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PROBLEMS OF THE SPINIFEX AREAS

THE DECLINE IN CARRYING CAPACITY

By H. SUIJDENDORP, B.Sc. Agric., Agricultural Adviser

A MAJOR problem facing pastoralists in the North-West spinifex areas, is the serious decline in carrying capacity which has taken place during the last two or three decades. Investigations into the cause of the decline, and experiments designed to point the way to regeneration of these areas were instigated by the Institute of Agriculture, University of Western Australia, and continued by the North-West Branch of the Department of Agriculture.

When the spinifex areas were first opened up to pastoral settlement, flocks of sheep were shepherded within reasonable walking distance of the natural surface waters.

Heavy stocking of these limited areas led to the eating out of country in the vicinity of the natural waters and a start was made with the fencing of paddocks in which water was supplied from wells. These wells were subsequently equipped with windmills, tanks and troughs and permitted the effective utilisation of much greater areas of country.

It became the practice to fence off new areas of virgin country each year and to carry the ewes in such paddocks. Very good lambing percentages were achieved and sheep numbers increased rapidly.

Unfortunately, the extra watering-points led to a tremendous build-up in the kangaroo and euro populations and soon these pests far outnumbered the sheep.

From about 1920 onwards, suitable virgin country became scarce and graziers had to rely upon the areas already fenced. Under the grazing pressure of large flocks of sheep and

ever-increasing numbers of kangaroos and euros, the more palatable perennial plants were rapidly eaten out and replaced by less palatable species and by an increasing number of short-lived annuals.

The degeneration of the native pasture was accentuated by drought and the all-too-prevalent practice of leaving stock in the paddocks for as long as they continued to "do well", further hastened the destruction of the more palatable fodder plants.

Once the palatable and nutritious plants were eaten out and their place was taken by useless species, the carrying capacity of the paddocks was permanently impaired and no amount of "spelling" will change this. The only way to improve the grazing value at this stage would be to destroy the unpalatable plants and introduce suitable perennial species.

SOIL EROSION

The unpalatable perennials have value as a means of preventing soil erosion, however, and this point must not be overlooked.

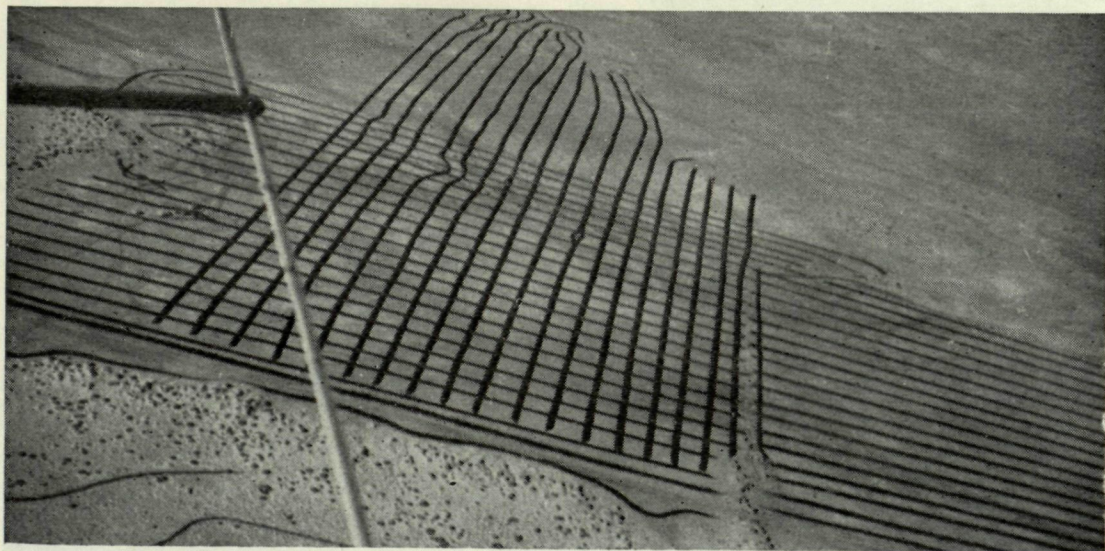


Fig. 1.—Aerial photograph showing chequer-board furrows at Mundabullangana Station. This is an experiment in re-grassing the "scalded" claypan country.

