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Let's Look at Dairying

By M. CULLITY, B.Sc. (Agric.), Superintendent of Dairying

FOR several years there has been a lot of gloomy forebodings about the future of the dairying industry. It has been said that there is a drift from dairying; the industry is declining; or even that it is finished.

Despite these forecasts the industry continues to make progress and as those who are closely associated with it are aware, dairy farmers are gradually overcoming a major disability in the relatively small amount of development of many farms. This is gradually bringing farms to an economic standard and therefore will render them more stable. In other words, what has happened is quite different from what was suggested. The gloomy opinions have not been realised, instead there has been increased production at a higher level of efficiency.

I will not bore you with figures but will endeavour to use those which are necessary to illustrate some trends and to show you that dairying is not finished; it is not declining. On the other hand there is an evolutionary progress or constant change which with rising production is in the direction of greater efficiency.

Milk is one of nature's protective foods which is of special value to the very young and to the very aged. It is good for all because of its high protein quality, its vitamins and its minerals.

Butter and cheese also are regular articles of diet. There have been fears expressed for the future of butter because of the threats of substitutes but the total effect so far is small and the future effect is thought not to be serious. There is no suggestion of a declining usage of cheese which rivals meat as a source of protein. On the other hand there appears to be a growing awareness of its value.

So while these foods are so valuable and there is a continuing if not increasing recognition of their value, the steady demand for them must encourage continued production.

In addition the population of Western Australia has risen and is expected to continue to rise. More mouths to feed means more food, more dairy produce will be needed, but it is hardly fair to argue that the industry is safe solely because we think people will continue to need its products. Let us look at what has happened in the industry itself to make it more secure.

Prior to 1939 there was a substantial portion of the dairy cattle of Western Australia located outside of what are considered the dairying districts of the South-West. Many were located in various parts of the wheat belt and the great southern
districts. Early in the War however, the shortage of refrigerated shipping space led to the prohibition of export of second and pastry grade butters. The result was that in order to meet the problem caused by an accumulation of this quality, an extremely low price was paid for inferior cream. Much of that produced in the latter districts was poor and the lower prices removed the incentive to continue milking.

There followed a gradual decline in the number of dairy cattle; this was counter balanced by a corresponding increase in numbers in the dairying districts. The total number in the State did not decline but the geographic disposition was changed.

Because of the more favourable climatic conditions for the growth of pastures and a relatively longer grazing season this has meant a bigger percentage of cows are milked under conditions more conducive to high yields.

At the same time there has been a voluntary withdrawal by some of the smaller farmers who may not have been technically inefficient but because of the relatively small size of their enterprises were unable to achieve a reasonable income.

There also has been a progressive development of farms to larger areas of pasture and so increased carrying capacity. It is not possible to procure figures relating to all farms to show the trend, but data from herd recording seems sufficiently satisfactory to show what has happened.

In 1941-42 the average herd size was 24, in 1959-60 it was 40.

Although figures for the total production for the State for the year ending June 30 last are not available there is a possibility of its having been an all-time record. Fewer dairy farmers are producing more milk than ever before in the history of this State.

It is possible to suggest reasons for this development. As pointed out above, there are fewer herds—they are larger, and the average yield has risen. In herds under herd recording it has moved from 181 lb. of butterfat in 1956-57 to 244 lb. in the past year. In terms of milk it has increased from 496 to 577 gallons.

How has this been done? There could have been no spectacular improvement in the genetic constitution of the herds. It is obvious there has been better management—the cows have been better fed; but many other aspects of management have had their influence in giving this result.

Herd recording data shows that more cows are being kept in production for a full lactation, e.g., 7 years ago 24 per cent. of the cows completed a 9 months lactation. In 1959-60, 40 per cent. or nearly double the number were in milk for 9 months or longer. In 1955-56 only 3.6 per cent. of the cows completed a 10 month period whereas in 1959-60, 21 per cent. were in production for this time. This is reflected also in the average length of lactation in all districts. Seven years ago the average length of lactation was less than 7 months. Last year it was over 7½ months.

Many farmers are using herd recording data to greater effect. Those who keep their herds under test continuously year by year are obtaining better results than those who submit their herds intermittently. This really is the answer to the question “Does herd recording Pay?” A lot of money has been spent in testing herds. Money that has been provided by the State and Commonwealth Governments as well as by the farmer himself. There is no doubt that in many herds a good deal has been spent uselessly but the evidence of recent years shows clearly that those farmers who are really interested have been able to use the data successfully to get higher yields. A sliding scale of fees with a progressive reduction according to the length of time a herd is under test is an encouragement to those farmers who take this interest and it is reducing the number of those who submit their herds for one or two years and then withdraw. The opinion could be expressed that this is very largely responsible for the fact that last year over 60 per cent. of the herds in herd recording had been under test for four years or more.

