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SPINIFEX SCHOOL
ANOTHER PASTORAL INNOVATION

FOUR years ago, the North-West Branch of the West Australian Department of Agriculture held a field day in the spinifex pastoral area, inland from Port Hedland. The gathering was such an outstanding success that it became an annual event. This year, the field day was preceded by a four-day "school" at which the "students" were 12 local pastoralists and six Departmental officers from as far away as the Kimberleys and Carnarvon.

The school was held at the Abydos Pastoral Research Station from October 8 to 11 inclusive and the instructors were a team of specialist officers:— the Animal Nutrition Officer (Dr. L. C. Snook), a Government Veterinary Officer (Mr. A. W. Williams), an instructor from the Sheep and Wool Section (Mr. M. Butler), a Research Officer of the C.S.I.R.O. Wild Life Section (Mr. E. H. M. Ealey) and the Regional Adviser of the North-West Branch (Mr. H. Suijdendorp).

THE ABYDOS STORY
Abydos Station, inland from Port Hedland in the spinifex belt, has an area of nearly 400,000 acres and the adjoining property, Woodstock Station is some 267,000 acres in extent.

About 27 years ago Abydos and Woodstock Stations had a combined sheep population of 33,000, but by 1944 there were only 7,000 sheep on the two properties and by 1946 they were empty and abandoned.

The decline in carrying capacity was not confined to those two stations but was typical—to a greater or lesser degree—of conditions over a large area of spinifex country.

Various factors had contributed to the decline—there had been some drought years, kangaroos had multiplied, dingoes were taking toll of the flocks, and occasional cyclones had caused severe damage.
Undoubtedly all these factors had played their part but were there other factors that were even more important? The State Government decided to find out and in 1946 Abydos and Woodstock were purchased as a base for an investigational programme.

The man chosen to carry out the preliminary work was Hank Suijendorp, a young Dutchman who had commenced his agricultural science studies in Holland, served with the Dutch Navy during World War II and completed his studies at the University of Western Australia.

In the early 1950’s he commenced a series of regeneration and stocking management trials at Abydos, as a result of which he evolved the system of “deferred grazing” which has lead to the regeneration of large areas of pastoral country in the district.

He decided that the main factor in the decline of carrying capacity was the selective grazing of the more palatable and more nutritious perennial plants. These were eaten down to such an extent that they had little opportunity to set seed. Often the root reserves were exhausted and the plants died out—leaving the way clear for the multiplication of unpalatable and innutritious herbage which barely provided a maintenance ration and left no margin of nutriment for breeding and lactation.

In “deferred grazing,” the stock are excluded from a portion of the run immediately following the first rains. This allows the grasses to seed and build up their root reserves. After seeding is complete, the area is heavily stocked so that seed is trampled into the ground to produce a still better stand when the rains come again.

POINTS FROM THE PASTORAL SCHOOL

The importance of pastoral production in the Australian economy was stressed by Dr. L. C. Snook, who pointed out that on typical stations in the Port Hedland area the produce sold per man employed could reach a figure of £9,000 per annum, while
substantial contributions from the gross annual returns of stations were paid out in taxation.

All over the world we could see deserts in low rainfall areas which had once supported pastoral communities and the object of the current school was to show that we could not only maintain a valuable asset but could actually improve carrying capacity by correct management, by introducing suitable pasture plants and by water conservation.

To achieve this desirable end, the pastoralist, the field officer and the scientist must meet and work together.

Dr. Snook said that while it was generally assumed that supplementary feeding of stock was uneconomic under station conditions, this was not necessarily true. Feeding ewes during the period when natural feed was harsh and unpalatable could influence mating so that lambs were dropped when feed was good. The supplementary feeding of ewes near to lambing would pay in many cases by saving animals which otherwise might die.

He discussed methods of feeding to achieve these results, together with estimated costs. Most livestock problems in the pastoral areas stemmed from insufficient feed or a deficiency of some specific substances which were necessary to maintain health.

The effects of feeding on fertility and gestation were discussed.

