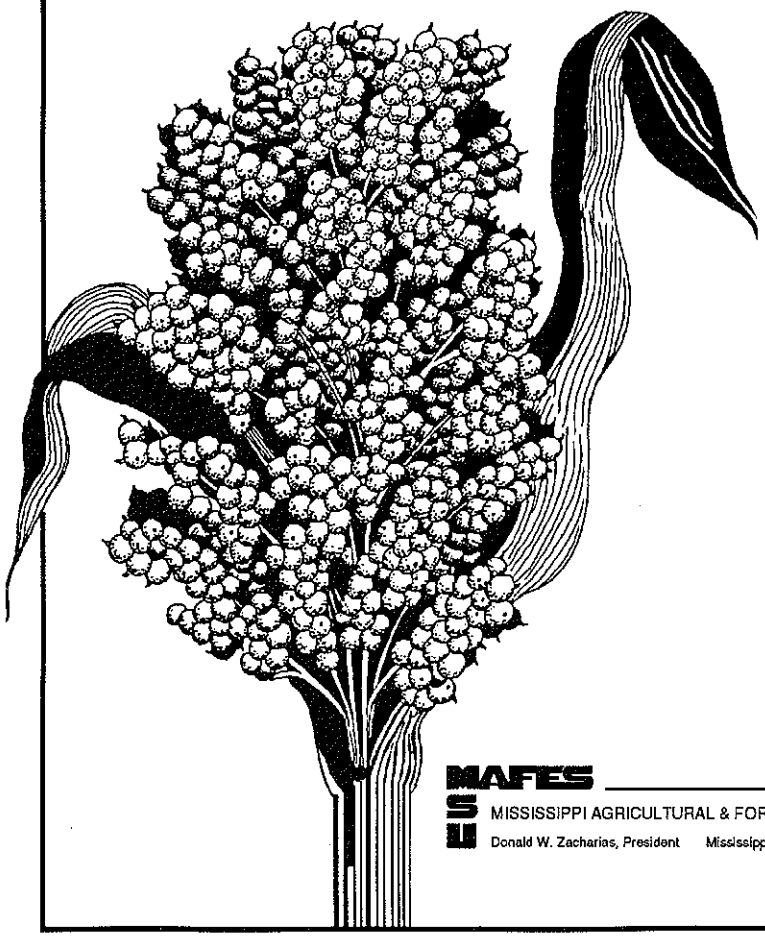
Bulletin 974 March 1991

The Use Of Desiccants For Field Drying Grain Sorghum With And Without Weeds



MAFES
MISSISSIPPI AGRICULTURAL & FORESTRY EXPERIMENT STATION Verner G. Hurt, Director Mississippi State, MS 39762
Donald W. Zacharias, President Mississippi State University R. Rodney Foil, Vice President

The Use of Desiccants for Field Drying Grain Sorghum With and Without Weeds

Harold R. Hurst
Plant Physiologist
Delta Branch Experiment Station
Stoneville, Mississippi

Published by the Department of Information Services, Division of Agriculture, Forestry, and Veterinary Medicine, Mississippi State University. Edited by Keith H. Remy, Publications Coordinator. Cover designed by Nancy Bolling, Artist.

Notice to Users

Current product labels should be consulted for use information on all chemicals. Some of the desiccants used in the experiments reported in this bulletin ARE NOT registered for use on grain sorghum. Chemicals used in these studies were applied and products harvested were handled in full accordance with all state and federal regulations.

The Use of Desiccants for Field Drying Grain Sorghum With and Without Weeds

Introduction

Maturation of grain sorghum is such that seeds are sufficiently dry for harvest while leaves and stems are still high in moisture. A common production practice in the Mississippi Delta is to apply a desiccant to grain sorghum prior to harvest. This desiccates green stemming material and hopefully speeds up grain drying, which permits easier and earlier harvesting. It is generally thought that if sorghum is harvested without desiccation the grain will be higher in moisture after harvest because of the green material passing through the combine during harvest.

