



Department of
Primary Industries and
Regional Development

Journal of the Department of Agriculture, Western Australia, Series 3

Volume 5
Number 3 May-June, 1956

Article 16

5-1956

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Nunn, W. M. (1956) "Pastoral research - 'Munda' Field Day demonstrates real progress in the Port Hedland area," *Journal of the Department of Agriculture, Western Australia, Series 3*: Vol. 5: No. 3, Article 16.
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Fig. 1.—Mr. H. Suijdendorp addressing visitors at the Munda wool-shed

PASTORAL RESEARCH

"Munda" Field Day Demonstrates Real Progress in the Port Hedland Area

By W. M. NUNN, B.Sc. (Agric.), Officer-in-Charge, North-West Branch

WHEN a programme of research was first put in hand at Abydos Research Station in 1951, it was generally thought that an almost impossible task was being undertaken—that of demonstrating that sheep might still be carried profitably on country which had been abandoned after years of occupation as commercial sheep stations.

Some half-dozen stations, comprising about 3,000,000 acres, had been abandoned in the early nineteen forties after flocks of 15,000 and 20,000 sheep had dwindled to mobs of a few thousand or less. Why had the carrying capacity decreased so alarmingly, and could the trend be reversed to enable the country to be occupied once again?

These were the questions as they were asked in 1946 when the then Premier (Mr. F. J. S. Wise) directed that the Abydos and Woodstock leases be vested in the Department of Agriculture for development as a Pastoral Research Centre.

The task was rather a frightening one, especially as at that time the Department of Agriculture had no staff trained for pastoral area investigations, and no advisory personnel in the lease-hold regions.

It is not to be wondered that subsequent governments baulked a little at embarking on a research programme, and turned hopefully to the Commonwealth Scientific and Industrial Research Organisation for consultation. C.S.I.R.O. declined even more firmly. Here was a field where lengthy and costly research could go on for years and still produce nothing. Agricultural graduates were hard to obtain for positions much easier to fill than that of research worker at such an isolated post as Abydos.

And so, for a few more years, the region remained neglected, and the leases were simply maintained in working condition against the time when research might become a practical possibility.

In 1950, impetus was given to the Department of Agriculture's interest in northern



Fig. 2.—Claypan furrowed only a few months prior to the field day. Grasses germinated with rains in late February and were only six weeks old when the photograph was taken

areas, by the formation of a North-West Branch, grouping the Gascoyne, Kimberley and Abydos Research Stations and making provision for the appointment of Agricultural Advisers to work from each of these three centres. One of them, Mr. Hank Suijdendorp, was prepared to accept the hardship of residence in spinifex isolation.

The next bewildering problem was—"How do we start, and whatever do we do first in this great sea of prickly and uninviting spinifex, which sheep were said to eat though we couldn't imagine why?"



Fig. 3.—The dual furrow as it looks when first formed on bare claypan surface

The initial trials were, naturally, ill-designed in the absence of any basic information concerning the forages that had provided the earlier carrying capacity, but Mr. Suijdendorp turned out to be an astute observer and a hard worker, and he soon made adjustments necessary to direct trials toward the main objective.

Really remarkable results were obtained during 1952 and 1953. So much so that a field day was arranged for April 3, 1954, when pastoralists were shown trial areas of country carrying an attractive stand of perennial grasses where spinifex alone had been in evidence for years. By simply managing his grazing on a deferred rotational system Mr. Suijdendorp had converted a pure stand of spinifex into a mixed stand of grass and spinifex, and had carried a sheep to three acres throughout the year while doing so.

These results have been written up in earlier issues of "The Journal of Agriculture," and are available in leaflet form for distribution to interested readers—see particularly:—"Station Management—The Value of Deferred Grazing," Leaflet 2194, by W. M. Nunn and H. Suijdendorp, and "Changes in Pastoral Vegetation can provide a Guide to Management," Leaflet 2302, by H. Suijdendorp.

This does not mean that Abydos goes straight back into operation as a wool-



Fig. 4.—The whole area shown here was a continuous bare claypan surface four years ago. The original furrow may still be seen in the centre foreground

producing station. We have dealt with only one of the soil types which go to make up the area. The next, now under attack, consists of country rather less fertile, where grasses do not flourish and where the edible types of spinifex have been replaced by a complete stand of quite unpalatable and useless woolly spinifex (*Triodia lanigera*). This type may be very much slower to respond, but since one of the best of the palatable spinifexes (*Plectrachne schinzii*) is represented, the objective is to try to induce it to spread at the expense of its less useful relative.

