Grain drydown effects in sorghum hybrids treated preharvest with glyphosate

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The period of grain drydown of grain sorghum from physiological maturity to a moisture content which will facilitate harvest and safe storage can be one in which potential for losses of yield and quality due to weathering, lodging and pest attack, may be economically significant.

The observation of grain drydown reported herein were obtained from three experiments conducted in northern N.S.W. and southern Queensland during 1982-84 which had the objective of evaluating the susceptibility of a range of grain sorghum hybrids to preharvest treatments of glyphosate.

Methods

Preharvest treatments were applied to unreplicated strips of sorghum hybrids at grain moisture contents between 17 and 35% using a vehicle mounted 12 metre boomspray. Treatments were applied in water volumes of 30 or 50 L/ha using flat fan nozzles and operating pressures of either 200 or 250 kPa.

Grain moisture samples were obtained at various intervals after treatment from randomly selected heads of primary tillers from within untreated and treated plots. Moisture contents were determined using a "Marconi" moisture meter.

Results and Discussion

Effects of preharvest treatments on drydown for a range of sorghum hybrid cultivars are presented in Table 1. Table 2 shows the effects of varying glyphosate treatment on the rate of grain drydown.

TABLE 1 Effect of preharvest treat ment of 0.72 kg ha-1 glyphosate on grain drydown of hybrid sorghum cultivars at Curlewis, N.S.W.

Grain Moisture %

	Days after treatment				
	0	10		17	
		0	0.72	0	0.72
Goldrush	17.4	14.9	14.2	13.3	11.6
E 57	24.1	21.1	17.2	14.5	12.6
NK 285	25.7	17.0	15.0	14.9	12.1
Ace	18.8	18.5	13.7	13.1	12.0
Goldmine	23.5	20.4	18.4	15.9	16.3
Gem	23.4	14.3	14.2	11.4	11.9

TABLE 2 Effect of treatment rate on grain drydown of the sorghum hybrid Pride at Brymaroo (A) and, Pirrinuan (B), Qld.

% Grain Moisture

Treatment kg ha^{-1}	A[1]	B[2]
Untreated	25.0	17.0
glyphosate 0.36	25.0	16.5
glyphosate 0.54	17.0	9.8
glyphosate 0.72	12.0	9.6
glyphosate 1.08	-	9.0

1. 18 days after treatment
2. 9 days after treatment

The data presented shows significant variation in the responsiveness of grain sorghum hybrid cultivars to preharvest treatments. More rapid reductions in drydown were apparent with increases in treatment rate. Similar trends have been reported by Bovey et al. (I) and Clarke (personal communication).

In these experiments, drydown effects weremore significant for susceptible slower maturing hybrids. Notwithstanding, responses have not been consistent within varieties (2), being influenced by grain moisture at treatment (3) and environmental conditions prior to and following treatment which affect natural drydown. Future work should aim to more clearly define these effects.

1. Bovey, R.W., Miller, F.R., and Baur, J.R. 1975 Agron. J. 67:618-621.

2. Monro, G.R. 1984 Proc. Seventh Aust. Weeds Conf. (in press).

3. Baur, J.R., Miller, F.R., and Bovey, R.W. 1977 Agron. J. 69:1015-1018.