Gascoyne Research Station - A progressive centre.

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IN 1922, at the request of the Secretary for the North-West Department, Gascoyne Location 125 (49 acres) was reserved as an experimental plot for tropical agriculture. In 1932, the area was re-surveyed to take in portion of an adjoining reserve, bringing the area to 64 acres.

Apart from fencing, very little developmental work was undertaken for a number of years but by 1941, 700 banana plants and a number of other tropical fruits were planted on a small cleared area serviced by an irrigation unit erected on the bank of the Gascoyne River. This was a 7-11 h.p. diesel engine and 2½ in centrifugal pump drawing from a 5½ ft. diameter concrete cylinder well sunk to a depth of 27 ft. in the river sands about 250 ft from the bank. At that time there were about 800 ft. of concrete channels and 80 spillways of various types being tested.

Originally, the research station was administered by the Horticultural Branch of the Department of Agriculture, but it was transferred to the newly-formed North-West Branch in 1951.

PRESENT ACTIVITIES.
Today, the station has approximately ten acres under cultivation of which seven acres are under bananas.

Other crops being tested include avocados, mangoes, pineapples, papaws, citrus macadamia nuts, date and coconut palms, sorghum and lucerne.

Trials with various types of shelter belts—which are very important in banana culture owing to the strong and persistent winds encountered in this area—include athel tamarisk, river gum, pigeon peas, bamboo species, *Leucaena glauca* and two tall banana varieties, the Lady’s Finger and the Sugar Banana.

To water the irrigation areas on the Station, up to 1,000,000 gallons of water a week is pumped from five wells in the river...
Fig 2.—A young bunch of bananas in one of the trial plots.

The station is fortunate in that these wells give relatively salt-free supplies and, even during long drought periods when pumping has to be maintained for up to 900 hours a month, the supply has never failed.

The Research Station held its first field day in May, 1951, and this was followed by a second field day in May of this year when about 150 local planters and visitors attended.

The second field day was officially opened by the Acting Minister for Agriculture (Mr. L. F. Kelly), who was accompanied by the Director of Agriculture (Mr. G. K. Baron Hay), and the Officer-in-Charge, North-West Branch (Mr. W. M. Nunn).

Addressing the visitors the Director said that although the research station had originally been established primarily for work on banana culture, its scope had been widened and the North-West Branch now had officers engaged on pastoral as well as agricultural problems, with Carnarvon as the headquarters of a team of agricultural scientists working over a wide area.

Mr. Nunn said that although bananas and beans had long been regarded as the principal crops produced at Carnarvon, lucerne was attracting much attention and other crops were being tested.

He felt that there was scope for research work into water usage as at present the bananas were receiving about 4in. weekly or over 17ft. a year. This was more than rice received and he thought that quantities might possibly be reduced without affecting yields.

Visitors inspected the following banana trials which were described by the Tropical Adviser (Mr. J. J. C. Suckling):

CLOSE PLANTING TRIAL.

Bananas are normally planted on the square 10ft x 10ft. (435 plants to the acre) in the first year. In the second year three suckers or “followers” are left on each plant bringing the number to 1,305 plants. In the Close Planting Trial the first year plants are planted 5ft x 5ft. giving 1,400 plants to the acre and this is maintained by leaving one “follower” on each plant.

Total production to date from the time the experiment was commenced in 1951 has been higher in the close-planted sections, despite the fact that these sections were severely affected by the cyclone in March, 1953.

LONGEVITY TRIAL.

The initial yields of close-planted areas are naturally better owing to the greater number of plants to the acre.

Production on these trials commenced in January, 1951, using plots of Cavendish and Golden Gros varieties to ascertain whether long-term production was affected by close planting. To date, no diminution of output has been apparent.

After recovery from the cyclone damage Golden Gros yielded at the rate of seven tons to the acre. Cavendish again stood by as a “bad weather friend” and maintained production from March, 1953 (when the cyclone struck) to mid 1954. The
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Golden Gros produced no fruit during that period and but little during the following six months. Over the life of the plots however the Golden Gros plots have produced nearly three tons to the acre more than the Cavendish plantings.

All plots in this trial received similar manurial treatments, namely, 1 oz. sulphate of ammonia per plant per month up to June, 1950, after which the dressing was increased to 1½ oz. per month. Blood and bone at the rate of 8 oz. per plant was applied during August and January of each year.

COMPLETE FERTILISER TRIAL.
In experiments with nitrogen, phosphorus and potash the records to date would tend to confirm Prof. L. T. H. Teakle's findings that nitrogen is deficient in these soils.