Studies have been conducted at various locations to evaluate the benefits of desiccation (1, 2, 3, 4). Some common materials that have been investigated are sodium chlorate, liquid nitrogen, and paraquat. Generally, these materials have not resulted in a profitable degree of enhanced grain drying. In fact, results have indicated that these materials have killed the plant and caused excess lodging and head stalk deterioration as compared with untreated areas (4) when an extended period of time elapsed between application and harvest.

Experiments were conducted to evaluate the influence of various desiccants on grain moisture of nonirrigated sorghum when applied to an area without weeds (*Experiment 1*) and on a site with natural weed infestations (*Experiment 2*) that had been established for the prior 6 years. It is generally concluded by producers that there are more advantages in desiccating weedy fields than in desiccating fields where weeds are not present in large populations. Prior studies have not measured the influence of weeds on grain moisture.

Procedure

Experiment 1

Desiccants were applied to no-till planted grain sorghum planted on Sharkey clay soil (11.2% sand, 23.2% silt, 65.6% clay, pH 6.3, organic matter 2%) in 1984 and 1985. Weeds were not present in numbers sufficient to influence yield or desiccant effectiveness. Helena brand 'Hyperformer 1225' hybrid was planted April 18, 1984. Seven desiccants were applied in water at 20 GPA (gallons per acre) to grain sorghum at two grain moisture levels; when sorghum grain moisture was 30% and to other plots when moisture was 17%.

Desiccant treatments were as follows:

(1) sodium chlorate (Defol® 6) at 4.5 lb ai/A;

(2) sodium chlorate at 6 lb ai/A;

(3) PPG 1013 at 0.2 lb ai/A + Crop Oil Concentrate[1] (C.O.C.) at 1 % v/v at 30% moisture (at 17% moisture, sodium chlorate at 4.5 lb + C.O.C. at 1% v/v was used after PPG 1013 was withdrawn from testing).;

(4) PPG 1013 at 0.4 lb ai/A + C.O.C. at 1% v/v at 30% moisture (at 17% moisture, haloxyfop at 0.25 lb ai/A + C.O.C. at 1% v/v was used);

(5) paraquat (Gramoxone®) at 0.5 lb ai/A + surfactant at 0.125% v/v;

(6) glyphosate (Roundup®) at 0.5 lb ai/A + surfactant at 0.5% v/v;

(7) undiluted 31% urea-ammonium nitrate solution (UAN); and

(8) none.

Desiccants were applied to eight 40-inch rows (80 feet long) of each plot on each application date (Figure 1). Combine harvest of two

[1]Surfel® spray adjuvant. Paraffinic base petroleum oil, 83% + polyel fatty acid esters and polyethoxylated derivatives, 17%. Rhone-Poulenc Ag Company.

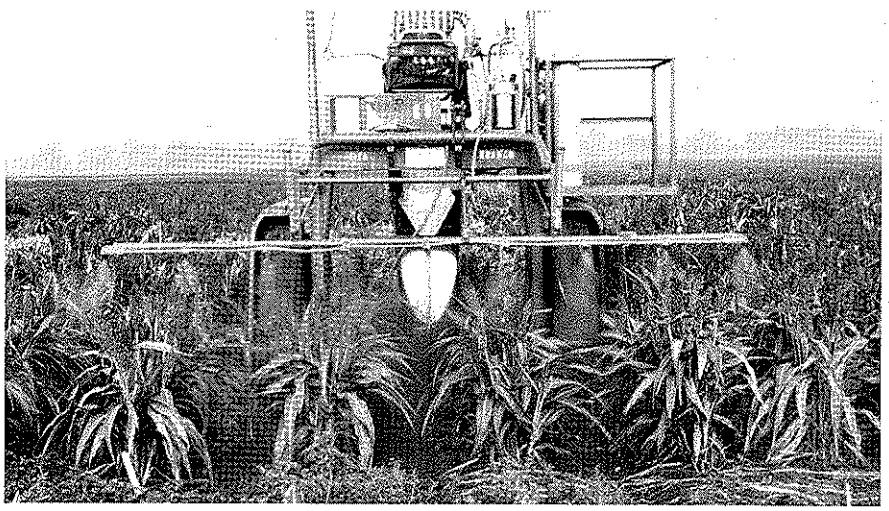


Figure 1. This is the sprayer used to apply dessicants to grain sorghum plots. Application shown was completed August 16, 1984.