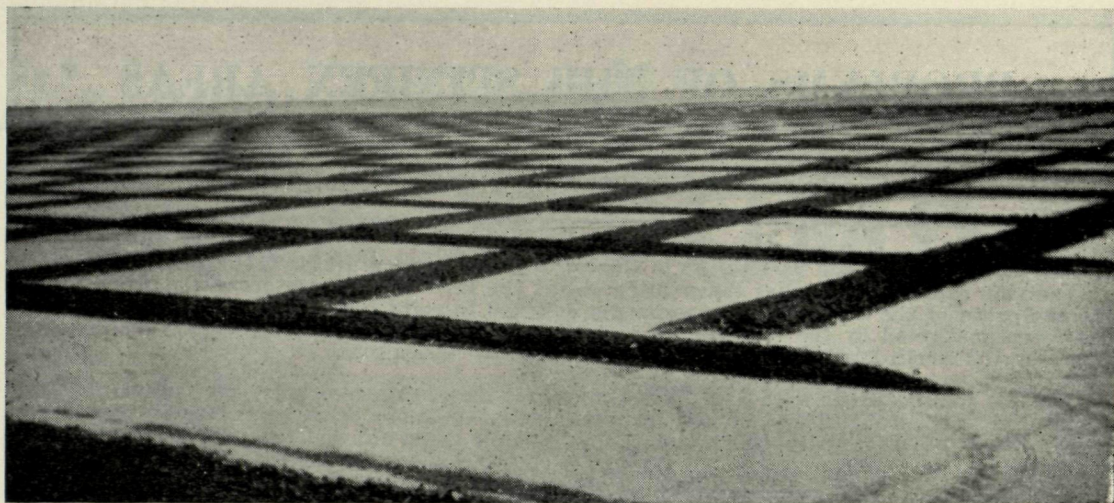


Fig. 2.—Closer view of chequer-board ploughing.

Wind erosion has exacted a heavy toll of soils on which the normal vegetation has been eaten out. The areas of "scalded" claypan country, from which the topsoil has blown away, are increasing daily, and claypans of 20 square miles in area are not exceptional.

"Pedestalling", where un-eroded soils stands up as much as 4ft. 6in. above the eroded surface may be seen in some areas. As the claypans are impervious to water, rainwater collects there and remains until it evaporates, leaving a deposit of salts. Some patches have a salt content as high as three per cent. and may be beyond reclamation at an economical cost.

MANY PROBLEMS

Before the present destructive tendency can be arrested, there are many problems to be solved.

Among these is the task of controlling vermin, mainly euros, which are present in tremendous numbers.

Soil deficiencies present another group of problems. It is realised that copper and cobalt are deficient in the coastal areas, and that phosphorus is generally deficient, but investigations are hampered by water being the limiting factor in many seasons.

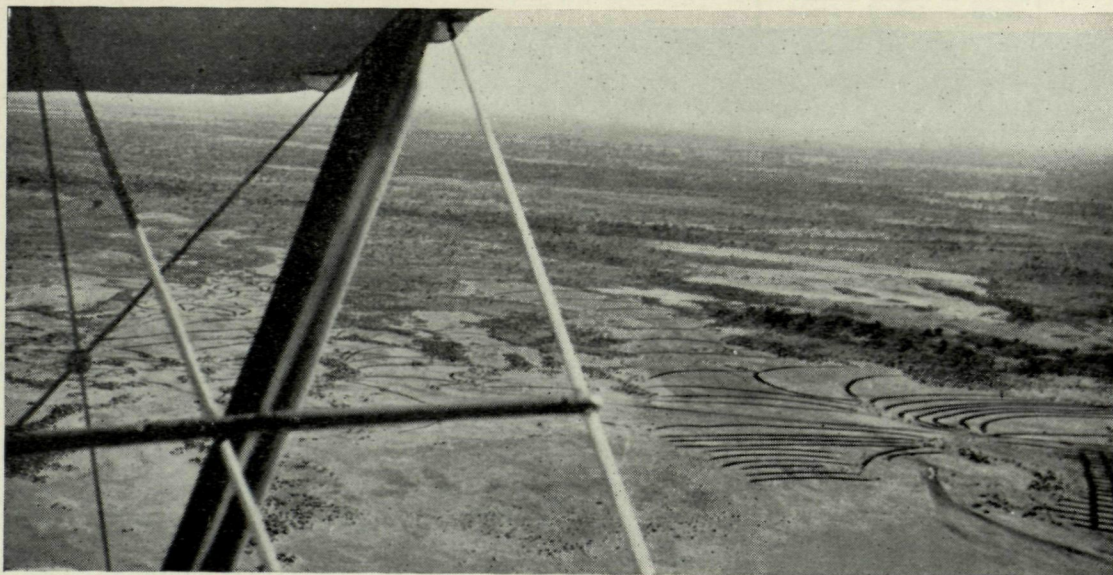


Fig. 3.—Contour furrows to arrest the spread of "scalded" country.

