

# INCREASED BEEF PRODUCTION THROUGH IMPROVED PASTURES IN QUEENSLAND

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## *Summary*

A survey of a random sample of 82 graziers in the Southern spear grass region, Queensland, revealed that 57 had some improved pasture. However, the average area was small relative to property size and stock carried, and most species were not those which had shown greatest promise in recent experimental trials. Most graziers remain sceptical that suitable species are as yet available for their particular properties. This attitude will have to be overcome if substantial increases in beef cattle turnoff are to be achieved in the region.

## I. INTRODUCTION

The southern Spear Grass region of Queensland is an important beef producing area, containing approximately 6% of Australian and 13 % of Queensland beef cattle numbers. Following a survey of a sample of graziers in the area, Hamilton and McCarthy ( 1964) outlined graziers' attitudes to property improvement and obstacles to improvement as seen by graziers. One fact which emerged was that an increase in the area under improved pasture was a major avenue of property development. Pasture research in the region, for example by Young, Fox and Burns (1959), Shaw (1961, 1965) and Graham (1963) has indicated that carrying capacities can be increased by up to threefold by the introduction of tropical grasses and legumes.

The purpose of this paper is to focus attention on the role that improved pastures (defined here as those which are composed predominantly of exotic species) are currently playing in the area and to suggest how this role could be increased. Crops are briefly mentioned, as some graziers see crops as an alternative to improved pastures.

## II. MATERIALS AND METHODS

Information concerning improved pastures was collected in the survey described by Hamilton and McCarthy ( 1964). The 82 properties selected averaged 24,301 acres in size, represent 15 % of the commercial beef properties in the area and have 29% of the beef cattle numbers.

Information on improved pastures is arranged as follows :-

- (a) types and areas of improved pastures;
- (b) grazier opinions of improved pastures.

## III. RESULTS

### *(a) Types and areas of improved pastures*

Of the 82 graziers interviewed, 70% had some improved pastures; of those with no improved pasture, 40% had crops (Table 1) .

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TABLE 1  
*Areas under improved pastures and crops 1963*

| Group                       | Number of Graziers | Av. Area (ac) | Range of Areas (ac) |
|-----------------------------|--------------------|---------------|---------------------|
| Improved pasture alone      | 21                 | 656           | 15- 6000            |
| Improved pasture and crops  | 36                 | Pasture 1618  | 2-20000             |
|                             |                    | Crop 172      | 4- 1520             |
| Crops alone                 | 10                 | 181           | 3- 600              |
| No improved pasture or crop | 15                 |               |                     |
| TOTAL                       | 82                 |               |                     |

The largest group was that with both improved pastures and crops. The average area under improved pasture for the "pasture alone" and "pasture plus crop" groups is 1271 acres with a range of from 2 to 20,000 acres. However, if the two graziers with the largest areas are excluded (20,000 and 10,000 acres respectively) the average area under improved pasture falls to 772 acres. Areas under crop are smaller, with an average of 174 acres and a range of from 3 to 1520 acres. Forty-six properties grew crops. Here, grain sorghum predominated (23 properties) followed by oats ( 18 properties).

Of the 67 properties with improved pasture, the most frequently occurring species was *Chloris gayana* (Rhodes grass) which was found on 32 properties. Following in order of frequency were *Panicum maximum*, var. trichoglume (green panic) on 27 properties, *Stylosanthes humilis* (Townsville lucerne) on 24 properties and *Cenchrus ciliaris* (buffel grass) on 12 properties. Other pasture legumes were found on comparatively few properties. Six had *Phaseolus lathyroides* (phasey bean) and five had *Phaseolus atropurpureus* (Siratro).

TABLE 2  
*Improved pasture mixtures as percentages of the total improved pasture area, 1963*

| Pasture mixture                                                     | Percentage of Total Area under Improved Pasture (%) |
|---------------------------------------------------------------------|-----------------------------------------------------|
| Rhodes grass alone .....                                            | 39.1                                                |
| Green panic alone .....                                             | 15.3                                                |
| Green panic, Rhodes, buffel .....                                   | 14.4                                                |
| Green panic, Rhodes, Sorghum alnum .....                            | 11.3                                                |
| Townsville lucerne alone .....                                      | 7.4                                                 |
| Rhodes, green panic .....                                           | 6.9                                                 |
| Paspalum .....                                                      | 2.7                                                 |
| Mixtures with a legume component other than Townsville lucerne .... | 2.4                                                 |
| All other mixtures .....                                            | 0.5                                                 |
|                                                                     | 100.0                                               |

TABLE 3  
***Stock carrying capacities and areas under improved pasture, 1963***

| Group                       | Average Partially Cleared Area<br>(Ac) | (Ac per BCE*) | Average Total Area<br>(Ac) | (Ac per BCE*) |
|-----------------------------|----------------------------------------|---------------|----------------------------|---------------|
| Improved pasture alone      | 22,221                                 | 19.7          | 11,071                     | 9.8           |
| Improved pasture plus crop  | 26,424                                 | 14.6          | 17,643                     | 9.7           |
| Crop alone                  | 20,757                                 | 20.8          | 9,451                      | 9.5           |
| No improved pasture or crop | 24,479                                 | 16.2          | 14,333                     | 9.5           |
| Overall all groups          | 24,301                                 | 16.4          | 14,276                     | 9.7           |

\* Breeding Cow Equivalents calculated by method of Sutherland (personal communication). One adult breeder equals one unit.