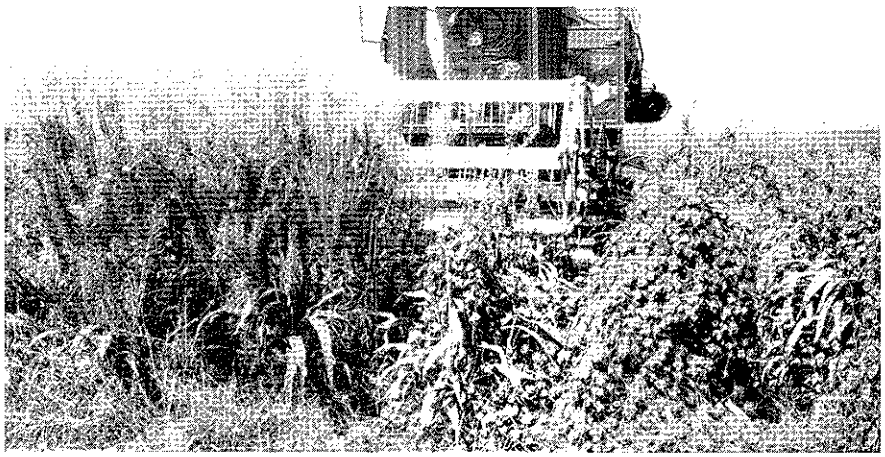


Figure 2. Harvesting grain sorghum from the annual broadleafs plot in 1986.

Figure 3. Harvesting grain sorghum from the no weeds plot in 1986.

Figure 4. Harvesting grain sorghum from the grass weed plot in 1986.

rows in each plot was made at weekly intervals after desiccant application for a total of four harvests.

In 1985, two grain sorghum varieties were planted May 2; Helena brand 'Hyperformer 1225' and Funk's brand 'G522 DR.' Desiccants were applied in water at 20 GPA to each variety at two sorghum grain moisture levels, 32.1% and 12.2%.

Desiccant treatments were as follows:

(1) sodium chlorate at 6 lb ai/A;

(2) sodium chlorate at 4.5 lb ai/A + C.O.C. at 1% v/v;

(3) paraquat at 0.25 lb/A + surfactant at 0.125% v/v; and

(4) none.

Two of four rows were harvested 2 weeks after desiccant application with the remaining two rows harvested 4 weeks after application.

In 1985, main plots were sorghum varieties consisting of 16, 40-inch rows 80 feet long; subplots were desiccants applied to four, 40-inch rows 80 feet long. The experimental design was a randomized complete block in 1984 and a split-plot in 1985. Four replications were used each year. Data were subjected to analysis of variance and means were separated using Duncan's Multiple Range test (P=.05).

Experiment 2

Funk's brand 'G522 DR' hybrid grain sorghum (treated with Concep® safener) was planted May 1, 1985; April 17, 1986; May 4, 1987; and April 21, 1988, on a Bosket loam soil (41.2% silt, 46.0% sand, 12.8% clay with pH 6.2 and 0.8% organ ic matter). In 1985, the area was subsoiled on February 22, at 45 degrees to the row direction, then left undisturbed. Glyphosate (Roundup®) at 1.0 lb ai/A + surfactant at 0.5% v/v was applied in water at 20 GPA as a preplant burndown on May 1. A

mechanically-prepared seedbed was used 1986 through 1988.

Four naturally occurring weed situations were used to evaluate three drying treatments. Plots were located on the same areas each year.

The weed situations were: annual grasses (primarily barnyardgrass and broadleaf signalgrass); annual broadleafs (primarily smooth pigweed, prickly sida, and morningglory); annual broadleafs and grasses; and no weeds.

Herbicides for maintenance applied preemergence (PRE) at planting in 1985 and 1986 were atrazine (AAtrex®) at 2.0 lb/A + alachlor (Lasso®) at 2.5 lb ai/A on the no weeds area; atrazine at 1.0 lb ai/A on the annual grasses area; alachlor at 1.0 lb ai/A on the broadleafs area; and no herbicides on the broadleafs + grasses area. Hand labor was used to maintain the respective weed situations. Plots were not cultivated.

