

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

of weeds was obtained with hand-weeding treatments, but, this operation had to be repeated as new weeds emerged quickly. Simazine and atrazine were found to be slightly superior over propazine in controlling weeds but they had injurious effects on sorghum plants, which, however, disappeared with the advance in crop-growth. Both hand-weeding and triazine treatments significantly increased the growth and yield of grain sorghum as compared to the control treatment but the difference between them was not significant (Table 1). In pot culture higher rates (3.5 kg per hectare and above) of these chemicals very seriously affected the growth and yield of grain sorghum.

No residual effect of the triazine herbicides on weed growth and growth and yield of winter wheat was observed at the rate applied to sorghum under field conditions. In pot culture where wild oats were used as the test crop, there was serious damage and plants died where the rate of application exceeded 3.0 kg per hectare. The residual effect of these chemicals largely depends on factors such as rates of application, leaching, volatilization, moisture and organic matter content of the soil, and photochemical and microbial breakdown. Therefore, the time interval between the application of these chemicals and sowing of the succeeding crop depends mainly on the rate of inactivation of these chemicals and resistance of the crop to the amount of residue present in the soil.

TABLE 1  
Effect of Treatments on Growth of Weeds and Yield of Grain Sorghum

Treatments	Number of weeds per m <sup>2</sup> days after sowing		Dry weight of weeds at harvest kg/ha <sup>+</sup>	Yield of grain sorghum kg/ha <sup>+</sup>
	15	75		
1. Control	220	250	2138	945
2. Hand-weeding	190	69	420	1625
3. Simazine	92	100	987	1393
4. Propazine	100	110	1150	1463
5. Atrazine	93	112	1005	1404
L.S.D. 5%	76.01	56.94	552	333

<sup>+</sup> one lb/acre = 1.12 kg/ha