

DISCUSSION

Could you enlarge on the claim of having made 1,000 lb liveweight gain per acre per annum with wealers on irrigated pasture?

Mr. Poulsen: First of all I should state that we were not trying to produce this figure, we were actually following the effects of copper at high rates of molybdenum application.

The pastures used were both irrigated and dry, set on alluvial soils. They have had a cumulative total of 1 ton of superphosphate now and plant analysis shows the phosphate level to be adequate. Some of the pastures are in their 6th year, others in their 2nd.

The pastures are pre-cropped with oats sown at 2 bushels per acre and under-sown to H 1 ryegrass (2-3 lb), Priebe's prairie (5-6 lb), Ladino clover (1 lb), and Louisiana white clover (4 oz). The annual fertilizer dressing is 2 cwt per acre Mo superphosphate. The carrying capacity of the pastures varied according to the feed and numbers of animals available. Overall, 120 head of dairy calves were carried for 13-14 months averaging 0.9 lb live weight gain per head per day. No Cu or Mo toxicities were demonstrated.

How do you think private farm management consultants could benefit farming?

Mr. Poulsen: Private consultants can do an excellent job in helping to improve production. I feel that this is an easy way out, however, and farmers lose their self-reliance. I feel that for tropical and sub-tropical regions there is as yet insufficient basic information for consultants to work on reliably.

Dr. Humphreys: I have been looking through the old records of the Queensland Pasture Improvement Committee and noted that in 1931 it was recommended that more superphosphate be used on farms in the Mary Valley. Could you comment on this?

Mr. Poulsen: I can recall while I was a student at Gatton College Professor Murray pointing out the value of the use of superphosphate on pasture. I did not heed his advice then because we could not afford to buy it. Having overcome this economic hurdle the values achieved from each unit of fertilizer compounds itself. Today if we cannot afford fertilizer then we cannot afford to grow the crop. It is as important as that. On pasture it takes 2 to 3 years to reap the full benefits of a fertilizer program.

Could you enlarge on your suggestion of special credit grants for agricultural development?

Mr. Poulsen: In the U.K. they are fostering improvements to agriculture by making direct grants to farmers for specific purposes. In Australia we have for long asked for long term, low interest rate loans, but we have got nowhere with this; nor are we likely to.

I feel it is preferable to make direct grants as e.g. 1. approved buildings which will increase the economic efficiency of the farm; 2. on certain types of equipment such as for feed conservation; 3. on facilities for conservation of feed such as barns, silage pits etc. A direct grant of 30% of the item value together with the normal income tax deductions for capital expenditure or depreciation can significantly reduce the initial capital outlay. In a year such as the one we've just

had a greater amount of conserved feed is obviously required. Most farmers do not like to see their stock die and will spend money to maintain them. However, in meeting this requirement by maintaining greater amounts of conserved feed, some changes must be made in the assessment of the value of this improvement for probate purposes.

With your maize production, do you find it more profitable to feed it or sell it as grain?

Mr. Poulsen: Hybrid maize is profitable as grain. It also fits into the system of ley farming we use. The crop rotation is necessary to meet seed certification regulations and beneficial to the crops and pastures. We have bought no grain since 1958 being self supporting for our requirements. I feel the grain which is fed is worthwhile as a supplement to pasture, particularly with young stock, for they come into production at a much higher level. Grain gives the same gain as good hay.

Could you enlarge on your methods of internal parasite control in young stock at high-stocking rates?

Mr. Poulsen: High stocking rates with young stock lead to heavy infestation of internal parasites. It is not possible to control these by grazing rotation as pasture growth is too rapid for the required spell period. Initially therefore, we used phenothiazine, but since this controls only some of the parasites, it was not really effective. Early trials with "Neguvon" administered orally caused calves to die under certain conditions of pasture growth. However, by subcutaneous injection it was found quite safe. We found 2½ inches of irrigation water every 2 weeks was necessary to maintain pasture growth over dry periods and this appeared to suit the build-up of parasites most so that 2 weekly doses of "Neguvon" were given. More recently we have used "Thibenzidole" on the tail end of the herd with good results and may in future combine the use of the two treatments.

