

THE COMPETITION OF SOME LESS COMMON WEEDS WITH WHEAT

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The two main weed species occurring in wheat crops in north-east Victoria are Wimmera ryegrass and wild oats, and their damaging effect has been well documented. However, in years of above-average winter rainfall, other weeds, predominantly toad rush (*Juncus bufonius*), loosestrife (*Lythrum* spp.), and silver grass (*Vulpia* spp.) can infest wheat crops.

Two years of high winter rainfall, leading to considerable soil waterlogging, occurred in 1968 and 1969 in much of northern and north-eastern Victoria and, in experiments at Rutherglen Research Station, data on the serious competitive effects of these weeds on wheat production were obtained.

The following Table shows the relative wheat and weed dry matter production at the wheat jointing stage in an experiment conducted in 1968:

<u>Species</u>	<u>Per Cent of Total Dry Matter Production</u>
Wheat	69.6
Toad rush and loosestrife	21.2
Ryegrass	6.9
Silver grass	2.3

In another experiment in the same year, which was originally planned to investigate the effect of a number of herbicides for controlling ryegrass in wheat, a similar weed population occurred in the unsprayed treatment. One of the herbicides being tested, alachlor applied at 8 oz a.i. per acre, (0.56 kg a.i. per hectare) very effectively controlled toad rush and loosestrife and increased wheat yield by 14.6 bus. per acre (9.8 kg per hectare) compared with the unsprayed control. Only a small population of ryegrass was present in this experiment, and there was no significant difference in the ryegrass populations of the above two treatments.

In 1969, when climatic conditions again favoured the growth of toad rush and loosestrife, spectacular pre-emergence control of these weeds was obtained with the herbicide methabenzthiazuron (tribunil). These weeds were the only ones present in the experiment. Grain yield increases over the unsprayed control

yield were recorded for all rates of Tribunil tested; rates were 4 (0.28), 8 (0.56), 16 (1.12), and 32 (2.28) oz a.i. per acre (kg a.i. per hectare). The greatest yield increase, of 10.0 bus. per acre (670 kg per hectare) was recorded at the highest rate of 32 oz a.i. per acre (2.28 kg a.i. per hectare) of Tribunil.

From these data, it is apparent that toad rush, loosestrife, and silver grass, although seemingly of minor importance, are, in fact, serious competitors with wheat in wet conditions. It has also been observed that they respond to nitrogen fertilizer applied to wheat, thus reducing any benefits which may be obtained from nitrogen application in wet winter conditions.

EFFECT OF TRIAZINE HERBICIDES ON WEED CONTROL IN GRAIN
SORGHUM AND THEIR RESIDUAL EFFECT ON THE SUCCEEDING CROP
OF WHEAT

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Competition from weeds during the early growth stage of the crop seriously reduces the yield of grain sorghum. Applications of triazine herbicides have been found to be quite effective in keeping sorghum crops free from weed competition under temperate conditions (Barnside 1962). In India a trial was conducted in 1965 to assess the effectiveness of these herbicides under sub-tropical conditions in an area where mechanical and cultural methods are the conventional means of weed control. Both these methods are very often ineffective during continuous wet weather.

Simazine, propazine and atrazine herbicides were compared at the rate of 1.5 kg per hectare with hand-weeding and control treatments. These herbicides were applied pre-emergence three days after sowing and hand-weeding was carried out 20 and 40 days after sowing the sorghum crop. The residual effect of these herbicides was observed on the succeeding crop of wheat in the field and on wild-oats in pot cultures.

RESULTS

The sorghum crop remained relatively weed free in the triazine treated plots as most of the weeds except nutgrass (*Cyperus rotundus*) were satisfactorily controlled. Still better control