However, much of the data procured from the records is of value to all dairy farmers as it relates to management rather than to the individual cow. For example, the information that higher yields on an average are obtained from those cows which calve in the months of March to June is of value to all.

So we see that on the farm greater efficiency and production is being achieved.
There has also been a considerable improvement in the treatment of dairy produce in factories and for the city milk market. The milk distributed to the people in the metropolitan area is produced under controlled conditions from disease free herds. It is chilled at country depots before transport to the city where it is pasteurised prior to distribution.

There has been a substantial improvement in the quality of butter resulting in not more than 1 per cent, being less than a good table quality.

The attractiveness of cheese is also increasing. There has been a revolution in packaging it. This is proving a protection of the Western Australian market for the local product. The rindless package prevents waste by the absence of a surface rind and therefore it is much more attractive to the housewife.

So we see that dairying in Western Australia is actually strengthening. It has become more stable, it is capitalising on the assistance given by the Government in various ways. The Dairy Farm Improvement Scheme is helping some farmers to increase the productivity of their farms. The activities of the Western Australian Department of Agriculture are designed to give assistance to farmers and to the managers and staffs of dairy produce factories.

There is little doubt that despite the early gloomy comments to which I have referred and despite the very great difficulties with which it has been faced, the dairying industry is gradually becoming one of Western Australia’s great industries.

"LIGHT BROWN APPLE MOTH"

By C. F. H. JENKINS, M.A., Government Entomologist

Damage by the Light Brown Apple Moth, was reported to be quite serious in some districts last season and many orchardists are quite concerned at the increase in this pest over the last few years.

The Light Brown Apple Moth is a native insect, which has caused some damage to local fruit for very many years but there seems to have been a definite upsurge of the pest in the last four or five seasons, particularly at Manjimup and, to a lesser extent, at Bridgetown. The adult moth is seldom seen, but measures about \( \frac{3}{8} \) inch in length, and is torpedo-shaped, with yellowish-brown wings. Prior to these recent infestations Apple Moth damage was more of a curiosity than anything else, and consequently, the insect has received little detailed investigation in this State. In the East, on the other hand, the insect or a very close relative, has long been troublesome and has therefore, been studied in some detail.

Each female lays about 200 eggs, which are flat and greenish in colour, and consequently rather difficult to see. On hatching, the tiny caterpillars feed on the underside of the foliage until nearly full grown, when they may web two leaves together or tunnel into one which is partly curled. Damage to the apple is superficial and may vary from a few surface pits to very extensive subsurface tunnelling. The injury is frequently at the stalk end, and often commences where two apples are touching, or when the fruit is protected by a leaf.

This type of injury is, of course, very distinct from the deep boring of the Codling Moth caterpillar, which usually makes for the centre of the apple and destroys the pips.

The relatively sudden build up of the Light Brown Apple Moth is not easy to explain, but it may be associated with the increased use of DDT as an orchard spray. When DDT supplanted arsenate of lead, as the routine Codling Moth treatment in Eastern Australian orchards, it soon became apparent that the Apple Moth was getting out of hand, and separate treatments for the pest became necessary. Local orchardists use much less DDT than their Eastern States counterparts, but it is apparently just enough to upset the earlier balance which kept the moth in check.
The name Apple Moth as applied to this insect highlights the fact that the apples are the main economic crop damaged by the pest, but it has a wide host range, including many native and cultivated plants. Cover crops of various kinds can harbour the creatures and may often add to the difficulty of control.

Fortunately, several of the newer insecticides have shown promise against the caterpillars of the Light Brown Apple Moth, and are quite useful against various other apple pests. While DDT, Dieldrin and several other chlorinated hydrocarbons still have a very real place in the orchard spraying programme their use should be reduced to a minimum where fruit tree mites or Apple Moth are troublesome.

Strangely enough, a close relative of DDT, and known by the letters TDE, or DDD is very useful against the Light Brown Apple Moth, and has been used with good effect both locally and in the East. It should be applied in the early summer at the rate of 2 pints of 20 per cent. emulsion to 100 gallons of water. Two quite recent insecticides have also shown great promise at the same concentration, and these are Gusathion and Sevin. Both Gusathion and Sevin have gained favour in those parts of the Eastern States where DDT resistant Codling Moths have multiplied but they have also dealt effectively with several other caterpillars including those of the Apple Moth.

Formulae recommended for these two materials are as follows—

1. Gusathion 25 per cent. wettable powder—2 lb.
Superior summer spraying oil—1 gallon.
Water—100 gallons.

2. Sevin 50 per cent. wettable powder—2 lb.
Superior summer spraying oil—1 gallon.
Water—100 gallons.

Either of these sprays should be useful in late October or early November for the looper caterpillars and many other spring pests but further sprays in early December and perhaps again in January may be necessary if Light Brown Apple Moth caterpillars are numerous.

