

Advance

THE CONTROL OF A TSETSE-FLY (GLOSSINA) ADVANCE
BY USE OF RESIDUAL INSECTICIDE

Chiredzi River,
Southern Rhodesia.

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by

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INTRODUCTION

The operations were carried out on the Chiredzi River, Ndanga District, Southern Rhodesia.

The Chiredzi River is a tributary of the Lundi River, into which it flows at a point near the northern edge of the open basalt zone which runs NE - SW across this part of Southern Rhodesia. From the confluence the Lundi River flows southwards through the basalt to the granite Chiwonja Hills.

In 1958, G. morsitans and G. pallidipes had been caught in the Brachystegia tamarindoides woodland of the hills, 15 miles south of the confluence.

The lower Chiredzi, which forms the western boundary of Lone Star Ranch, runs for the last ten miles of its course through a belt of alluvium, generally a mile wide.

On either side, the basalt soils support a low woodland of Colophospermum mopane. This scrub mopani, which extends over much of the basalt zone, is leafless and inhospitable to tsetse during the dry season. On the alluvial belt, however, the woodland is dense, and green for most of the year.

On the alluvial sands, away from the river, there is a tall woodland of Colophospermum mopane, with Grewia spp. and Euclea sp. in the understorey.

The grey alluvial soils close to the Chiredzi support a dense woodland of Acacia heteracantha, Lonchocarpus capassa and Combretum imberbe, with a locally dense understorey of Maytenus cymosa and Acacia ataxacantha. On the west bank, these soils carry A. heteracantha parkland.

The steep banks of the Chiredzi are clothed with a heavy riverine fringe association. Such species as Trichilia emetica, Diospyros mespiliformis and Acacia galpinii occur with a dense understorey including Lecaniodiscus fraxinifolius and A. ataxacantha.

This alluvial woodland was a most suitable tsetse habitat, and formed a potential avenue of advance for tsetse, northward from the Chiwonja hills, and across the basalt zone.

West of this zone lie some 10,000 square miles of low veld now carrying about 350,000 head of cattle, but little human population. This area was infested with tsetse-fly (presumably G. morsitans and G. pallidipes) prior to the Great Bitternest of 1896. It is a matter

this would take several months to complete it was decided to eliminate the new focus of tsetse infestation by insecticides.

The riverine fringe and alluvial woodland, described above, along the lower 10 miles of the Chiredzi, and the riverine fringe along 8 miles of the Lundi River were selected for treatment with dieldrin, a total of over 3,000 acres.

The dieldrin was applied as a 3.6% emulsion. This concentration was used in the hope of avoiding defoliation, which may occur when a 5% emulsion is applied. A second application of a 1.8% dieldrin emulsion was planned to follow 2 months after the first.

Ten "Motoblo" machines were used to apply the insecticide. These are motorised, shoulder-mounted, mist-blowers. Each was attended by a team of 5 men.

It was decided that a sufficient cover of insecticide would be laid down if it were applied in parallel swathes, 40 yards apart, each swathe being 5 - 10 yards wide.

Except in the initial stages, no traces or paths were cut for the machines. It was found that the 40 yard interval could be maintained by eye where the whole span worked as a unit, in line abreast.

All foliage and tree boles along the swathes were sprayed to a height of 10' above the ground. Samples of the deposit were obtained from filter papers pinned on tree boles, 5' above the ground. The mean of 10 deposits was 337 mgm per square metre, estimated by the Colonial Pesticides Research Unit, Arusha.

This figure can be compared with those obtained in work with 2% Dieldrin at Voi, Kenya ⁽¹⁾ where deposits of the order of 160 - 230 mgm/square metre were obtained. In work with 5% Dieldrin in Uganda ⁽²⁾ a mean deposit of 790±300 mgm/square metre was obtained.

The first application of 3.6% Dieldrin emulsion took place during September, October and November 1959 in a total of 15 working days. The second application of 1.8% Dieldrin was started in November, but had to be abandoned owing to the onset of the rains.

During the first application, 1655 gallons of 3.6% Dieldrin were applied to 3125 acres of woodland and riverine fringe, at a rate of 0.6 gallons per acre. This is equivalent to 0.105 gallons of Dieldrex "15" per acre.

Table 2

Insecticide - 331 gallons	£	s	d
Dioldrex "15"	701	14	6
Fuel (approximately)	20	0	0
Labour (approximately)	331	0	0
Transport (approximately)	<u>70</u>	<u>0</u>	<u>0</u>
	<u>£1122</u>	<u>14</u>	<u>6</u>

The last cases of trypanosomiasis occurred on Lone Star Ranch in September, when the spraying commenced.

In November, 1959, all cattle on the ranch were inoculated with Berenil. This removes any latent trypanosomiasis, but confers no lasting protection. The cattle were therefore open to infection at the end of December, 1959.

Since no fresh cases occurred in January, February or March, it may be concluded that the cattle are no longer in contact with the fly, and that the tsetse population in the area has, for the present, been controlled.

SUMMARY

1. A northward extension of the south eastern fly-belt occurred on the Lundi River in 1959, accompanied by an outbreak of trypanosomiasis on Lone Star Ranch.
2. Dioldrin was applied to riverine vegetation in the area during September - November, 1959.
3. No further cases occurred on the Ranch during the period October 1959 - March 1960.
4. It is considered that the tsetse population in the area has been effectively controlled.

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References: (1) Cockbill. G.F. (1959) Departmental Report