
FIELD DAY

A. INTENSIVE DAIRYING

The objective in organising this day was to show the delegates intensive dairying in Taranaki, its potential and some of the limiting factors.

STOP 1. TARANAKI AGRICULTURAL RESEARCH STATION: Grass grub has adversely affected dairying in South Taranaki since the beginning of this century. Over recent time two large population increases of grubs have been documented; one from 1936-1948 and again from 1969-1975. From 1952-1960 grass grub was satisfactorily controlled with D.D.T. However in 1960 D.D.T. resistance was recorded in the area, and following the restriction on the agricultural use of D.D.T. in 1966, populations again increased, causing severe pasture damage and loss of dairy production. Farmer concern resulting from this latter outbreak led to the development of the research station at Normanby to specifically investigate this problem. Various control strategies have been incorporated into small self-contained dairy farmlets which have now been in operation for three complete seasons. Grass grub has only caused an economic loss in dairy production in one of these years, and an interaction occurring between climate, grass grub numbers, pasture growth and dairy production has confounded the clear definition of an economic threshold level.

Lucerne, although resistant to grass grub and 20% higher yielding than grass/clover pasture, produced over the three years, 20% less milkfat at an additional cost of \$1 10/ ha. Bloat and the marked seasonality of growth were the major limiting factors. In drier climates (< 1200 mm rainfall) lucerne may make a more positive contribution to dairying.

PASTURE TREADING: A significant factor in the regulation of grass grub populations is the physical effect of intensive stocking. This however, also affects pasture growth and a study of the damaging effects of various stock wintering systems on pastures has been made on the research station over the last three winters. The work has now been completed and the conclusions drawn are:

(i) Winter DM production is maximised if pastures are undefoliated over winter.

(ii) Block grazing for only four hours (on/off) grazing had no effect on subsequent winter growth compared with pasture defoliated with a mower.

(iii) Block grazing for 24 hours (320 cows/ ha/day) depressed pasture growth to the next grazing in spring by 20%.

(iv) Strip grazing (having no-back fence) did not significantly affect subsequent pasture growth compared with 24 hour block grazing.

An interesting point observed in these trials was that the effect of the wintering system on subsequent pasture growth was independent of weather

conditions except in extreme situations (southerly storm). Also in all winter soil conditions a considerable amount of available pasture is trodden below ground level and remains undetected by conventional cutting techniques.

GRASS GRUB TOLERANT PASTURES: Grass grub causes spasmodic damage to pastures and if a tolerant pasture is to be adopted by farmers it will have to be as persistent and more profitable than the current 30-80 year old pastures. "Grasslands Roa" Tall Fescue is the most promising of the tolerant grasses suitable for dairying (cocksfoot, Phalaris, tall fescue and Yorkshire fog) but at present the availability of seed is the factor limiting the establishment of a tall fescue farmlet on the station.

STOP 2. COLIN MEAD'S FARM, MANAIA: (60 m a.s.l. 1125 mm rainfall). Area 54 ha; Cows 180; Staff 2; Production (kg milkfat/ha) 1978/79 499; 1979/80 640; 1980/81 670.

Cohn has been a very successful dairy farmer for many years and has maintained his enthusiasm to be now one of the top dairymen in New Zealand. His paper presented earlier in this proceedings (p. 76-79) provided a good background description of the farm and its operations which stimulated an interesting discussion.

The early calving (July) and the high level of post-calving feeding has always been speculated on by visiting groups and could not be explained entirely by good management. Dr Brougham suggested that the dominant ryegrass was similar type to H 1 (Manawa), and had probably developed and persisted on the farm through the haying system, long rotations and the nitrogen fertilizer policy adopted over the past two years.

Colin is not entirely satisfied with current levels of production and has the philosophy that "next year will be better". To achieve this he is continually on the lookout for new techniques, and as an example next winter he will be covering his cows for the following reasons:

- (i) make more efficient utilisation of scarce winter feed.
- (ii) warm contented cows may cause less treading damage to pastures.

STOP 3. PRODUCTION OF UREA FERTILIZER AT KAPUNI: Over the lunch break at Manaia, Mr Pope the General Manager of Petro-Chem (the holding company controlling the interests of the Ammonia-Urea plant at Kapuni) gave an excellent address which dispelled many of the worrying aspects of this development. Two points were highlighted.

- (i) The increasing world demand for urea as a fertilizer, particularly in the Pacific basin.
- (ii) The price of locally produced urea would be competitive with the imported product.

STOP 4. WAIMATE WEST DEMONSTRATION FARM: A brief stop was made at the Farm and the research work conducted on the property over the past 20 years was summarised. The most critical single factor affecting dairy

production emerging from this work is stocking rate. Other aspects of management such as rotation lengths over winter and during lactation, magnesium supplementation and high inputs of phosphate and potash have made relatively minor increases to production. The only other factor giving a worthwhile lift to production was an increase in the level of winter feeding to cows. However over the past four years no further production increase to additional management inputs have been recorded which poses a problem for dairying research --- "Where do we go to from here?".

