Planning a dairy farm

A W. Hobbs

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THE average dairy farmer makes improvements to his property as opportunity offers, working towards a goal he has formulated in his mind. This gradual development may eventually lead to his desired layout.

But engineers and town planners do not work to plans in their heads. They prepare plans, and often detailed models of projected work. No room is left for doubt or guesswork, although modifications may be necessary during the progress of the work.

There is every reason why a farmer planning improvements to his property should work in the same way.

Successful dairy farming demands ever-increasing efficiency and, among other things, this means that there should be a sound basis for development of the property, irrespective of whether it is new or old.

Farm development generally takes place by the clearing of areas of land from time to time and the erecting of fences to enclose these areas without due consideration being given to the final layout of the farm. Often the farm becomes somewhat disjointed in design, with inconvenient paddock arrangements. Fences, buildings and roadways are often badly placed and further development and use of new areas is limited.

During the development of such farms or when starting off a virgin area, it is desirable to plan on paper the most suitable layout for the future development and working of the property. It must however be realised at the beginning that each farm will have its individual problems and no set design can be imposed directly on any holding. Considerable thought must be given to the following factors:

- Natural features of the area such as soil type, land contour, potential water supplies, rainfall.
- Cost of labour and materials involved in development and subsequent maintenance.
- The ultimate standard of living and comfort obtainable in the homestead, together with the provision of adequate facilities and amenities for all members of the family.

The first essential in planning is to draw a master plan of the farm in its present state. This should be made to a suitable scale which will be workable in size yet large enough to enable reasonable notations to be made where required. Next, enter all important natural features and improvements such as fences, buildings, roadways, cleared land, summer moist areas and watering points—in fact everything that will finally influence the ultimate farm design.

Construct a second plan incorporating a layout most suitable for the particular farm and type of farming practice favoured. Impose this upon the master plan and make such modifications as are practical without involving undue costs.

The Farm Plan

The farm plans A and B show an example of what has been described. Plan A illustrates the layout of an actual Western Australian dairy farm as it was several years ago. Obviously it was in need of redesigning. It had slowly taken shape over many years and was cleared and fenced without much thought to future managerial problems. These conditions of development did not allow much in the way of planning the farm.
The farmer decided to start on an improvement programme and in association with an officer of the Department of Agriculture a scale map of the property was drawn as shown in Plan A. Later Plan B was developed from this to suit the future requirements of the farm. A raceway was surveyed on the contour so that it would take heavy traffic to all parts of the farm at any time of the year without danger of erosion occurring. Paddock subdivisions were made to lead lengthways from the race, where possible using the existing fences to reduce costs.

All likely problems were dealt with in advance, and the farm's future development and production pattern was worked out in detail. Pasture trials with various species and fertilisers were carried out to determine the best mixture for each soil type on the farm. The paddocks were numbered and an efficient farm records system was adopted.

This gave the farmer a sound basis for future development of his property and has allowed improvements to follow a planned programme. The result will be a better farm layout, achieved at lower cost than would be possible if the usual haphazard approach to farm improvement had been followed.

Below are discussed some of the points to be considered when planning a dairy farm in this way.

**Homestead and Farm Buildings**

Generally on the property only a few positions can be classed as suitable sites for the homestead and other farm building. For the convenient working of the farm, it is desirable for the buildings to be approximately centrally situated, part-
particularly if the farm is long and narrow. Otherwise place them towards the main road entrance and close to public amenities. Consider a position that is convenient to the paddock layout as well as being on a reasonably high situation, well drained, and if possible sheltered from the prevailing winds, such as in the lee of a hill or belt of trees.

The dairy should be at least 50 yards from the home although not so far distant as to cause excessive travelling time. Prevailing winds must be taken into account, so as to avoid discomfort in the home from dust and smells.

The buildings must be placed to allow for effective drainage away from such places as streams and water sources. Drainage water from pig pens must not be allowed to flow through or near the dairy premises or calf pens.

The machinery shed deserves special attention. If well planned and constructed it will save a great deal of time, as well as reducing the maintenance needed for farm machinery.

One hay shed should be placed near the dairy buildings. Others may be better placed at strategic situations on the farm to avoid long haulage to a central shed and out again to feed the stock. Also, this hay is more likely to be fed back on the areas from which it was cut, thereby avoiding excessive shifting of soil fertility to restricted areas of the farm.