A single grass, Rhodes, accounts for almost 40% of all improved pastures, while Rhodes, green panic and buffel grasses together comprise 75% of the total. Legumes are currently playing a minor role. Townsville lucerne accounts for 7.4% of the total and all other legumes (siratro, phasey bean, centro, glycine, clovers) only 2.4%.

Stock carrying capacities for the various property groups are included in Table 3. Data for "ringbarked" (partially cleared) areas in each group are also presented.

Wide differences in carrying capacities do not occur when expressed on an effective acreage basis (assuming that partially cleared area is a measure of effective acreage). Four factors are responsible for this. Firstly, carrying capacity can be influenced by factors such as water, fencing and seasonal conditions, in addition to improved pasture. Secondly, only a small proportion (average 5.4% ) of each property is under improved pasture. Thirdly, the productive capacity of many of the pure grass stands, particularly Rhodes grass, has deteriorated over the years. Fourthly, carrying capacity does not reflect any possible improvement in the condition of the stock turned off.

In an attempt to establish a more precise relationship between effective acreage and carrying capacity, properties with greater than 10% of effective area under improved pasture were examined. For this purpose, pastures were grouped into three classes (a) Rhodes grass alone (b) grass mixtures, (c) grass-legume mixtures or legumes alone. The respective carrying capacities were 9.5, 9.2 and 7.7 acres per Breeding Cow Equivalent (see footnote, Table 3).

#### ***(b) Grazier opinions of improved pastures***

Of the 57 graziers with improved pastures, 62% considered the major benefit was through improved animal performance, either by increased carrying capacity or by turning stock off earlier or in more forward condition. Twenty seven per cent visualized improved pasture primarily as security against drought.

Of the 57 graziers, 36 had some reservations regarding the value of improved pastures. Thirteen were concerned with lack of persistence, eight considered productivity was lower than expected, and five thought that suitable species were lacking. Other criticisms centred around cost and difficulty of establishment and increased labour requirements.

Of the 25 graziers without improved pastures, only two could see no benefit in them, though they all visualized some disadvantages. Sixteen thought suitable species were lacking, six were concerned with possible high costs and three with additional labour requirements.

#### IV. DISCUSSION

The properties surveyed exhibited no general association between carrying capacity and the presence of improved pastures. The likely explanation is that species and mixtures for which the most promising results have been obtained experimentally make up a minor part of the area at present under improved pastures.

The problem of substantially improving beef cattle production in the area through pasture improvement is not simply one of spreading existing knowledge. Most graziers have reservations centering around the establishment, productivity and persistence of such pastures and these opinions must be changed or modified if the adoption of improved pastures is to be hastened.

Wider publicity for existing trials being carried out in the area by the State Department of Primary Industries and C.S.I.R.O. would help because 38% of survey graziers had no knowledge of such trials. Also, only 51% of those familiar with these trials believed that the results would apply on their own properties. The reasons given for this belief by 83% of these graziers were the apparent similarities of the trial areas to their own properties with respect to aspects such as rainfall and topography. Paradoxically 87% of those graziers who did not believe that trial results would apply to their properties gave precisely the same reasons but in the opposite context, e.g., country not similar.

A major necessary condition for a substantial increase in the area under improved pasture is the allaying of graziers' anxiety concerning the lack of suitable species. Establishment and maintenance problems could be related to indifferent husbandry methods. Certainly only 64% of the graziers had ever had any contact with extension officers and only 48% had requested visits to their properties.

If species suitable to all areas are not available, a second necessary condition is the establishment of trials in these areas.

Perhaps the best method for spreading the required knowledge is by capitalising on reading habits. Sixty-four per cent of the survey graziers first heard of improved pasture through reading about it. In the survey area, 80 of the 82 graziers subscribe to "Queensland Country Life", (a weekly country newspaper) and 31 to the Department of Primary Industries' Journal.

To be of greatest effectiveness, information would best be presented so as to appear relevant to improvement motives. Eighty three per cent of the survey graziers stated that "getting the place in good order and accepting whatever income arises" was their primary motive for property improvement.

If considerations such as these are kept in mind, beef cattle output in the region can be accelerated.

## VI. REFERENCES

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