STOP 5. The buses made a short tour through the construction site of the ammonia-urea plant at Kapuni.

STOP 6. JOHN OLIVER'S FARM, MAHOE: (410 m a.s.l., 2250 mm rainfall). Area 40 ha; Cows 100; Staff 1; Production (kg milkfat/ha) 1978/79 330; 1979/80 350; 1980/81 400.

Low winter/spring soil temperature and the hilly nature of the topography are the main limitations to dairying in this area. This farm is typical of most situated on the southern and eastern slopes of Mt Egmont from 300 m a.s.l. and above, an area predominantly in dairying. The only favourable aspect is a reliable summer rainfall and John's last seasons production of 400 kg milkfat/ ha is considered exceptional. Over the last four years the increase in production from 300 kg to 400 kg milkfat/ ha can be attributed to three factors:

(i) A heavy phosphate, potash and liming programme. (1000 kg/ha 30% potassic superphosphate, 2250 kg/ ha lime).

(ii) Delaying the commencement of calving until the 20th August.

(iii) A higher stocking rate, controlled winter grazing and the fertilizer programme has resulted in an increase in ryegrass and a decline in the once dominant browntop.

Compared with Colin Mead's 300 day lactation, John can only achieve a 240 day lactation due to climatic limitations and to obtain high production he has to allow the cows to consume all available pasture in early and mid-lactation leaving little for conservation. For winter feeding he then has to rely heavily on a run-off for wintering heifers and providing additional hay. At the current levels of production John is managing to conserve off the milking area only 50% of the winter supplements necessary.

Discussion was centred around the high fertilizer inputs and the general feeling was that these could now be cut back and a greater use be made of nitrogen fertilizer in September and again later on hay paddocks.

STOP 7. THE LAHAR COUNTRY OF WESTERN TARANAKI: After the visit to John Oliver's the buses returned to New Plymouth via Opunake and Okato to give visitors a look at the unique lahari^c soils. The formation and agricultural limitations of which were described by Robin Palmer of Soil Bureau (following a delay of some time caused by the lead bus, navigated by Dr Roberts, taking a wrong turning).

The area of these soils is approximately 22,000 ha, predominately utilised

for dairying, but has two limitations; a clay pan in the subsoil that impedes drainage, and a hummocky terrain that causes difficulties with subdivision and efficient pasture utilisation. The most productive farms on these soils are those with a flat topography and as drainage improves, production increases. The top farmer in the area is on a flat, relatively free draining soil producing 570 kg milkfat/ ha but as the number of hummocks (laharic mounds) increases production declines with the better farmers doing little more than 400 kg milkfat/ ha.

SUMMARY

The objective of the Field Trip was to highlight the potential for dairying in Taranaki (Cohn Mead) and to show some of the main physical limitations (soils, topography and climate) demonstrated by John Oliver's property and the laharic soils of which together comprise approximately 45% of the total dairy farms in Taranaki. The area of Taranaki with the greatest potential for increasing dairying production is on the Waimate plains. However, on these free draining lowland soils, land can be utilised profitably from other farming systems and the attractiveness of continually achieving high levels of dairy production is maintained on only a few farms, and Cohn Mead stands out as a rare example.

(COMPILED BY N. THOMSON)

B. HILL COUNTRY

A great area of New Zealand hill country was lost to grazing through reversion to scrub and bush from 1930 onwards. The development of aerial topdressing in the 1950's stemmed the tide and allowed a return to even more productive grassland. However, in the face of rapidly escalating world fertiliser prices and the trend towards reduced fertiliser use, this grassland is once again under threat. These events have been well demonstrated in the Eastern Taranaki Hill Country and this field day was organised to highlight the problems and potential of this area, discussing both physical and financial aspects.

STOP 1. A general orientation to the area was given at the property of John MacIntyre at Waitui on the rolling hills near Inglewood. Of particular interest was the three oil drilling sites, Rimu, MacKee No. 1 and MacKee No. 2. MacKee No. 2 is now producing about 4% of New Zealand's needs at 3000 barrels per day. Extensive seismic surveys are being carried out with deeper holes (down to 4000 metres) about to be drilled at Waitui. The group was also able to look down the Waitara Valley towards where the Methanol plant will be sited beside the Waitara River.

The next stops at the properties of Gerald Carver and Mike Iremonger,

Matau, contrasted two farms very close to each another but highlighting the difference in production and performance between a semi-developed farm carrying out large scale scrub development, and a farm fully cleared of scrub achieving high per head performance.

STOP 2. MIKE IREMONGER

The main points coming from discussion on physical aspects of development were:

1. Manuka scrub clearance was by contract gangs with chainsaws in preference to spraying (more expensive) and roller crushing (generally contour too dissected and steep).

(2) Tracking for fence lines and stock tracks was a significant cost due to the many gullies and gorges. Fencing was conventional on boundary fences and areas where stock pressure is high (around gateways and in races where stock are driven), and electric for internal subdivision.

