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Sorghum midge : threat to re-cycle cropping

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High temperatures and ample irrigation water allow grain sorghum to be grown throughout the year on the Ord River Irrigation Area, and observations in 1969-70 indicated that it may be possible in this area to produce three crops in one year from one planting, by ratoon cropping.

This article describes the technique and discusses its possibilities on the Ord.

The sorghum midge, one of the worst pests of sorghum, could well make ratoon cropping impossible, but the midge has not yet been seen in this area.

By P. J. MAY
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GRAIN SORGHUM IN THE ORD VALLEY—THREE CROPS A YEAR?

IRRIGATED grain sorghum appears to have great potential in the Ord River Valley.

However, yields per crop of sorghum on the Ord are not yet as high as yields in more temperate areas and one of the main reasons for this is that the grain sorghum varieties now available have been developed for more temperate regions than the tropical climate of the Ord Valley.

A vigorous programme of variety testing and selection has started at Kimberley Research Station and increased yields can be expected once varieties selected for high temperature conditions become available. However, these may take up to 10 years to develop.

Offsetting this disadvantage, the high temperatures of the Ord Valley and the availability of irrigation water throughout the year enable more than one crop to be grown each year.

In temperate regions, growth stops in winter and temperatures below freezing kill the sorghum plant. Thus only one crop can be produced annually.

The relatively high temperatures of the winter (dry season) and complete absence of frost in the Ord Irrigation Area, allow growth of the sorghum crop to continue throughout the year, provided it is watered regularly.

It appears feasible to produce three crops of grain sorghum from one planting in the one year. The crop is planted in January and the first harvest taken off in April-May. The sorghum plants are then slashed to 1 to 2 inches high, re-fertilised and re-watered. Tillers shoot from the base of the plant to produce a second crop which is harvested in August-September. The plants are slashed off again and a third cycle is grown and harvested in November-December.

Early wet season storms in November-December could pose a problem when the third cycle crop is maturing under wet conditions that could cause mould and grain spoilage. But even if the third grain crop is not achieved, the crop could still be foraged or grazed by cattle.
To obtain the three crops in one year the time from planting or slashing to harvest must be reduced to a minimum, and to achieve this the grain must be harvested at moisture levels too high for safe storage without heating and subsequent spoilage.

Satisfactory results have been obtained by harvesting the grain at moisture levels up to 24 per cent. and then drying it to a storage level of 14 per cent. For drying, the grain is stored in steel mesh silos lined with flywire. Air is blown through the silos, and because of the low relative humidity of the air during the dry season in the Ord Valley, the grain dries readily.

If it is to be used locally as a stock feed, a preservative can be added to the moist grain to kill the micro-organisms which cause heating and spoilage. The grain can then be safely stored at the moisture content at which it was harvested.

To hasten maturity of the grain on the plants, the crop may be sprayed with a desiccant. This dries off the leaves, and the moisture content of the grain falls more rapidly than if the grain were allowed to mature naturally.

These techniques allow earlier harvest and a reduction in the time of each growing cycle.

Other advantages arise from earlier harvesting:

The sorghum plant is still actively growing when slashed, and tillering starts immediately. If the grain is allowed to mature on the plant, the plant becomes dormant and does not tiller immediately.

White cockatoos or corellas attack sorghum in the Ord Valley. Earlier harvesting reduces the time that the grain is exposed to damage by the birds.

If growers can take full advantage of the continuous growing season by producing three crops each year, grain sorghum has the potential to become a major crop of the Ord Irrigation Area.

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**SORGHUM MIDGE—THREAT TO RE-CYCLE CROPPING**

*By D. G. SHEDLEY, Entomologist*

SORGHUM midge is one of the most widespread and persistent pests of any crop. Under suitable conditions, the midge can halve the yield of grain sorghum crops.

Midge occurs in all the major sorghum-producing countries of the world. It has been a problem in Queensland for many years but has never been seen in Western Australia. However, it was noticed in the Northern Territory for the first time last year.

Adult sorghum midges are only a few millimetres long. They can be easily spotted in the crop by trained observers, but otherwise are seldom noticed. The larvae, which spend the whole of their lives within the sorghum spikelets, are even less conspicuous.

When conditions are unfavourable the larvae enter a resting stage within the spikelet. Here they are protected by the glumes of the spikelet and by a silken cocoon which they spin. In this stage they can survive freezing or drying and remain alive for years.

The adults begin to emerge with the first flowering of sorghum in the new season. Each adult has a life span of only 8 to 10 hours but can quickly multiply to damaging numbers.

The insects are most damaging to ratoon crops—that is, second and third crops from the one planting. This system is very high-yielding where insects are not a great problem, but is rarely practised because of the great damage caused by the midge.

At Kununurra last year, a Department of Agriculture trial produced more than 10,000 lb. of grain per acre (170 bushels) by ratooning.

Should the sorghum midge gain a footing in Western Australia such yields would be impossible, unless resistant strains or economic control measures can be found.