

TIMELY INFORMATION

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Provost 433SC Fungicide Registered For Use On Peanut

A. K. Hagan

Alumni Professor and Extension Plant Pathologist-Nematologist

Provost 433SC fungicide, which is manufactured and distributed by Bayer CropScience, was recently registered for the control of early leaf spot, late leaf spot, peanut rust, web blotch, leaf scorch, white mold (stem rot), and *Rhizoctonia* limb rot, as well as the suppression of *Cylindrocladium* black rot (CBR) on peanut. Unlike most other peanut fungicides, Provost 433SC is a combination of the triazole (Group 3) fungicides prothioconazole and tebuconazole. While there is some cross tolerance to both of these triazole fungicides, target fungi that have displayed increased tolerance or decline in sensitivity to tebuconazole tend to be sensitive to the prothioconazole component in Provost 433SC.

Provost 433SC is a direct replacement for Folicur 3.6F. With the recent release of a number of Folicur 3.6F clones in the last year, Bayer CropScience will stop the sales of and tech support for Folicur 3.6F in the peanut market. They will, however, continue to supply tebuconazole to formulators that are manufacturing the Folicur 3.6F clones.

The 4-spray block program specified for Folicur 3.6F has been retained for Provost 433SC. In a standard 7-spray, 14-day calendar treatment program, Provost 433SC should be applied at spray numbers 3, 4, 5, and 6. If fewer than 7 fungicide applications are planned, the total number of Provost 433SC applications should cut in order to correspond with current FRAC guidelines concerning triazole fungicide resistance management, where a triazole fungicide applied alone should not occupy more than ½ the treatment slots. Preferably, the 4 application block should be bracketed by applications of a non-triazole fungicide such as Bravo Ultrex, Echo 720, or another chlorothalonil fungicide. If Tilt/Bravo or similar triazole/non-triazole fungicide combination applied, a low rate of one of the chlorothalonil fungicides should be added to Provost 433SC tank mixtures.

The application rate range for Provost 433SC is 7.0 to 10.7 fluid ounces per acre. The base rate for controlling leaf spot diseases, peanut rust, white mold, and *Rhizoctonia* limb rot is 8.0 fluid ounces per acre. The lower 7.0 fluid ounce per acre rate may be used in a good rotation situation where pressure from leaf spot and soil diseases is expected to be low. The higher 10.7 fluid ounce per acre rates is recommended for suppressing CBR on peanut, as well as controlling white mold in those field with a history of severe outbreaks of this disease.

Performance of Provost 433SC in Alabama Field Trials

Activity of Provost 433SC for the control of early leaf spot and white mold was evaluated in irrigated trials on 'Carver' peanut in 2005 and 2006 in fields cropped to peanut once every two years at the Wiregrass Research and Extension Center in Headland, AL. In addition, the late leaf spot, peanut rust, and white mold activity of Provost 433SC was compared against that of other registered fungicide

programs on dryland ‘Georgia Green’ peanut at the Gulf Coast Research and Extension Center in Fairhope, AL. In all trials, four consecutive applications of Provost 433S at 8 fluid ounces per acre were made. Fungicides were applied on a calendar treatment schedule at approximately 14-day intervals.

At the Wiregrass Research and Extension Center in 2005, the Provost 433SC 4-application block programs were as effective in controlling early leaf spot as the Abound 2SC and Echo 720 + Moncut 70DF programs and gave better control than the recommended Folicur 3.6F program (Table 1). The season-long Echo 720 program also gave the same level of early leaf spot control as the Provost 433SC with or without the at-plant treatment of Proline fungicide. In contrast, the Echo720/Echo 720 + Moncut 70DF program controlled white mold better than all other fungicide programs, including Provost 433SC. White mold damage levels on the Provost 433SC-treated peanuts were lower compared with the standard two-application Abound 2SC program. Similar white mold damage ratings were obtained with the season-long Echo 720, Provost 433SC, and Folicur 3.6F programs. Superior white mold control obtained with the Echo 720/Echo 720 +Moncut 70DF program translated into significantly higher pod yields compared with most of the other fungicide programs. Yield response with both Provost 433SC were comparable to those obtained with the season-long Echo 720, Folicur 3.6F, and Abound 2SC programs.

Table 1. Provost 433SC performance compared with that of other recommended fungicides on irrigated ‘Carver’ peanuts at the Wiregrass Research and Extension Center in 2005.