In the meantime, work of this nature is not confined to Abydos. The Port Hedland group of the Pastoralists' Association is too lively a body to allow that to happen in their district. They have turned up in force to two field days at Abydos—the first in April 1954, the second in April 1955, and on Saturday, April 14, 1956, the third Pastoral Field Day was held, this time at Mundabullangana Station.

This station is owned by the Mundabullangana Pastoral Co., and managed by Mr. R. Lukis, who is also President of the local branch of the Pastoralists' Association.

A truly remarkable degree of co-operation has existed between Mr. Lukis and

Mr. Suijdendorp, since the latter commenced his studies in the Port Hedland area. "Munda." is one of the out-standingly successful stations of the area, and its facilities and manpower have virtually been placed at Mr. Suijdendorp's disposal for research purposes, with the result that trials on the different types of country here available have been carried out just as if it were a Government research station.

The field day on April 14, was a triumph in local organisation as well as an outstanding success in its value as an extension function. Pastoralists travelled from stations up to 450 miles distant to be present, and there were very few stations within a 200 mile radius which were not represented.

The Munda. shearing quarters provided better accommodation than has been available in earlier years at Abydos, and the Richardson Bros. did their usual excellent job of volunteer catering.

Although Munda. is an excellently-run station in a favoured coastal location, this has not spared it from the ills of overgrazing in the earlier years of continuous stocking at high levels, which seems to have characterised all pastoral regions.



Fig. 5.—Claypan almost reclaimed. This was photographed three seasons after the original furrowing

The same excessive stocking practice, which at Abydos resulted in the replacement of grasses by spinifex on Type 1, and of palatable soft spinifex by inedible woolly spinifex on Type 2, has, on Munda., brought about the formation of thousands of acres of bare claypan where high production grasslands were originally established. On another type, the continuous stocking procedure of earlier days has resulted in the invasion of grasslands by poverty bush (*Acacia translucens*) to such a degree that the more seriously affected regions had become virtually useless for grazing purposes, while areas totalling probably 150,000 acres were affected to various lesser degrees.

RECOVERY OF CLAYPAN AREAS

Work on these areas commenced in 1951, and visitors were able to inspect sections which had been furrowed at different times since that year with a variety of agricultural implements. Most success had been obtained using a 3-furrow mould-board plough with the middle share removed. This left two parallel deep furrows, with soil thrown up in a cloddy condition. The rougher the obstruction left in this way the better, as the objective is to check the velocity of ground level winds and bring about the collection of seed, soil and debris in those furrows.

Areas treated this way in 1952, with half-chain spacings between furrows, had been virtually covered over with a complete sward of grasses.

Perhaps the most telling part of the demonstration, so far as visitors were concerned, was the drive through thousands of acres of recently-furrowed claypan. This is no longer a trial treatment of uncertain outcome to Mr. Lukis. It is a routine station practice, and his plant is busy applying the treatment on a paddock-wide basis wherever these bare areas exist.

Deferred grazing is, of course, an essential part of the recovery programme. The furrows catch the seed and windborne soil particles. Deferment ensures that the plants produce and mature their seed for the densening of the cover in later years.

RECOVERY OF POVERTY BUSH AREAS

Only a few seasons back, when the first light seemed to be coming from the Abydos trials, where spinifex was disposed of by burning and grazing was deferred to promote grasses, the author inspected these poverty bush areas with Mr. Lukis and Mr. Suijdendorp. We felt that as an invader the bush should be capable of elimination, and if this could be arranged, then simple deferment should bring back the grasses. But poverty bush consists of a relatively loose tangle of sticks with an evergreen

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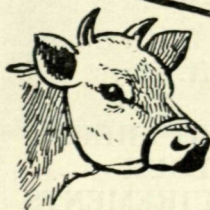