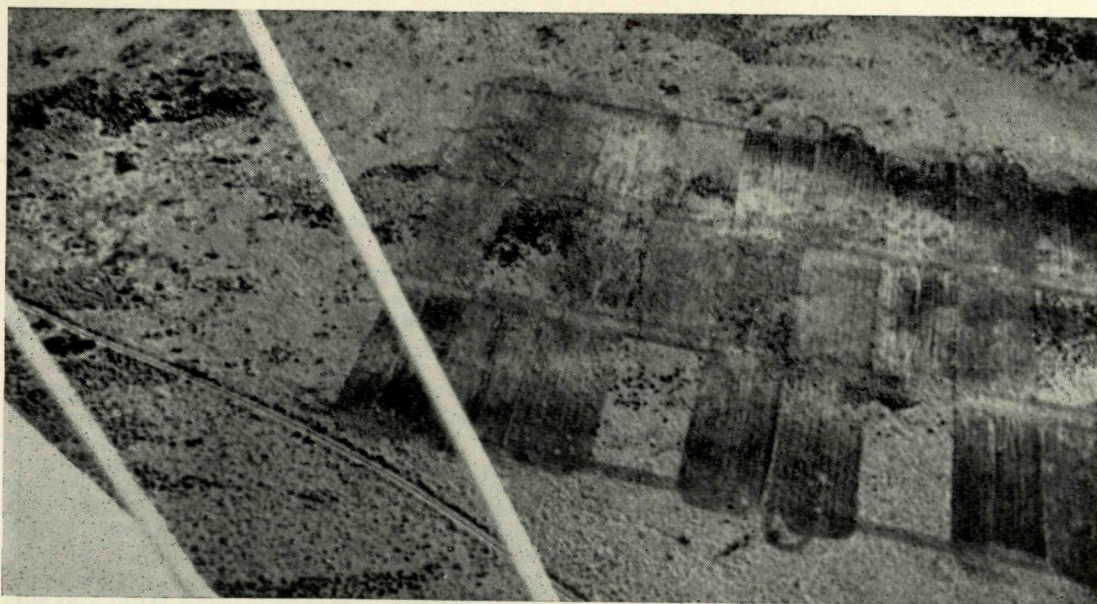


Fig. 4.—Aerial photograph of experimental plots on Mundabullangana Station. These plots were designed to test different methods of introducing Buffel grass.

Suitable perennials have to be found and this also implies research into the most economical methods of establishment over large areas, and into management methods designed to give maximum production without deterioration of the perennial vegetation.

The reclamation of the "scalded" areas must receive attention, not only because of the acreage of potential pasture which has already been lost, but because the claypan areas are encroaching upon the spinifex at an alarming rate.

EXPERIMENTAL WORK

To date, the North-West Branch has initiated a number of experiments, but due to the variability of the rainfall they must of necessity be regarded as long-term projects.

Considerable expenditure will be involved before the answers to the problems can be found but if the spinifex areas are to be used as pastoral country in the future, the work must be undertaken.

The present work may be grouped under the following headings:—

1. Introduction of Buffel Grass (*Cenchrus ciliaris*).

Buffel grass was accidentally introduced into Port Hedland with camel fodder about 1910.

It is a highly nutritious perennial and on coastal properties it was readily introduced over considerable areas. Inland, some pockets of it have been established, mainly near watercourses, but introduction elsewhere did not meet with much success. It was felt that some cultivation would assist establishment. Six treatments were tried on a five acre area, e.g.:

1. Burning.
2. Sweeping with drag.
3. Ploughing with disc plough.

4. Ploughing with mouldboard.
5. Rotary hoe treatment.
6. Control (no treatment).

Seed was sown with a pasture layer on all plots and covered with tandem disc harrows (except on control plot). Due to poor seasonal conditions results were not very definite in the first year, but indications are that the deeper cultivation was the more satisfactory one in that particular season.

Thanks to the co-operation and assistance from Mr. Lukis, of Mundabullangana, and Mr. McGregor, of Carlindi, it was possible to put down similar plots at these two stations.

Possibilities of acquiring more useful strains for this work are being investigated.

2. Management Practices.

A trial has been started, and will be extended with the object of studying the effects of different practices on spinifex grazing.

3. Soil Conservation.

Reclamation of these scalded claypan areas is attempted with systems of checkerboard and contour furrows.

4. Succession and Regeneration Trial.

Regeneration and succession of native vegetation after burning under different conditions is being observed.

- (a) Vermin proof enclosure. No grazing pressure.
- (b) Wire fencing to exclude sheep; kangaroos have access to this area.
- (c) No fencing. Both sheep and vermin have access to this plot.

5. Vermin Destruction.

Further investigations into economic means of destroying vermin are being planned.