In a series of lectures and discussions, Mr. H. Suijdendorp described the effects of soil moisture conditions on vegetation under arid conditions; how heavy grazing affected plants; the geological origin of local soils and its effects on plant growth, and the systems of grazing management which would encourage the recovery of the better species of pasture plants.

He discussed spinifex burning as an aid to achieving a better pasture composition by suppressing the harsh undesirable species, and showed by means of experimental plots that the best results were achieved by summer burning.

Burning in December, followed by deferred grazing in the subsequent wet season gave the best results.

Winter (mustering) burning was inadvisable for several reasons. It was apt to destroy seeds of nutritious grasses; it left the soil bare and subject to erosion for periods up to nine months; it often encouraged the growth of undesirable species, and because of the patchy nature...
of the burn, the stock tended to congregate on the burnt patches after the rains, so that the areas were stocked far beyond their capacity.

Mr. M. Butler of the Sheep and Wool Section discussed the blowfly menace and gave demonstrations of crutching and mulesing as an aid to minimising fly-strike. The "students" were encouraged to try these operations themselves and successfully worked through a flock of 90 sheep under Mr. Butler's supervision. His helpful comments and the pithy anecdotes with which he lent point to his talks were a feature of the school.

The visiting veterinary surgeon, Mr. A. W. Williams, described the sheep diseases which pastoralists are most likely to encounter, particularly those affecting fertility.

He demonstrated the manual examination of rams and the method of vasectomising a ram so that it is rendered infertile but capable of being used as a "teaser."

KANGAROO CONTROL

Most dyed-in-the-wool pastoralists regard themselves as authorities on kangaroos, but scientific investigations carried out by Mr. "Tim" Ealey of the C.S.I.R.O. Wild Life Section have upset many long-cherished ideas.

At Woodstock Station, Mr. Ealey has been engaged in intensive studies for several years using mechanical and electronic devices to check on the drinking habits of the euros; testing the reactions of the animals to various poisons and endeavouring to amass data which would assist in evolving successful methods of control.

His studies have shown that a large percentage of the kangaroo population in this harsh, dry area of high temperatures habitually go without drinking for weeks at a time—a discovery that has come as a surprise to many people who believed that poisoning water supplies for a few consecutive days would significantly reduce kangaroo numbers.

Some of the school students saw kangaroos being caught in trapping yards and fitted with plastic collars carrying reflector tape symbols so that they could be identified when coming in to drink at night. A spotlight and telescope or binoculars were used in this work. At some mills, all kangaroos coming in to drink were automatically sprayed with coloured dyes to assist in identification.

A popular feature of the school was the showing of coloured slides in the evenings, with informal discussions and "question times."

A SUCCESSFUL FIELD DAY

Over 60 people attended the fourth annual pastoral field day on Saturday October 12. Bringing their "swags" and "tucker-boxes," some of the pastoralists had come from properties 300 and 400 miles away to take part in the proceedings.

The roll-call of station men included Messrs. B. Knight (Yalgo); J. Stickney (Croydon); J. and M. Featherby (Sherlock); R. Lukis and F. Murray (Munda); D. Haldane (Mallina); P. Corbin (Karratha); J. Lewis and R. Lockyer (Yallalong); R. and K. Eckerman (Mulyie); P. Rushforth (Calliwa); J. Hardie and J. Fisher (Warralong); A. Spring (Roy Hill); C. Newland (Marillana); D. Scott (Eginbah); R. Sharpe (Mardie); W. Rose (Coongan); P. Hardie (Boodarie); J. Richardson (Pippingarra); B. Paterson (Yalleen); D. Shilling and J. Olive (Muccan); J. Leete (Bamboo Springs); G. Mallett (Lime Stone); H. Richardson (Noreena Downs); J. McMackin (Banny Downs) and J. Kerr (Indee).

The Officer-in-Charge, North-West Branch (Mr. W. M. Nunan), officially opened the field day and welcomed the visitors. The specialist officers, who had lectured at the school, were introduced so that pastoralists could have opportunities of discussing their problems during the day.