Desiccant treatments applied to each weed situation were **(1)** sodium chlorate at 4.5 lb ai/A + crop oil concentrate (C.O.C.) at 1.0% v/v; **(2)** paraquat at 0.375 lb ai/A + surfactant at 0.125% v/v; and **(3)** no desiccant. Desiccants were applied in water at 20 GPA on August 29, 1985 with grain moisture at 29%, and on July 29, 1986 with grain moisture at 25%. Two rows in each plot were harvested September 13, 1985, and August 12, 1986; the two remaining rows were harvested September 25, 1985, and August 26, 1986 (see Figures 2-4).

The experiment was altered in 1987 and 1988 by changing the application of PRE herbicides. This was to compare the effects of preemergence herbicide treatments. Treatments applied to each of the previously-described weed situations were atrazine at 1.25 + alachlor at 2.0 lb ai/A; atrazine at 1.25 + metolachlor (Dual®) at 1.75 lb ai/A; and no herbicide. Sodium chlorate at 4.5 lb ai/A + C.O.C. at 1.0% v/v as a desiccant was compared with no desiccant. Sodium chlorate was applied August 10, 1987 with grain moisture at 19%, and August 9, 1988 with grain moisture at 21%. Plots were harvested August 20, 1987 and August 24, 1988.

The experimental design was a split-plot with four replications. Main plots were weed situations consisting of 16, 40-inch rows 40 feet long; subplots were desiccants applied to four, 40-inch rows 40 feet long. Data were subjected to analysis of variance and means were separated using Duncan's Multiple Range test (P=.05).

With both experiments, grain sorghum was mechanically harvested with combines modified to harvest by plots. Yield, at 13% moisture, was determined from each plot. Plot moisture was determined by obtaining a random grain sample of about 2 pounds from each plot weight and measured using a Dickey-John® GAC II moisture meter. In 1986, plots were harvested, weighed, and moisture determined in the field with a Massey-Ferguson 8® plot combine. Nitrogen, at 120 lb/A, was applied to both experiments as a sidedress treatment before sorghum had reached the 5-leaf stage. Planting (6 lb seed/A) was accomplished with a John Deere 7100® planter.

Results

Experiment 1.

On the clay soil area in 1984, when desiccants were applied to sorghum at 30% grain moisture, there were no differences among desiccant treatments after 2 or 6 weeks (Table 1). When harvested 4 weeks after the desiccants were applied, PPG 1013 at 0.2 lb and paraquat resulted in reduced moisture as compared to the no-desiccant check. At 8 weeks after application, no treatment was different from the no-desiccant check. Paraquat resulted in the lowest moisture of any treatment and was significantly lower than sodium chlorate at either rate.

When desiccants were applied to sorghum at 17% moisture (Table 2), there were no differences among treatments after 2, 6, or 8 weeks. At 4 weeks after application, no treatment resulted in grain moisture different from that of the no-desiccant check. Grain moisture from the application of UAN was significantly higher than grain moisture from treatments utilizing sodium chlorate, paraquat, or glyphosate.

In 1985, there were no variety by desiccant interaction differences in sorghum grain moisture. Also, no differences resulted with any desiccant or with either of the two

Table 1. Effect of desiccants on grain moisture of harvested Hyperformer '1225' sorghum when applied August 1 to field plots at 30% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1984.

Drying agent	Broadcast rate/A	Harvest moisture[1] Weeks after desiccant application 2	4	6	8
	(lb ai)	(%)			
Sodium chlorate	4.5	25.3	22.0 ab	17.4	16.4 a
Sodium chlorate	6.0	25.5	21.6 ab	18.5	16.3 ab
PPG 1013 + C.O.C.	0.2 + 1%	25.7	20.5 b	17.6	16.0 a-c
PPG 1013 + C.O.C.	0.4 + 1%	25.7	21.4 ab	17.4	16.0 a-c
Paraquat + surfactant	0.5 + 0.125%	25.3	20.9 b	18.0	15.9 c
Glyphosate + surfactant	0.5 + 0.5%	25.5	21.8 ab	17.2	16.0 a-c
Liquid nitrogen	70.0	25.5	21.4 ab	18.2	15.9 bc
None	–	25.7	22.6 a	18.2	16.1 a-c

[1]Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

Table 2. Effect of desiccants on grain moisture of harvested Hyperformer '1225' sorghum when applied August 16 to field plots at 17% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1984.