THE USE OF SEAWEED AS A FERTILISER

By T. WACHTEL, B.A. B.Sc. (Agric.), Horticultural Adviser.

Many enquiries and reports have been received concerning the use of seaweed as a garden fertiliser. Some home gardeners, who use seaweed regularly, report very spectacular results, and some even go as far as to attribute some magic properties to this material.

It is quite natural that with the increasing difficulty and cost of obtaining sufficient quantities of stable manure, gardeners look around in search of suitable substitutes, and those who have a ready access to seaweed are anxious to know what success could be expected from its use.

A review of the literature shows that seaweed is used successfully in many parts of the world in the immediate vicinity of the coast. It is used extensively in the Channel Islands, the coastal soils of England, Ireland and France, and many parts of America.

In assessing the value of seaweed in gardening we must make distinction between its value as a source of plant nutrients and as a source of organic matter or "humus."

The material available for collection from the ocean beaches in this State is very poor in plant nutrients. Unfortunately, most of the so-called "seaweeds" of the Western Australian coast are not true seaweeds, which belong to a rather primitive group of plants called algae, but are more highly developed plants, and may more properly be called sea grasses. These local sea grasses are very high in ash, over 50 per cent. of the total dry weight being...
generally of ash material, the chief constituent of which is calcium carbonate. They are low in nitrogen, phosphate and potash. By way of comparison, cow manure contains four times as much nitrogen and up to ten times as much phosphorus and potassium.

River algae, on the other hand, have quite appreciable manurial value. They contain about 85 per cent. moisture when first collected, and 12 per cent. when dried in the open air. A local sample analysed showed 3 per cent. nitrogen, 1.6 per cent. phosphoric acid and 2.3 per cent. potash present in the air dried material. While this analysis is still not very high, it compares favourably with most animal manures. The high total salt content—about 9 per cent. in the sample analysed—usually presents no problem in sand where normal watering would wash it out quickly. The high iodine content of seaweeds has no advantage for plant life as iodine is not an essential plant food. On the other hand, the high amount of calcium which is invariably present in seaweeds would make them a very effective liming material for acid soils.

However, the main value of seaweed lies in its large bulk of organic matter, with which it can build up light sandy soils. It increases the moisture holding capacity of these soils, as well as their capacity of retaining artificial fertilisers applied later. It also has the advantage of being free from weed seeds which are often abundant in animal manures.

The water content of seaweeds or sea grasses collected on the beach is approximately 75 per cent., which means that handling and carting will be expensive. Air drying would reduce manyfold the weight to be transported. Pulverising would greatly improve the ease of distribution and incorporation into the soil, but it is normally not carried out as extra costs usually exceed any benefit that may result.

When the material on the local ocean beaches is being used, it has to be collected within a few days of being washed up on the beach, as true seaweeds, being very soft, would decompose rapidly, especially when partially covered with sand, leaving behind the coarse and less valuable sea grasses. Decomposition appears to be more rapid in summer time, hence the best time to collect the material would be late winter or early spring.

The best way to prepare seaweeds and sea grasses for the garden is to put them in a compost heap for about six months. As the fertiliser value is very low, it is recommended to add 20-50 lb. of superphosphate and about the same amount of ammonium sulphate to each ton of fresh material in the compost heap or compost pit. For composting, seaweeds can be mixed with animal manures and any vegetable matter commonly used for composting. It is essential to keep the compost heap moist until late autumn or early winter, when it should be applied to the soil and then dug or ploughed in. Relatively heavy dressings should be given. To be of any benefit, at least 10, and anything up to 50 tons to the acre should be used and completely buried in the soil.

As an alternative, the ground could be trenched and the fresh seaweed be placed in the bottom of the trenches, where, in the course of time, if it has been kept sufficiently moist, it will decompose and become incorporated with the soil.

Another alternative is to use the seaweed as a surface mulch and dig it in later when the crop is finished. It is usual to apply a surface layer about three inches deep. Like any other organic surface mulch, this too would attract insects and provide a breeding ground for flies. However, if these insects become a serious problem, they could be controlled by the appropriate insecticides.

It appears that in the absence of organic manures, seaweeds can provide a suitable substitute when properly treated. The moisture holding capacity of these materials is sufficient to warrant their use as a substitute for stable manure where transport does not render the cost prohibitive. They can be used to build up sandy soils along our coast where transport is short and heavy applications can be used. However, it is well to remember that the main function of these materials is to increase the water holding capacity of light sandy soils and not primarily to supply fertiliser ingredients, or even to replace artificial fertilisers. It will still be necessary to apply the usual dressings of chemical fertilisers in the garden for best results.