HUMPHREYS, L. R. TOWNSVILLE LUCERNE—HISTORY AND PROSPECT

Presidential Address to the Annual Meeting of the Society November 29, 1966.

ABSTRACT

Early records from 1914 of extension and experimental work with Townsville lucerne in Australia are reviewed. The naming and distribution of the plant is described. Contemporary research work with Townsville lucerne is assessed, attention being paid to studies in genetic variation of the species, responses to climatic variation (daylength, radiation, temperature and moisture), soil requirements, and the effects of nutrients on growth, composition, and animal productivity. Establishment and grazing management techniques are then described, and the factors affecting Townsville lucerne/grass compatibility, and symbiotic nitrogen fixation discussed.

Prospects for the future increased use of Townsville lucerne in coastal beef pastures are counted good; this optimism arises from the proven high productivity of Townsville lucerne pastures, especially when fertilised, advances in techniques such as aerial seeding and suction seed harvesting, and the physical and financial development of the beef industry which is now more favourable to producing the cattle numbers necessary for good Townsville lucerne growth.

REFERENCE

HUMPHREYS, L. R. (1967).—Townsville lucerne—history and prospect. *Journal of the Australian Institute of Agricultural Science* 33(1): 3-13.

DISCUSSION

- Dr. Skerman:* It could be said that the real reason for the lack of recognition of Townsville lucerne during the depression years of the 1930's rested in the price of seed at \$1 per pound and also the lack of phosphatic fertilizer or its price.
- Dr. Ebersohn:* *Could it not also be considered that back in the 1930's and 40's Townsville lucerne did not make its appearance so well due to the country being less intensively grazed? I is now becoming clear that the success of aerial seeding of Townsville lucerne is dependent on preconditioning the area by heavy grazing pressure.*
- Dr. Humphreys:* Intensive pasture use almost to the point of degradation makes Townsville lucerne establishment easier. This requires extra stock which may not be easy in years following droughts. It also exposes the land to erosion hazard.
- Mr. Fox:* Townsville lucerne is commonly observed on stock routes and areas of heavy grazing. However many graziers are not prepared to take the risks involved of increasing their stock carrying capacities to 1 beast to 4 acres in order to achieve Townsville lucerne establishment.
- Dr. Humphreys:* The complementary use of Townsville lucerne with native pasture is safe.
- Dr. Henzell:* *Are you sure that the cattle are more affected by drought on Townsville lucerne pastures than those on native pasture? The comparison depends so much on the stocking rate used.*
- Dr. Humphreys:* To determine this it is necessary to set up variable stocking rate experiments. Normally, native pasture is underused and hence water is not the final limiting factor to production. Shaw's work shows greater stability of performance of animals on native pasture than on pastures improved with Townsville lucerne where the forage is more completely eaten and hence production is more sensitive to water supply. By the same token animal production from native *Danthonia* pastures around Canberra is relatively insensitive to moisture supply compared with the higher production from more completely used sown pastures of phalaris and subterranean clover.
- Mr. Shaw:* The benefits of fertilizer on Townsville lucerne in terms of beef production have been unexpected; they have been comparable again to that of Townsville lucerne alone. In years of good summer rain there is an additional benefit to grass growth from the legume. The different responses reported in different Annual Reports refer to individual seasons only and hence different stocking rates.
- There has been some opposition to the practice of aerial seeding Townsville lucerne. Why?*
- Mr. Shaw:* I do not know. It has been successful at Rodds Bay both in terms of establishment and subsequent regeneration from seed set.

Mr. Pulsford: In Cape York Peninsula large areas have now been successfully aerially sown. The area is increasing each year and is, perhaps, 100,000 acres per year now. Mostly, the Townsville lucerne is sown with fertilizer. This may be done separately or in one operation. The latter aids the spread of the seed, which is difficult to sow evenly, and puts the fertilizer in the same place as the seed, which is economic.

What studies are there on the fate of establishing seedlings? In the Northern Rivers region of New South Wales tropical legumes appear to be very susceptible to drought at the cotyledon stage.

Dr. Humphreys: At Katherine in the Northern Territory, Townsville lucerne seedlings will withstand more drought stress than buffel grass.

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