Indications are that potash is also a major deficiency but little conclusive evidence is yet available.

Work involving trials with lime, gypsum and sulphur are as yet not sufficiently advanced to warrant comment.

LUCERNE IRRIGATION TRIAL.
The North-West Branch Agrostologist (Dr. B. Rumich), speaking at the field day and later at a showing of colour slides at the Gascoyne Hotel, described work being carried out at the research station to determine the most economical quantities of water which should be applied to sprinkler-irrigated lucerne plots.

Several types of sprinklers were being tested, and daily, two-daily and weekly applications at different rates were being compared.

Dr. Rumich said that he felt that lucerne-growing was destined to play an important role in irrigated agriculture in the North-West. In the form of baled hay it gave a readily saleable product and it was especially valuable as a soil improver.
Lucerne-growing increased the nitrogen content of the soil and provided humus which improved the texture and water-retaining properties.

Carnarvon's principal crop, the banana, was highly salt-susceptible. With anything over 40 grains of salt to the gallon, banana-growing became a risky undertaking but good lucerne crops could be produced with water containing almost 200 grains to the gallon.

In the evening, Dr. Rumich showed a number of slides depicting excellent lucerne plots grown on station properties where the irrigation water was carrying between 150 and 200 grains of salt to the gallon.

OTHER CROPS.

For some years, the station has carried experimental plots of pineapples under flood and sprinkler irrigation but no marked success has yet been achieved with these fruits. Yields tended to be low and the fruit was apt to scorch badly during the hot weather.

Work with papaw varieties is proceeding and trial plantings of avocados have done well.

Date and coconut palms are under trial, the latter being in their seventh year of growth and coming into production.

Macadamia nuts and citrus have given good yields but marketing conditions are at present unsatisfactory. Sorghum had grown well and a number of vegetables had given good results. A grass garden for plant introduction work has been established on the station and a number of research projects are in hand.

DRAGONFLIES.

Several visitors to the field day asked for information concerning the control of dragonflies which were damaging large numbers of young beans by laying their eggs in the stalks of the plants, causing them to wither.

Agricultural Adviser, H. Suijdendorp said that dragonflies had been very numerous this season but pointed out that the adult insects were not plant eaters but preyed on other insects.

They laid their eggs in water-plants or plants growing near water and, in the case of beans, the "hemstitching" effect caused by the rows of puctures was often responsible for serious damage to the young plants.

The dragonfly larvae lived in water, he explained, and eventually reached the "nymph" stage after which they crawled out of the water and the adult fly emerged from the nymph casing.

Around the station's 63,000 gallon tank, which had recently been drained, Mr. Suijdendorp showed visitors a number of the empty nymph skins just above the former water-level.

He suggested that the most effective method of control would be to kill the larvae in the aquatic stage by covering water in pools and tanks with a thin film of kerosene or other oil.
THE MESQUITE MENACE.

Concern was expressed by several visitors who spoke of the rapid spread of the introduced plant, mesquite, in the Carnarvon area.

Mr. Suijdendorp said that mesquite was hardy and drought-resistant and because it made an attractive shade tree, a large number had been planted in various parts of the North-West.

Mesquite trees bore pods, the flesh of which was rich in sugars, and these were both palatable and nutritious to livestock. The pods contained seeds which were rich in proteins but most of the seeds were so hard that they passed through the digestive tract intact and were distributed far and wide in the droppings of the animals.

Professor W. Phillips, Professor of Botany at the University of Arizona had recently visited Western Australia and he said that in Arizona, where the tree is indigenous, it had suddenly commenced to spread about 50 years ago and had now over-run 9,000,000 out of 15,000,000 acres of that State's desert grassland.

Mesquite forms dense thickets and develops taproots that penetrate to a great depth in search of water. It also forms a mass of surface roots which makes it impossible for grasses to grow near the trees.

Mr. Suijdendorp said that the "explosive" nature of the tree made it particularly dangerous. One station in the Onslow area had six mesquite trees growing on it in 1930. In 1945, the trees suddenly "ran amok" and today there are 36 acres of the property covered with mesquite thickets.

Considerable variation in leaf size and growth habit was noticed among trees growing in the North-West. It was believed that the original introduction were a spineless variety but many had reverted and now carried thousands of sharp spines from \( \frac{1}{8} \) in. to 3 in. long.

A mesquite thicket was a dense mass of spine-armed plants that soon became impenetrable. No time should be lost in eradicating mesquite from the Carnarvon area where it had already become firmly established.
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