Treatment and Rate/A	Application timing ^z	Disease rating		Yield lb/A
		Leaf spot	White Mold ^y	
Echo 720 24.0 fl oz	1-7	4.2 ab ^x	7.0 c	2912 b
Echo 720 24.0 fl oz	1,2,7	3.8 b	7.3 c	3090 b
Provost 8.0 fl oz	3,4,5,6			
Proline 5.7 fl oz	In-furrow	3.7 b	7.7 bc	3090 b
Echo 720 24.0 fl oz	1,2,7			
Provost 8.0 fl oz	3,4,5,6			
Echo 720 24.0 fl oz	1,2,7	4.6 a	7.3 c	3073 b
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Echo 720 24.0 fl oz	1,2,4,6,7	3.9 b	12.8 a	3162 ab
Abound 2SC 18.5 fl oz	3,5			
Echo 720 24.0 fl oz	1,2,4,6,7	3.8 b	2.7 d	3452 a
Echo 720 24.0 fl oz + Moncut 70DF 1.1 lb	3,5			
Abound 2SC 6 fl oz	In-furrow	3.7 b	10.7 ab	3130 ab
Echo 720 24.0 fl oz	1,2,4,6,7			
Abound 2SC 18.5 fl oz	3,5			

^zFungicides were applied on 1 = 20 June, 2 = 5 July, 3 = 18 July, 4 = 1 August, 5 = 15 August, 6 = 6 September, and 7 = 15 September.

^yWhite mold incidence is expressed as the number of hits, 1 foot or less in length, per 60 feet of row.

^xNumbers followed by the same letter are not significantly different according to Fisher’s protected least significant difference (LSD) test, P=0.05).

In 2006 at the Wiregrass Research and Extension Center, poorest leaf spot control was seen wherever program included Folicur 3.6F (Table 2). In contrast, Provost 433SC at rates from 4.0 to 8.0 fluid ounces per acre controlled leaf spot as effectively as the Abound 2SC, Absolute/Echo 720, and the Echo 720/Echo 720+Moncut 70DF programs, which also gave similar leaf spot control. Also, application rate had no influence on leaf spot control provided by Provost 433SC. Effectiveness of Provost 433SC for the control of white mold was mixed (Table 2). The 5.0 and 10.7 fluid ounces per acre rates of Provost 433SC and the 8.0 fluid ounce per acre rate of this same fungicide plus Proline at-plant gave better white mold control than the Folicur 3.6F program. In contrast, white mold hit counts for the 4.0 and 8.0 fluid

ounce per acre Provost 433SC treatments were similar to the Folicur 3.6F program, which gave the poorest control of this disease. Sizable reductions in white mold hit counts were also seen with both of the Abound 2SC programs. In addition to leaf spot control, Provost 433SC application rate had little impact on yield. Yield response with the 5.0 fluid ounce per acre rate of Provost 433SC was higher compared with the 4.0 and 10.7 fluid ounce per acre rate of the same fungicide. Yields for the remaining Provost 433SC fell between those recorded for the above treatments. With one exception, yield response with the recommended Echo 720, Abound 2SC, Folicur 3.6F, and Echo 720/Echo 720+Moncut 70DF did not greatly differ.

Table 2. Provost performance for leaf spot and white mold control compared with that of other fungicides on irrigated ‘Carver’ peanuts at the Wiregrass Research and Extension Center in 2006.

Treatment and Rate/A	Application timing ^z	Disease rating		Yield lb/A
		Leaf spot	White Mold ^y	
Echo 720 24.0 fl oz	1-7	3.2 bc ^x	4.3 ab	3138 abc
Echo 720 24.0 fl oz	1,2,7	2.8 c	3.8 abc	3253 abc
Provost 433SC 8.0 fl oz	3,4,5,6			
Proline 5.7 fl oz	In-furrow	2.8 c	2.0 dc	3461 abc
Echo 720 24.0 fl oz	1,2,7			
Provost 433SC 8.0 fl oz	3,4,5,6			
Echo 720 24.0 fl oz	1,2,7	2.9 c	2.8 bcd	3630 a
Provost 433SC 5.0 fl oz	3,4,5,6			
Echo 720 24.0 fl oz	1,2,7	3.0 c	3.2 ab	3078 bc
Provost 433SC 4.0 fl oz	3,4,5,6			
Absolute 500SC 3.5 fl oz + Induce 0.06% v/v .	1,3,5 2,4,6,7	2.9 c	3.8 abc	3233 abc
Echo 720 24.0 fl oz				
Absolute 500SC 7.0 fl oz + Induce 0.06% v/v .	1,3,5 2,4,6,7	3.0 c	3.5 abcd	3299 abc
Echo 720 24.0 fl oz				
Echo 720 24.0 fl oz	1,2,7	3.0 c	2.8 bcd	3098 bc
Provost 433SC 10.7 fl oz	3,4,5,6			
Echo 720 24.0 fl oz	1,2,7	3.8 a	4.8 a	3227 abc
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Abound 2.08SC 6.0 fl oz	In-furrow	2.9 c	1.8 d	3033 c
Echo 720 24.0 fl oz	1,2,4,6,7			
Abound 2.08SC 18.5 fl oz	3,5			
Echo 720 24.0 fl oz	1,2,4,6,7	2.9 c	2.6 bcd	3185 abc
Abound 2.08SC 18.5 fl oz	3,5			
Echo 720 24.0 fl oz	1,2,4,6,7	3.1 c	4.7 a	3514 ab
Echo 720 24.0 fl oz + Moncut 70DF 1.1 lb	3,5			
Headline 2.09EC 9.0 fl oz	1.5	3.7 ab	4.7 a	3291 abc
Folicur 3.6F 7.2 fl oz	3,5			
Headline 2.09EC 12.0 fl oz	4			
Echo 720 24.0 fl oz	6,7			

