

## **Effectiveness of Different Herbicides for Harvest Aids in Dry Beans.**

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A field study was initiated near Scottsbluff, Nebraska to compare different herbicides as harvest aids in dry beans. The objective of the experiment was to measure the influence of the herbicide on the dry down or loss of moisture from the bean plant following treatment. The experimental design was a randomized complete block with four replications. The dry bean variety was GN 'Marquis' and was planted on May 31. Plots were six rows wide by 40 feet long. Dry beans were grown in a conventional manner throughout the growing season. Herbicides were applied on August 31 when approximately 80% of the bean pods were yellow (physiological maturity of the plant). Treatments were applied with a tractor-mounted sprayer calibrated to deliver 20 GPA of water. Herbicides were applied between 1:30 to 3:30 p.m., wind was calm and the humidity was 21%. At the time of treatment four dry bean plants were pulled from the soil in each replicate of the nontreated plot. Plant moisture (leaves and stems), pod moisture (pods removed from plant, seeds removed from pod) and seed moisture was determined by weighing plant materials after removal from the field and after being dried in an oven set at 120° F for 72 hours. Four dry bean plants were removed from each plot 7 and 14 days after herbicide application and fresh and dried weights were taken to calculate plant moisture. Dry bean plants were cut with a conventional bean cutter and placed in a wind row and the middle two rows of the plot were thrashed with a Hege plot combine on September 20.

Seven days after the start of the study plant moisture (stems and leaves) was similar among all the treatments (Table 1). In the nontreated plot, pod moisture had declined from 72 to 62% over 7 days. Treatment with Gramoxone Inteon alone or a combination of Aim plus Gramoxone Inteon at 0.031 + 0.141 lb/acre, or Valor at 0.064 lb/acre increased the dry-down of pods and seeds. A seed moisture content of 11 to 12% in the Aim plus Gramoxone or Valor treatments would allow the crop to be harvested.

Seed moisture in the nontreated plot was 17%, 14 days after the start of the experiment and at this moisture the crop was not ready to harvest (Table 1). Treating the dry bean plant with Gramoxone Inteon reduced

plant, pod, and seed moisture 63, 63, and 47% respectively, compared to the nontreated. Foliage of plants treated with Roundup WeatherMax and Roundup WeatherMax plus Aim had a moisture content of 11 and 5% respectively, compared to the nontreated with a 60% moisture content. By 14 days after treatment all the treatments except ET had reduced dry bean seed moisture to below 12%. None of the herbicide treatments had a significant influence on dry bean seed yields.

The plot area was infested with hairy nightshade, so another aspect of the study was to determine the effect of the various treatments on the desiccation of nightshade foliage and the quantity of berries that went through the combine (Table 1) (Figure 1). Five days after treatment Gramoxone Inteon had the most dramatic effect on hairy nightshade foliage with 90% of the foliage wilting and turning dark green. By 12 days after treatment, hairy nightshade foliage had desiccated to the greatest extent in plots treated with Gramoxone Inteon. In addition, the quantity of nightshade berries that were present with dry bean seed was reduced 87% by Gramoxone Inteon compared to the nontreated control.

Figure 1. Influence of Harvest Aid Treatments on the Quantity of Hairy Nightshade Berries Mixed with Dry Bean Seeds