Drying agent	Broadcast rate/A	Harvest moisture[1] Weeks after desiccant application 2	4	6	8
	(lb ai)	(%)			
Sodium chlorate	4.5	17.3	14.9 b	13.8	14.3
Sodium chlorate	6.0	17.4	15.1 b	13.6	14.3
Sodium chlorate[2] + C.O.C.	4.5 + 1%	17.2	15.1 b	14.0	14.1
Haloxyfop[2] + C.O.C.	0.25 + 1%	17.4	15.2 ab	14.4	14.1
Paraquat + surfactant	0.5 + 0.125%	16.9	15.0 b	13.5	14.3
Glyphosate + surfactant	0.5 + 0.5%	17.2	14.9 b	13.5	14.1
Liquid nitrogen	70.0	17.6	15.5 a	13.9	14.5
None	–	17.0	15.2 ab	13.6	14.2

[1] Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.
[2] Substituted for PPG 1013, which was withdrawn from testing.

Table 3. Effect of desiccants on grain moisture of Funk's 'G 522' and Hyperformer '1225' sorghum when applied August 15 to field plots at 32.1% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1985.

	Broadcast rate/A	Harvest moisture[1] Weeks after desiccant application 2	4
	(lb ai)	(%)	
Variety			
'G 522DR'	–	12.08	14.18
'1225DR'	–	12.14	14.34
Drying Agent			
Sodium chlorate	6.0	12.23	14.43
Sodium chlorate + C.O.C.	4.5 + 1%	12.13	14.32
Paraquat + surfactant	0.25 + 0.125%	11.93	14.04
None	–	12.15	14.26

[1]Values within a column for variety or for drying agent without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

Table 4. Effect of desiccants on grain moisture of Funk's 'G 522' and Hyperformer '1225' sorghum when applied August 29 to field plots at 12.2% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1985.

	Broadcast rate/A	Harvest moisture[1] Weeks after desiccant application 2	4
	(lb ai)	(%)	
Variety			
'G 522DR'	–	13.76	13.36
'1225DR'	–	13.45	13.51
Drying Agent			
Sodium chlorate	6.0	13.69	13.39
Sodium chlorate + C.O.C.	4.5 + 1%	13.59	13.37
Paraquat + surfactant	0.25 + 0.125%	13.58	13.38
None	–	13.56	13.61

[1]Values within a column for variety or for drying agent without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

varieties when sorghum was harvested at 2 or 4 weeks after the application of desiccants to sorghum at 32.1% grain moisture (Table 3). It was interesting to note that the 4-week average grain moisture was approximately 2% greater than the average of the grain moisture when harvested at 2 weeks. This was probably a reflection of the environment whereby the sorghum absorbed moisture from the atmosphere. In 1985, when desiccants were applied to sorghum at 12.2% grain moisture (Table 4), there were no differences among desiccant treatments or among varieties when grain was harvested at 2 or 4 weeks after application. Both the 2- and 4-week harvest dates yielded grain with approximately equal moisture, approximately the same as that measured when the desiccants were applied.

Experiment 2.

There were no desiccant or preemergence herbicide by weed history interactions. In 1985, there were no differences in grain moisture at the 2-week harvest date (Table 5). In 1986, moisture in grain from plots treated with paraquat was lower than from plots with no desiccant. At the 4-week harvest in 1985, both paraquat-treated and sodium chlorate-treated sorghum resulted in lower grain moisture than the untreated control (0.50% and 0.45%, respectively). Averaged across drying agents (Table 6), 1985 grain moisture 2 weeks after applying the desiccants was less in broadleaf weed plots than where no weeds were present.

In 1986, treatments with broadleaf weeds had greater grain moisture than all other weed treatments. Grain moisture from annual broadleafs and no-weeds treatments were greater than annual grasses.