**Farm Roads**

From roads usually carry the farm transport and machinery as well as stock and consequently it is difficult to keep them in good repair, particularly in the winter. Long laneways with a high upkeep
will be required where a property is long and narrow. In such cases the farm buildings should be as near the centre of the property as other factors will allow.

Crossover bridges and gateways are best raised to avoid water laying in them, a cause of mud holes which are most unpleasant and hazardous to stock and machinery.

Consideration must be given to possible soil erosion and to counter this, drains and culverts may be necessary. In some instances the road may have to be made on the contour of the land, with the centre crowned up and dispersal drains constructed to carry the water onto the grass areas so as to minimise any erosion hazards.

Where the land is flat, it is often wise to raise the road above the surrounding ground level with soil or gravel. Do not use the soil along the roadsides to raise road levels as this could produce a situation which will eventually require an expensive drainage and culvert system.

Roads and laneways should not be too wide or too narrow; about 15 to 20 feet in width is usually sufficient for stock and farm machinery. Wide raceways are wasteful of good pasture land and frequently hinder the handling of stock.

Gateways

Gateways should be placed in well-drained positions and raised above the surrounding ground to avoid the accumulation of water and the ultimate forming of muddy and impassable entrances. Where possible they may be placed in positions which will allow for controlled movement of stock, as in raceways for the diversion to particular areas on the farm. Often gates in adjacent corners of adjoining paddocks offset from the raceway will provide an easier approach for vehicles as well as a turning point in the race.

Gates placed in paddock corners nearest the dairy will cut down much travel time, but often in low lying areas a central one in the race fence may be preferable, as this permits stock to converge from different directions, resulting in less damage to pasture land.

These gates should be 10 to 12 feet wide, which is sufficient to allow passage of the widest implement on most dairy farms. Further, a gateway at every fence intersection with the boundary will simplify firebreak cultivation and allow free travel for fire control vehicles.

Subdivision

Subdivision permits good farm management, but the amount of subdivision will vary from farm to farm. The number, size, and shape of the paddocks will be determined by the type of grazing management most favoured by the farmer, the contour of the land, the soil type and finally the cost. Progressive subdivision of the farm over a number of years will mean the spreading of costs, whilst the use of electric or temporary fences, particularly in the early stages of development, will be found most helpful in quickly bringing into operation rotational grazing practices.
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Number of Paddocks

The desirable number of paddocks to allow for rotational grazing and division of stock will be about 18 to 20 on most dairy farms. This will permit daily grazing periods with rest intervals of two to three weeks depending on pasture growth at the different seasons of the year.

During the flush season a shorter rotational grazing programme is preferable and this will leave some paddocks that can be closed for hay or silage conservation.

Some smaller paddocks may be required near the farm buildings for the holding of bulls, calves, and cows about to calve.

Shape of Paddocks

The paddock shape is determined by soil type, wet land, general slopes, gullies and the shape of the farm. Generally a square area will cost less in fencing while a rectangular paddock, reasonably long, is generally found best for cultivation and grazing management and will decrease the length of raceways required.

Size of Paddocks

Paddock size is usually determined by the size of the farm, soil type, the number and type of stock carried, the contour of the land and the kind of farm management favoured by the individual farmer.

Water Supply

Water supply influences to some extent the final layout of the property and placement of raceways to give the shortest satisfactory water main service.

Large troughs at divisional fences will serve two paddocks and if close to a raceway will require little extension to supply four paddocks. Troughs should be kept well away from the gateways and are best built on raised ground; this prevents the stock making boggy areas in the winter and will allow the free movement of machinery. Water should be accessible in all paddocks to prevent stock making long trips for a drink.

Fences

Boundary and divisional fences should be sound and well constructed. Internally a four or five plain wired fence, well maintained, will control dairy stock without the use of barbed wire, which can cause much injury and loss of production.

Shelter

Shade trees and shelter sheds rapidly repay the cost of their establishment providing they are not overdone. Trees enhance the appearance of the farm as well as providing shade in the summer and shelter from heavy rains and winds in winter. Too many farms have been depleted of all timber and in such cases a programme of establishing a few trees in most paddocks would be of benefit.
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