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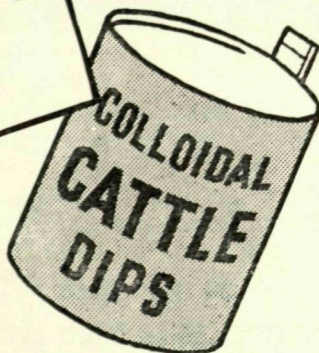
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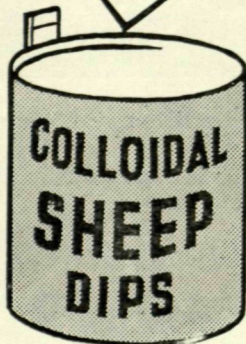
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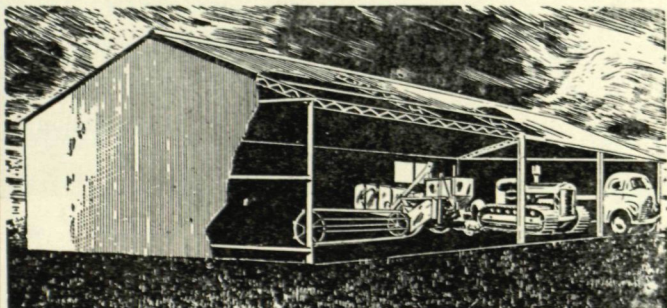
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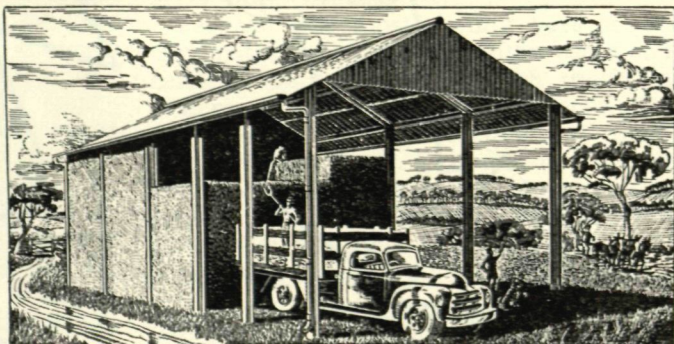
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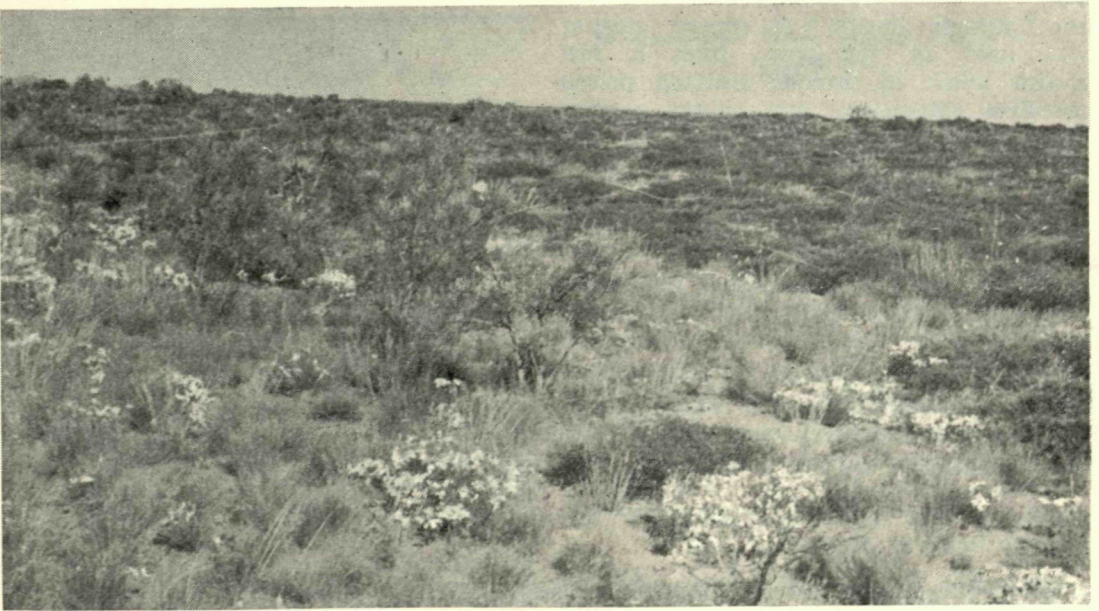


Fig. 6.—The area on the right is overgrown with poverty bush. On the left and in the foreground perennial grasses have returned after burning and deferred grazing

layer of foliage two or three feet above ground. The sheep can get in and keep down the few grasses that survive under this degree of competition. It is almost impossible then to muster them, and the bush won't carry a fire.

This seemed to be a stalemate at the time, because there could certainly be no means other than by fire of economically

removing a hundred thousand acres of poverty bush.

However, the answer was there to be seen on April 14, by the 54 interested visitors. Sheep had been removed from the paddocks in question for the growing period during two consecutive summers, to obtain a build up of inflammable material in the form of grass and spinifex below



Fig. 7.—Rotary slasher at work in dense poverty bush

the poverty bush. A rotary slasher was used to cut down lines a few chains apart to provide starting points for fires (Mr. Lukis now thinks a light scrub roller would be better), and at the appropriate time that poverty bush went up in a blaze.