At the 4-week harvest in 1985, there were no differences in grain moisture with any of the weed treatments. In 1986 at 4 weeks, greatest moisture occurred with the annual broadleafs and the annual broadleafs + grasses treatments and both were greater than the treatment having only annual grasses. Under the weed situations described, there were no differences in sorghum grain moisture in 1987 when harvest was 2 weeks after application of the desiccant (Table 7). In 1988, where no desiccant was applied, grain moisture was lowest from plots with annual grasses. Where sodium chlorate was applied, the lowest grain moisture was obtained from plots with no weeds–significantly lower than with annual broadleafs and annual grasses. In 1987 and 1988, when herbicide treatments were applied to each of the weed situations, the use of either herbicide without a desiccant resulted in lower grain moisture (Table 8). Where the desiccant was applied, there were no differences.

Overall, these studies did not result in any distinct advantage for application of desiccants to reduce sorghum grain moisture.

Yield is presented as pounds of harvested sorghum per acre in these experiments (Tables 9-16). However, the main interest was to determine the influence of the vario us treatments on the grain moisture. No discussion is made of the yields obtained from the various treatments.

References

1. Graves, C. R., and T. McCutchen. 1982. Grain sorghum desiccation study. Tennessee Farm and Home Science No. 123, pages 2-4.

2. Hurst, H. R. 1986. Field drying of grain sorghum with and without annual weeds. Proc. South. Weed Sci. Soc. 39:44.

3. Hurst, H. R. 1989. Effect of weeds on field drying of grain sorghum. Proc. South. Weed Sci. Soc. 42:125.

4. Touchton, J. T., and D. P. Moore. 1985. Relationship between grain moisture and harvestable sorghum. Highlights of Agricultural Research, Alabama Agricultural Experiment Station 32(3):12.

Table 5. Effect of desiccants on harvest grain moisture of Funk's 'G 522' sorghum, when averaged across weed situation treatments, applied August 29, 1985 and July 29, 1986 to field plots at 29% and 25% grain moisture at the MAFES Delta Branch, Stoneville, MS.

		Harvest moisture[1] Weeks after desiccant application			
		1985		1986	
Drying agent	Broadcast rate/A	2	4	2	4
	(lb ai)	(%)			
None	–	13.18	15.18 a	15.58 a	14.92
Paraquat + surfactant	0.375 + 0.125%	13.02	14.68 b	15.06 b	14.46
Sodium chlorate + C.O.C.	4.5 + 1.0%	13.03	14.73 b	15.29 ab	14.95

[1]Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

Table 6. Effect of weeds on harvest grain moisture of Funk's 'G 522' sorghum, when averaged across desiccant treatments applied August 29, 1985 and July 29, 1986 to field plots at 29% and 25% grain moisture at the MAFES Delta Branch, Stoneville, MS.

	Harvest moisture[1]			
	1985		1986	
Weed history	9/13	9/25	8/12	8/26
	(%)			
No weeds	13.18 a	14.87	15.05 b	14.84 ab
Annual grasses	13.02 ab	14.89	14.58 c	13.97 b
Annual broadleafs	12.98 b	14.78	16.18 a	15.15 a
Broadleafs + grasses	13.12 ab	14.91	15.42 b	15.14 a

[1]Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

Table 7. Effect of weeds on harvest grain moisture of Funk's 'G 522' sorghum (when averaged across preemergence herbicide treatments) with and without the application of a desiccant in field plots at the MAFES Delta Branch, Stoneville, MS.

	Harvest moisture[1]			
	August 20, 1987		August 24, 1988	
Weed history	No dry	Dry[2]	No dry	Dry[2]
	(%)			
No weeds	15.21	15.08	13.73 a	13.31 c
Annual grasses	15.13	15.15	11.87 b	13.90 ab
Annual broadleafs	15.18	15.11	13.90 a	15.53 a
Broadleafs + grasses	15.20	15.23	13.18 a	14.56 ab

[1] Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

[2] Applied sodium chlorate 4.5 lb/A + C.O.C. 1 % to sorghum with 19% grain moisture August 10, 1987, and 21% August 9, 1988.

Table 8. Effect of preemergence herbicide treatments on harvest grain moisture of Funk's 'G 522' sorghum (when averaged across weed situations) with and without the application of a dessicant in field plots at the MAFES Delta Branch, Stoneville, MS.