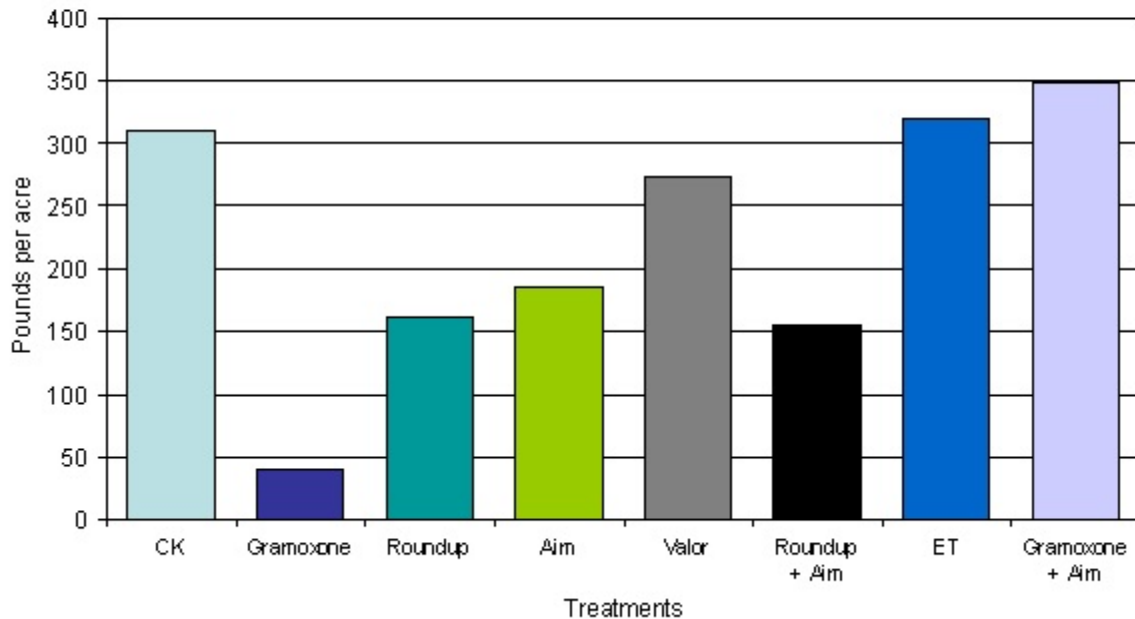


Table 1. Effectiveness of Different Herbicides for Harvest Aids in Dry Beans.

Treatment	Rate	Surfactant	Visual evaluations of desiccation				Dry bean moisture content									Dry bean seed yield 9/20	Hairy nightshade berry yield 9/20
			Dry bean		Hairy nightshade		At the time of treatment 8/31			7 days after treatment 9/7			14 days after treatment 9/14				
			9/5	9/12	9/5	9/12	Plants	Pods	Seeds	Plants	Pods	Seeds	Plants	Pods	Seeds		
	lb/acre		----- (%) -----				----- (%) -----									bu/acre	lb/acre
Nontreated	—	—	0	0	0	0	75	72	50	60	62	26	60	36	17	46	311
Gramoxone Inteon	0.5	X77 @ 0.25%	84	93	90	93				42	33	16	22	13	9	41	39
Roundup WeatherMax	0.75	AMS 17 lb/100 gal	20	97	11	63				43	48	25	11	20	10	51	161
Aim	0.039	Scoil @ 1%	55	91	40	50				54	48	26	41	15	5	49	186
Aim + Gramoxone Inteon	0.031 + 0.141	Scoil @ 1%	60	91	60	68				39	25	12	24	9	5	45	349
Valor	0.046	COC @ 1 qt/A	88	99	68	65				59	57	28	35	9	5	42	404
Valor	0.064	COC @ 1 qt/A	86	99	58	66				42	19	11	27	6	5	42	273
Roundup WeatherMax + Aim	0.75 + 0.039	AMS 17 lb/100 gal Scoil @ 1%	73	99	60	83				49	37	20	5	7	5	47	156
ET	0.0045	COC @ 1 qt/A	48	90	45	68				66	61	24	60	31	15	46	320
Roundup WeatherMax + ET	0.75 + 0.0045	AMS 17 lb/100 gal Scoil @ 1%	58	93	53	63				62	51	22	37	18	9	50	121
ET + Gramoxone Inteon	0.0033 + 0.25	COC @ 1 qt/A	48	88	68	79				53	28	19	21	11	6	52	219
LSD at 5%	—	—	18	8	20	18				28	47	22	26	30	13	NS	203