3. Fertilizer and Seed. Mike has used 1000 kg/ha superphosphate as a capital dressing along with a seed mix of 8 kg Nui, 8 kg Ruanui and 4 kg Huia white clover/ ha. At the next stop there was a detailed discussion on this aspect.

4. It was emphasised by more than one person how critical it was in Taranaki to get a good burn and how seldom this was possible with a 2000 mm evenly spread rainfall. Paraquat has been used as a means of assisting but this had proved a costly exercise in most cases. The helicopter using Lumigel for lighting fires, is used widely, as well as for depositing fencing material on ridge tops.

5. Stock number increases were geared to retaining replacements which allowed only limited selection of replacements although stock performance has been maintained.

STOP 3. GERALD CARVER: Some management aspects were discussed by Gerald who cited his change to the Border Leicester cross ewes and controlled feeding at tugging and pre-lambing as the two most important factors contributing to his high production. The difficulties of moving stock over steep hills and of the need to have good dogs and general stock sense are of great importance when factors such as steep contour are against you.

With large surpluses of feed during the summer both Gerald and Mike have kept a good balance of beef breeding cows, in Mike's case mainly to eat off scrub burn blocks during the winter and with Gerald's to preserve summer pasture quality to make maximum use of autumn growth for liveweight gains in ewes.

STOP 4. LUNCH AT WHANGAMOMONA: During lunch, Malcolm Cotter of the Lands and Survey Department outlined the large scale development at Aotuhia where about 7000 ha should provide 12 units in the future.

STOP 5. LEE AND IAN WYNNE-JONES, POHOKURA: After travelling from

the first stop in the thin belt of easy hills of Waitui, through to Matau with its mixture of soils derived from silty sandstones with heavy ash deposits on the easier country, the final visit was to an area known by many as some of the hardest hill country to farm in Taranaki. A combination of very steep country with thin ash cover overlaying sedimentary sandstone, poor drainage in what little flat areas existed and a very sporadic topdressing history, are the constraints the Wynne-Jones' farm under.

A cost-benefit analysis of scrub development showed that on present day development costs, including stocking at \$92 per stock unit it would take a 28 year payback period to recoup their initial outlay. By using the incentives of both the Livestock Incentive Scheme and Land Development Encouragement Loan, including a tax saving based on a marginal tax rate of 60c in the dollar, the pay period was reduced to six years. It was considered a pay back period of less than 10 years would be required under today's cost structure to make hill country development profitable. The exercise highlighted the positive impact the L.D.E.L. and L.I.S. has had on land development, but showed the need to maintain these inputs to keep development going at a desirable level.

Perhaps the most controversial session followed *onpriorities in present day hill country development*. The questions posed were how much will an increase in pasture utilization by intensive grazing through rotating stock offset the benefits of extra fertilizer usually used as a capital dressing, and what emphasis should be placed on fertilizer, fencing, stock and grazing management to produce the best result?

Ian Wynne-Jones believes that by putting on less fertilizer than a capital dressing in year one but fencing intensively and rotationally grazing he will get a better return per dollar invested. With the finances saved he plans on cutting a larger area of scrub. Accepting a low level of animal performance, less clover in pastures, and a greater reversion factor because of lower soil fertility, are costs, probably large, which Ian realises he will be up against. With the potential to cut another 300 ha of scrub, and at present carrying 2868 stock units on 246 ha, many felt he should spend more finance on fertilizer and get better performance by stimulating more legume and hence soil nitrogen, so easing his present cash flow position to enable further development at a later date. The farm has relatively low cattle numbers with a 70:30 sheep beef ratio and it is planned to increase cow numbers in order to help control the reversion problem.

Robin Mason, an experienced hill country farmer summed up. His experience on this sandstone country indicated that after clearing, a capital dressing of 2.5 tonnes superphosphate/ ha, and a stocking rate of not less than 10 ewe months (i.e. 4248 kg ewe at tupping with a 75-80% lambing) starting 2 months after sowing and subsequently increasing to maintain pressure, was necessary to transform scrub and fern to pasture in 4 years. By aiming for heavier ewes (55 kg) and 90% lambing, grazing pressure had to be relaxed and the development process to pasture delayed. Following the initial development, most hill country farmers could take an example from the dairy farmers nearer Mt Egmont, where normal grazing pressures of 250 s.u./ ha by

lactating **cows, and** up to 2500 s.u./ ha by dry stock (350 cows/ ha), have resulted in amazing transformation in pastures. No hill country farms approach these grazing intensities between weaning and lambing. Such techniques could be adopted for hill country. While research provides the basic information, more positive planning from both researcher and advisor is needed to put innovative managements into practice. The gap in the chain is still the practical application of what is already known.

TE WERA FOREST

The buses were able to travel through the 16,000 hectare forest, and forest management was outlined with the exceptionally good tree growth rates partly compensating for difficulties with access to plant, thin, prune and road for log extraction. Saw logs are being extracted and the group got a good impression of the alternative land use on a similar class of country to the Wynne-Jones property.

(COMPILED BY A. DCK)