Preemergence herbicide	Broadcast rate/A	Harvest moisture[1] August 20, 1987 No dry	August 20, 1987 Dry[2]	August 24, 1988 No dry	August 24, 1988 Dry[2]
	(lb ai)	-- (%) --			
None	–	15.83 a	15.23	14.38 a	14.46
Atrazine + alachlor	1.25 + 2.0	14.68 b	14.98	12.29 b	14.53
Atrazine + metolachlor	1.25 + 1.75	15.03 b	15.22	12.84 b	13.98

[1] Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

[2] Applied sodium chlorate 4.5 lb/A + C.O.C . 1.0% to sorghum with 19% grain moisture August 10, 1987, and 21% August 9, 1988.

Table 9. Effect of desiccants on yield of harvested Hyperformer '1225' sorghum when applied August 1 to field plots at 30% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1984.

Drying agent	Broadcast rate/A	Combine yield @ 13%[1] Weeks after desiccant application 2	4	6	8
	(lb ai)		(%)		
Sodium chlorate	4.5	2,560	2,976	2,294 ab	2,215 ab
Sodium chlorate	6.0	2,827	2,612	1,870 b	1,801 bc
PPG 1013 + C.O.C.	0.2 + 1%	2,669	3,758	2,648 ab	2,441 ab
PPG 1013 + C.O.C.	0.4 + 1%	2,334	2,719	2,415 ab	2,159 ab
Paraquat + surfactant	0.5 + 0.125%	2,508	2,856	1,713 b	1,188 c
Glyphosate + surfactant	0.5 + 0.5%	2,209	2,651	3,069 a	2,772 a
Liquid nitrogen	70.0	2,545	3,004	2,768 ab	2,314 ab
None	–	2,174	2,976	3,201 a	2,899 a

[1]Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

Table 10. Effect of desiccants on yield of harvested Hyperformer '1225' sorghum when applied August 16 to field plots at 17% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1984.

Drying agent	Broadcast rate/A	Combine yield @ 13%[1] Weeks after desiccant application 2	4	6	8
	(lb ai)		(%)		
Sodium chlorate	4.5	4,271 ab	3,103 ab	2,983	3,467 ab
Sodium chlorate	6.0	3,850 a-c	3,087 ab	2,912	3,658 ab
Sodium chlorate[2] + C.O.C.	4.5 + 1%	3,890 a-c	3,377 ab	3,022	4,039 a
Haloxyfop[2] + C.O.C.	0.25 + 1%	3,363 bc	2,750 b	2,861	3,009 b
Paraquat + surfactant	0.5 + 0.125%	4,501 a	3,471 a	2,746	3,546 ab
Glyphosate + surfactant	0.5 + 0.5%	4,016 a-c	3,474 a	3,128	3,941 a
Liquid nitrogen	70.0	3,715 a-c	3,133 ab	2,790	3,396 ab
None	–	3,223 c	2,766 b	2,727	3,631 ab

[1] Values in the same column without letters or with a common letter are not different (P = .05) according to Duncan's NMRT.

[2] Substituted for PPG 1013, which was withdrawn from testing.

Figure 5. This is a field view on August 5, 1987. Note the plots without weeds, with annual broadleafs, and with grasses.

Figure 6. Field view of the author standing between plots in the 1987 experiments. The no weeds plot is at right, the annual broadleafs plot is at left.

Table 11. Effect of desiccants on yield of Funk's 'G 522' and Hyperformer '1225' sorghum when applied August 15 to field plots at 32.1% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1985.

	Broadcast rate/A	Combine yield at 13%[1] Weeks after desiccant application 2	4
	(lb ai)	(lb/A)	
Variety			
'G 522DR'	–	4,058	3,821
'1225DR'	–	4,157	3,696
Drying Agent			
Sodium chlorate	6.0	4,196	3,643
Sodium chlorate + C.O.C.	4.5 + 1%	3,950	3,811
Paraquat + surfactant	0.25 + 0.125%	4,216	3,846
None	–	4,070	3,734

[1]Values within a c olumn for variety or for drying agent without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

Table 12. Effect of desiccants on yield of Funk's 'G 522' and Hyperformer '1225' sorghum when applied August 29 to field plots at 12.2% grain moisture at the MAFES Delta Branch, Stoneville, MS, 1985.

