Effect of Promot on Potato Yield

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Previous studies in Idaho state, Promot has been reported to increase potato yield. The yield increases varied with application methods, application rates and application frequencies. The purpose of this study is to investigate the effect of Promot on potato under California conditions with special emphasis on the rates and frequency of applications.

Material and Methods

Field experiment was conducted in Kern County California in 1995 on potato. Experimental field was divided into 42 plots. Individual plot was 6 rows wide and 40 feet long. Randomized complete design was employed with 7 treatments and 6 replications. The treatments were:

Control	- -	No application of Promot
P1-1	- -	One application of Promot at 1 quart per acre
P1-2	- -	Two applications of Promot at 1 quart per acre each
P1-3	- -	Three applications of Promot at 1 quart per acre each
P2-1	- -	One application of Promot at 2 quarts per acre
P2-2	- -	Two applications of Promot at 2 quarts per acre each
P2-3	- -	Three applications of Promot at 2 quarts per acre each

Treatments with 1 application of Promot, the material was applied before planting. Treatments with 2 applications of Promot, the first application was made before planting and the second application was made at 45 days after planting. Treatments with 3 applications of Promot, the first application was made before planting, the second application was made at 45 days after planting and the third application was made at 2 weeks after the second application. The first application of Promot was made by diluting the desired rate of Promot with water equivalent to 100 gallons per acre and applied to a furrow, which was about 4-5 inches deep, at the center of the rows. After the application, the furrow was immediately covered with soil. For the second and third applications, Promot was diluted with water equivalent to 100 gallons per acre and applied as a side dress. Equivalent amount of water was applied to plots which received no Promot treatment at the time of treatment application.

Potatoes were hand harvested from the middle two rows of each plots and weighed for yields.

Results and Discussion

Yields of potatoes from each plot are shown in Table 1. Statistical analysis on the yield is shown in Table 2. As shown in Table 1, three applications of Promot at both one quart and two quarts per acre rates significantly increased potato yields. With two applications of Promot both 1 quart and 2 quarts rates increased the potato yields but the increases were not statistically significant. With one application of Promot, neither 1 quart nor 2 quarts per acre rate increased the potato yields. Regardless of the application rates, potato yields increased with the application frequency. There was no significant difference between the 2 application rates at the same application frequency. This result indicated that frequency of application is more important than application rate on the effect of Promot on potato yields.

Table 1. Effect of Promot on Potato Yield

	Yield (CWT/A)						
Treatment	1	2	3	4	5	6	Average*
Control	405	397	360	421	388	352	387 b
P1-1	389	405	382	354	398	410	390 b
P1-2	421	385	402	391	443	372	402 ab
P1-3	418	435	471	443	412	389	428 a
P2-1	354	396	419	378	408	401	393 b
P2-2	428	387	431	403	426	370	408 ab
P2-3	451	409	411	467	435	394	428 a

* Means in the same column not followed by the same letter differ significantly ($P \leq 0.05$) as determined by DMRT.

Table 2. Analysis of Variance on the Yields of Potato

Source of variation	df	SS	MS	F
Block	5	4400.12	880.02	1.44 ns
Treatment	6	10613.81	1768.97	2.90*
Error	30	18321.05	610.70	
Total	41	33334.98		