, to arrange for a contractor to harvest the seed and sell it on a share basis. A few dairy farmers harvest lucerne, lupin and various grass seeds.

Potatoes
A licence is required before potatoes can be grown commercially and the industry is controlled by a Potato Marketing Board. Licenses for defined acreages are issued only to approved growers, and it is not easy to enter the industry.

Lucerne is an important sideline growing on many dairy farms.
Nevertheless, a number of dairy farmers, particularly in the Manjimup district, do have licences and grow potatoes. Almost all the summer crop is now grown under sprinkler irrigation.

*Orcharding*
Orcharding is a major activity in the Donnybrook-Bridgetown-Manjimup district, but because this, too, is a labour-intensive industry it does not fit in well with dairying. Fruit crops are apples, pears, stone fruits and some citrus.

*Vegetables*
There is little scope in most dairying districts for the growing of vegetable crops for sale as fresh vegetables. Several firms are interested in snap-frozen vegetables, in particular peas and sweetcorn. Peas are grown under contract in the Mt. Barker and Manjimup districts and sweetcorn at Manjimup.

A few farmers have purchased headers and harvest sweet lupins for sale to other farmers or to supply stock feed manufacturers. The market for lupins is expanding.

*Lucerne*
Some dairy farmers also grow lucerne as a cash crop with the aid of irrigation during the summer months. The lucerne is cut every four to six weeks and baled, with some five or six cuts per season. The yields average about 2 tonnes per hectare per cut. Lucerne hay is sold to other farmers, feed manufacturers and to horse owners.

The market outlook for lucerne appears good; however, it requires well-drained soil and will not grow on all soil types. The major area of lucerne production is the coastal sand belt between Bunbury and Mandurah.

**ENTERING THE INDUSTRY**
The supplement to this booklet gives an up-to-date picture of the economics of dairy farming in Western Australia. In this section other pertinent points are given for those contemplating entering the industry.

*Experience*
No matter how well acquainted the intending farmer may be with dairying practices elsewhere, experience of local conditions is desirable. This can best be obtained by working on a farm in the area in which the newcomer intends to settle. Often the employer provides a house, and wages are comparable with other farm workers’ wages. Work opportunities are usually high and good labour is always appreciated.

*Housing and towns*
The standard of housing naturally varies. New homes are usually brick and tile. Most districts are connected to State Electricity Commission 250-volt power lines, so houses can be fully equipped with a refrigerator, radio, washing machine and television set.
Good shopping centres and other facilities are available in all main towns.

Most schooling is based at the larger towns, with school buses picking up children from outlying districts and transporting them to and from the central schools. The minimum school-leaving age is 15 years.

The larger towns are often equipped with sporting facilities, libraries, swimming pools and indoor and drive-in cinemas.

**AGRICULTURAL SERVICES**

Services allied to agriculture are readily available within the dairy areas. Farm advisory clubs, farm consultants, the Department of Agriculture and various press sources provide farming information, and research is carried out by the Department of Agriculture, CSIRO and the University of Western Australia. The major stock firms are represented in most country centres. Private veterinary surgeons are located in various towns covering the South-West region.

The Department of Agriculture provides professional advice and technical assistance to farmers via eight district offices located throughout the dairying areas.

The Department's officers give advice and conduct trials on all aspects of dairy farming and related enterprises. This includes advice on feeding, breeding and herd management of dairy, dairy-beef and beef cattle; pigs and goats; the establishment, maintenance, improvement, fertilisation and use of pastures, fodder crops, small seed crops and fodder conservation; farm planning (both physical and financial), fencing, water supplies, dairy design, milking shed husbandry and milking methods.

The Department operates three research stations in the dairying areas, at Wokalup, Bramley (Margaret River) and Denmark.

Irrigation, drainage, veterinary, vegetable, horticultural and rural economics specialists are stationed in the South-West to give specialised advice to farmers.

The Agriculture Protection Board is responsible for noxious weed and vermin control.

A herd-recording and improvement scheme operates under the control of the Department of Agriculture. More than 20 per cent of cows in the dairying areas are tested for production, butter fat content and in some cases protein content. Most fat testing is done on the farm, but some herds are sampled for testing in the dairy laboratory at South Perth. The results are tabulated in Perth using a computer system. The scheme is subsidised by the State Government and costs the farmer about $2 per cow per year. Pure-bred herd owners may also pay to have solids-not-fat, protein and lactose levels determined.

An artificial insemination scheme operates in nearly all dairying districts, under the Artificial Breeding Board of Western Australia. The Board's head office is at Harvey. The semen comes from the other States and many overseas countries. Catalogues are available from the Artificial Breeding Board.