

Bio-Stimulant and Harvest Energy

2009-Trials

Barley: Plots were established under furrow irrigation at the Powell Research and Extension Center, WY to evaluate the effect of Bio-Stimulant and Harvest Energy products applied at different rates and crop stages on barley yield. Plots were 9 by 30 ft. with four replications arranged in a randomized complete block design. Barley (var. Conrad) was seeded at the rate of 100 lb/A on April 4, 2009 in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter, and pH 7.6). The entire experimental site was sprayed with Bronate and Axial for weed control on June 4 when barley was at 4 to 5 leaf stage. Treatments were applied broadcast with a CO₂ pressurized knapsack sprayer delivering 20 gpa. at 40 psi. on May 1, as pre-emergence (air temperature 42F, relative humidity 48%, wind West at 0-3 mph., sky cloudy, and soil temperature at 0-inch 50F, 2-inch 40F, and 4-inch 40F) or on June 4 as post (air temperature 64F, relative humidity 85%, wind West at 0-1 mph., sky cloudy, and soil temperature at 0-inch 74F, 2-inch 70F, and 4-inch 64F). Visual crop injury ratings made on June 21. Crop height measurements were taken on July 22. The middle area (5.3 by 14 ft.) of each plot was harvested on August 25, 2009.

Table 2. Barley response to Bio-Stimulant and Harvest Energy applied at different timing.

Treatment	Application		Barley response		
	Rate	Timing	Injury	Height	Yield
	oz/A	leaf#	%	cm	bu/A
Bio-S + Harvest-E	15 + 15	Pre-emergence	0	88.7	130.3
Bio-S + Harvest-E	18 + 12	Pre-emergence	0	87.8	130.8
Bio-S + Harvest-E	12 + 18	Pre-emergence	0	90.8	130.9
Bio-S + Harvest-E	15 + 15	4-5 lf	0	87.5	132.4
Bio-S + Harvest-E	18 + 12	4-5 lf	0	87.8	131.3
Bio-S + Harvest-E	12 + 18	4-5 lf	0	90.9	132.7
Bio-S + Harvest-E	15 + 15	4-5 lf + Herbicides	0	86.9	133.4
Bio-S + Harvest-E	18 + 12	4-5 lf + Herbicides	0	86.3	134.9
Bio-S + Harvest-E	12 + 18	4-5 lf + Herbicides	0	87.5	133.7
Check			0	86.1	130.8

No injuries were recorded in the treated plots. Biostimulat and Harvest energy applied as pre-emergence or alone as post yielded similar to the check. Slight yield increase (2 to 4 bu/A) was recorded in plots treated with the mixture Biostimulant and harvest energy plus herbicides.

Dry Beans: Plots were established under furrow irrigation at the Powell Research and Extension Center, WY to evaluate the effect of Bio-Stimulant and Harvest Energy products applied at different rates and crop stages on pinto bean yield. Plots were 7.5 by 30 ft. with four replications arranged in a randomized complete block design. Pinto bean (var. Bill Z) was seeded to stand May 20, 2009 in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter, and pH 7.6). Treatments were applied broadcast with a CO₂ pressurized knapsack sprayer delivering 20 gpa. at 40 psi. on May 5, as pre-emergence (air temperature 50F, relative humidity 41%, wind Northeast at 0-3 mph., sky clear, and soil temperature at 0-inch 80F, 2-inch 50F, and 4-inch 48F), on June 23 as post (air temperature 64F, relative humidity 39%, wind West at 0-2 mph., sky clear, and soil temperature at 0-inch 84F, 2-inch 69F, and 4-inch 61F), or on August 12 as post at flowering stage (air temperature 62F, relative humidity 56%, wind calm, sky clear, and soil temperature at 0-inch 62F, 2-inch 56F, and 4-inch 56F). Visual crop injury ratings made one week after each treatment. Crop stand was taken on June 10. The middle row of each plot was harvested on September 10, 2009.

Table. Dry bean response to Bio-Stimulant and Harvest Energy applied at different stages.