	Broadcast rate/A	Combine yield at 13%[1] Weeks after desiccant application 2	4
	(lb ai)	(lb/A)	
Variety			
'G 522DR'	–	4,206 a	3,633
'1225DR'	–	2,943 b[2]	2,690[2]
Drying Agent			
Sodium chlorate	6.0	3,670	3,326
Sodium chlorate + C.O.C.	4.5 + 1%	3,708	3,124
Paraquat + surfactant	0.25 + 0.125%	3,305	3,022
None	–	3,614	3,176

[1] Values within a column for variety or for drying agent without letters or with a common letter a re not different (P=.05) according to Duncan's NMRT.

[2] Low yield due to improper nitrogen application.

Table 13. Effect of desiccant on yield of Funk's 'G 522' sorghum (when averaged across weed situation treatments) applied August 29, 1985, and July 29, 1986, to field plots at 29% and 25% grain moisture at the MAFES Delta Branch, MS, Stoneville.

Drying agent	Broadcast rate/A	Combine yield @ 13%[1] Weeks after desiccant application 1985 2	1985 4	1986 2	1986 4
	(lb ai)	(lb/A)			
None	–	3,923	3,696	3,520	2,641
Paraquat + surfactant	0.375 + 0.125%	3,637	3,464	3,197	2,712
Sodium chlorate + C.O.C.	4.5 + 1.0%	3,552	3,548	3,231	3,030

[1]Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

Table 14. Effect of weeds on yield of F unk's 'G 522' sorghum, when averaged across desiccant treatments applied August 29, 1985 and July 29, 1986 to field plots at 29 and 25% grain moisture at the MAFES Delta Branch, Stoneville, MS.

	Combine yield @ 13%[1] Weeks after desiccant application			
	1985		1986	
Weed history	2	4	2	4
	(lb/A)			
No weeds	3,332 b	3,340	3,690 a	2,912 ab
Annual grasses	3,537 ab	3,270	3,860 a	3,120 a
Annual broadleafs	4,247 a	3,876	2,788 b	2,400 b
Broadleafs + grasses	3,700 ab	3,793	2,926 b	2,743 ab

[1]Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

Table 15. Effect of preemergence herbicide treatments on yield of Funk's 'G 522' sorghum (when averaged across weed situations) with and without the application of a desiccant in field plots at the MAFES Delta Branch, Stoneville, MS.

		Combine yield @ 13%[1]			
	Broadcast	August 20, 1987		August 24, 1988	
Preemergence herbicide	rate/A	No dry	Dry[2]	No dry	Dry[2]
	(lb ai)	(lb/A)			
None	–	2,309 b	2,467 b	3,680	3,917
Atrazine + alachlor	1.25 + 2.0	3,346 a	3,534 a	3,813	4,227
Atrazine + metolachlor	1.25 + 1.75	2,989 a	2,959 b	3,860	4,100

[1] Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

[2] Applied sodium chlorate 4.5 lb/A + C.O.C. 1.0% to sorghum with 19% grain moisture August 10, 1987 and 21% August 9, 1988.

Table 16. Effect of weeds on yield of Funk's 'G 522' sorghum (when averaged across preemergence herbicide treatments) with and without the application of a desiccant in field plots at the MAFES, Delta Branch, Stoneville, MS.

	Combine yield @ 13%[1]			
	August 20, 1987		August 24, 1988	
Weed history	No dry	Dry[2]	No dry	Dry[2]
	(lb/A)			
No weeds	2,948 ab	3,104	4,169 a	4,371 a
Annual grasses	2,568 b	2,675	3,045 b	3,062 b
Annual broadleafs	3,224 a	3,333	3,943 a	4,684 a
Broadleafs + grasses	2,786 ab	2,835	3,740 a	4,208 a

[1] Values in the same column without letters or with a common letter are not different (P=.05) according to Duncan's NMRT.

[2] Applied sodium chlorate 4.5 lb/A + C.O.C. 1% to sorghum with 19% grain moisture August 10, 1987 and 21% August 9, 1988.

Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the Mississippi Agricultural and Forestry Experiment Station and does not imply its approval to the exclusion of other products that also may be suitable.

47307/.9M