The Regional Adviser (Mr. H. Suijendorp) outlined the day's programme and a move was then made to the C.S.I.R.O. kangaroo trapping yards near Woodstock Station homestead where the various trapping, counting and marking devices were inspected and described.

PASTORAL MANAGEMENT

The next stop was at the original management trial which has been in operation since 1952.
In this trial, half the plots had received the “deferred grazing” treatment—sheep at the rate of one to four acres being introduced shortly after seed drop in winter each year. The other half of the plots had never been grazed.

The deferred grazing area showed a noteworthy return of perennial grasses while the ungrazed portions carried little vegetation other than harsh spinifex.

The most interesting feature of this trial however was the effect of burning the spinifex at regular intervals. Even where deferred grazing is practised a burn is necessary every four years to prevent the spinifex from crowding out the other species.

Plots illustrated the advantage of burning in November-December prior to the summer rains. Winter burning destroyed valuable seeds and the winter-burnt plots illustrated this most effectively.

MATING THE EWES

Another stop was made at the oestrus cycle trial where work is in progress to determine the incidence of heat periods in ewes under the conditions prevailing in this area. It is possible that by using vasectomised rams as “teasers” prior to mating, a better conception rate could be achieved. In this regard too, there could possibly be advantages in supplementary feeding or “flushing” of the ewes prior to mating.

ROTATIONAL V. CONTINUOUS GRAZING

The most important trial inspected was that in which 12 one-acre paddocks in which deferred rotational grazing is practised are compared with a single 12-acre paddock which is grazed continuously. Stocking rates are the same in each case (a sheep to four acres) and the sheep are weighed and wool yields compared.

This season, possibly owing to some good rains, the wool yields were approximately even in both the rotational and continuous grazing sections. Last season the rotational yield was almost double that of the continuous grazing area.

The most striking feature of the trial however is the difference in the pasture species. In the rotationally-grazed section, there is an excellent mixed pasture containing numbers of grasses, mostly perennials, while the continuous grazing section produces nothing but spinifex.

WATER UTILISATION

After a buffet lunch at Woodstock, capably arranged by Messrs. A. and J. Richardson, visitors were shown a new water-spraying trial which aimed at utilising excess water during the wet season by spreading the run-off over a slope through a series of furrows. This is now prepared and will be tested during the next wet season.
Another project was an attempt at "water-harvesting." A low dam has been constructed and a system of furrows dug to utilise the stored water.

This is a small-scale experiment designed to overcome one of the area’s main problems—the lack of regularity in the rainfall. It is possible that, by storing excess water, even over short periods, it may be possible to develop small but highly productive areas incorporating better pasture species. On these areas, regular supplementary irrigation could be applied between the irregular heavy falls of rain.

During the evening, each of the specialist officers gave short addresses and answered numerous questions.

The Officer-in-Charge, of the C.S.I.R.O. Wild Life Survey Section (Mr. F. Radcliffe), made an appearance by plane late in the afternoon and addressed the visitors on some of the aspects—and the difficulties—of the C.S.I.R.O. approach to the kangaroo problem.

At the conclusion of the field day, a vote of thanks was moved by Mr. Rob Lukis, Chairman of the Port Hedland branch of the Pastoralists’ Association. He was supported by Mr. D. Shilling who had taken a leading part in the many lively discussions at the school lecture sessions.

Both these gentlemen were highly complimentary in their tributes to the quality of the work carried out by the Department of Agriculture but put in a strong plea for more officers to extend the work beyond its present limited confines and to provide an extension service based on the convincing results obtained at Abydos.

In his closing remarks, Mr. W. M. Nunn complimented the Port Hedland branch of the Pastoralists’ Association on their ability and willingness to co-operate in matters of common interest. It was this co-operation which had made possible firstly the field days and then the pastoral school.

Port Hedland had set a high standard in this respect and the success of these gatherings was its own reward and a source of pride and gratification to the officers of the North-West branch and the C.S.I.R.O. who were working hard in an endeavour to provide answers to the many problems besetting the pastoral industry.
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