Treatment	Application		Injury	Dry bean response		
	Rate (oz/A)	Timing		Stand 10 ³ plts/A	Yield lbs/A	100 seed wt (g)
Bio-S+Harvest-E	15+15	PPI	0	64.2	3487	39.3
Bio-S+Harvest-E	18+12	PPI	0	63.0	3463	38.5
Bio-S+Harvest-E	12+18	PPI	0	63.9	3492	38.8
Bio-S+Harvest-E	15+15	4-lf	0	65.0	3620	39.5
Bio-S+Harvest-E	18+12	4-lf	0	62.1	3696	38.0
Bio-S+Harvest-E	12+18	4-lf	0	63.9	3590	39.0
Bio-S+Harvest-E	15+15	Flowering	0	65.3	3769	39.0
Bio-S+Harvest-E	18+12	Flowering	0	65.3	3790	38.5
Bio-S+Harvest-E	12+18	Flowering	0	65.6	3581	38.3
Bio-S+Harvest-E	9+6	4-lf/Flowering	0	66.8	3573	39.3
Bio-S+Harvest-E	6+9	4-lf/Flowering	0	62.7	3529	38.3
Check	--	--	0	64.8	3417	39.0

No bean injuries were recorded in any of the treated plots. Bean stand ranged from 62.1 to 66.8 (10³ plants/A). Preplant treatments were similar to the check. In average post treatment at 4-leaf yielded 200 lb/A higher than the check, while treatment at flowering stage yielded 300 lb/A higher than the check. 100 seed weight ranged between 38.3 and 39.5 gram.

Sugarbeets: Plots were established under furrow irrigation at the Powell Research and Extension Center, WY to evaluate the effect of Biostimulant and Harvest Energy on Roundup Ready sugarbeet yield and sugar content. Plots were 7.5 by 25 ft. with Three replications arranged in a randomized complete block design. Sugarbeet (var. Hilleshoq 9036-RR) was planted to stand in 22-inch rows on April 23, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Treatments were applied broadcast with a CO₂ pressurized knapsack sprayer delivering 20 gpa. at 40 psi. on May 5, as pre-emergence (air temperature 53F, relative humidity 40%, wind calm., sky clear, and soil temperature at 0-inch 80F, 2-inch 50F, and 4-inch 48F), on June 11 as post at four leaf stage (air temperature 64F, relative humidity 43%, wind calm., sky cloudy, and soil temperature at 0-inch 80F, 2-inch 70F, and 4-inch 59F), or on June 23 as post at 8 leaf stage (air temperature 64F, relative humidity 40%, wind Northeast at 3 mph., sky clear, and soil temperature at 0-inch 72F, 2-inch 68F, and 4-inch 64F). Sugarbeet injury ratings were visually evaluated 7 days after each treatment. Sugarbeet stand counts were made June 30. Plots were harvested October 15, 2009.

Table. Sugarbeet response to Biostimulant and Harvest Energy applied at different stages

Treatment	Application		Sugarbeet response			
	Rate (oz/A)	Timing leaf #	Injury %	Stand 10 ³ plts/A	Yield ton/A	Sucrose %
Bio-S+Harvest-E	15 + 15	PRE	0	40392	10.5	16.96
Bio-S+Harvest-E	18 + 12	PRE	0	41184	10.7	16.24
Bio-S+Harvest-E	12 + 18	PRE	0	41184	10.1	16.45
Bio-S+Harvest-E	15 + 15	4 LF	0	40392	12.8	16.13
Bio-S+Harvest-E	18 + 12	4 LF	0	42768	12.7	16.23
Bio-S+Harvest-E	12 + 18	4 LF	0	40788	12.3	16.55
Bio-S+Harvest-E	15 + 15	8 LF	0	40392	12.4	16.76
Bio-S+Harvest-E	18 + 12	8 LF	0	34452	10.8	16.12
Bio-S+Harvest-E	12 + 18	8 LF	0	41184	10.9	16.31
Bio-S+Harvest-E	7.5 + 7.5	4/8 LF	0	42372	11.0	16.71
Bio-S+Harvest-E	9 + 6	4/8 LF	0	37620	11.1	16.65
Bio-S+Harvest-E	6 + 9	4/8 LF	0	36036	11.7	16.55
Check			0	41184	10.3	16.62

No injuries were recorded in treated plots. Sugarbeet yields were very low compared to beets grown under normal fertility treatments (30 tons/A). It appears that Biostimulant and harvest energy products could be used as a complement to Nitrogen fertility.