Another deferment during the growing season following the fire, and those thousands of acres presented a picture of perennial grasses with only some black sticks to show that the poverty bush had once held sway.

In all, Mr. Lukis burned 40,000 of his 150,000 acres of poverty bush last summer. Jeeps dragging burning motor tyres over the accumulated material in hot summer overcame the final reluctance of the poverty bush to carry a fire.

Of course the poverty bush would return again if earlier continuous grazing methods were resumed, but the position is much clearer now, thanks to Mr. Suijden-dorp's studies, and Munda. will make sure that grasses are given their opportunity to mature and drop seed. This is all the help they need to enable them to beat the slow growing poverty bush.

Illustrating the value of this work to Munda., Mr. Lukis stated that the 40,000 acres treated this year might have carried a sheep to 15 to 20 acres, but was rapidly going further downhill. Since recovery he now rates it as a sheep to five acres.

Once again it has been demonstrated that research carried out on a practical basis pays high dividends. There is call for more and more of this class of investigation throughout the pastoral regions.

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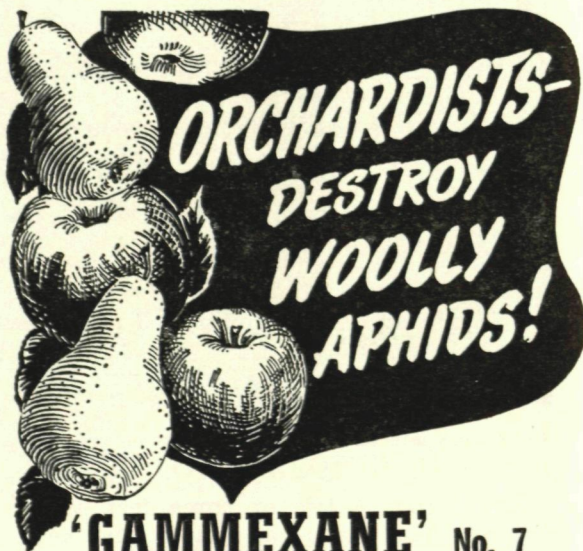
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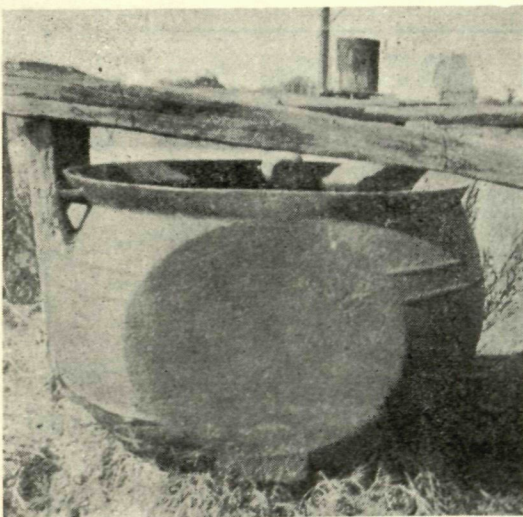
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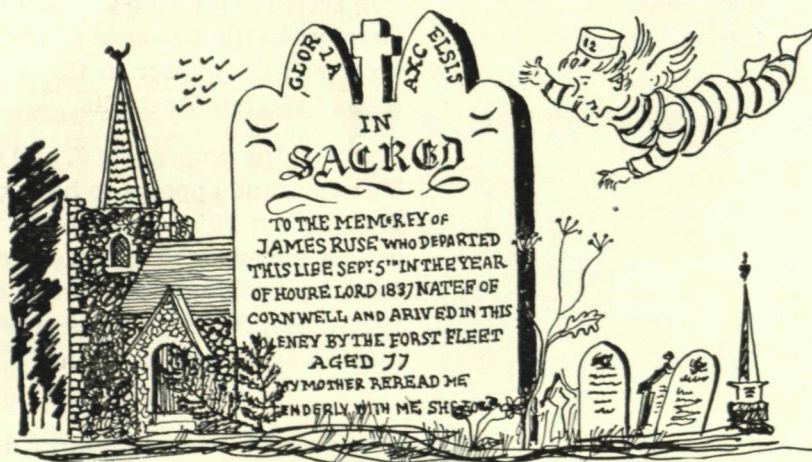
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