^zFungicide applications were made on 1 = 28 June, 1.5 = 5 July, 2 = 10 July, 3 = 28 July, 4 = 11 August, 5 = 25 August, 6 = 13 September, and 7 = 26 September.

^yWhite mold incidence is expressed as the number of hits, 1 foot or less in length, per 60 feet of row.

^xNumbers followed by the same letter are not significantly different according to Fisher’s protected least significant difference (LSD) test, P=0.05).

At the Gulf Coast Research and Extension Center in 2005, the level of late leaf spot control obtained with 8.0 fluid ounces per acre of Provost 433SC as well as the Echo 720, Abound 2SC, Echo 720/Echo720+Moncut 70DF, and Absolute/Echo 720 programs was very similar (Table 3). Folicur 3.6F was significantly less effective in controlling late leaf spot than all of the above fungicide programs except for Absolute/Echo 720. The level of rust and white mold control with Provost 433SC was very similar to that obtained with the above recommended fungicide programs. Overall yields were exceptionally high for all fungicide programs. Peanuts treated with the 8.0 fluid ounce rate of Provost had yields that were similar to all recommended fungicide programs. The Provost 433SC program that included Proline at-plant yielded increased yield significantly above those that included at-plant and post-plant applications of Abound 2SC as well as the Absolute/Echo 720 program.

Table 3. Provost 433SC performance against late leaf spot, peanut rust, and white mold compared with that of other recommended fungicides at the Gulf Coast Research and Extension Center in 2005.

Treatment and Rate/A	Application Timing ^z	Disease Rating			Yield lb/A
		Late Leaf Spot ^y	Rust	White Mold ^y	
Echo 720 24.0 fl oz.	1-7	3.4 b ^x	3.5	4.0	6194 abc
Absolute 3.5 fl oz + Induce 0.125% v/v . Echo 720 24.0 fl oz	1,3,5,7 2,4,6	3.6 ab	3.0	3.7	5873 c
Echo 720 24.0 fl oz	1,2,7	3.2 b	3.2	3.2	6347 abc
Provost 433SC 8.0 fl oz	3,4,5,6				
Proline 5.7 fl oz	In-furrow	3.0 b	3.2	3.2	6691a
Echo 720 24.0 fl oz	1,2,7				
Provost 433SC 8.0 fl oz	3,4,5,6				
Echo 720 24.0 fl oz	1,2,7	4.1 a	3.2	3.7	6186 abc
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Echo 720 24.0 fl oz	1,2,4,6,7	3.5 b	3.3	3.5	6439 ab
Abound 2SC 18.5 fl oz	3,5				
Echo 720 24.0 fl oz	1,2,4,6,7	3.5 b	3.3	3.0	6316 abc
Echo 720 24.0 fl oz + Moncut 70DF 1.1 lb	3,5				
Abound 2SC 6 fl oz	In-furrow	3.5 b	3.2	3.5	6064 bc
Echo 720 24.0 fl oz	1,2,4,6,7				
Abound 2SC 18.5 fl oz	3,5				

^zFungicide applications were made on 30 June, 12 July, 25 July, 9 August, 22 August, 6 September, and 19 September.

^yWhite mold incidence is expressed as the number of hits, 1 foot or less in length, per 60 feet of row.

^xNumbers followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test, P=0.05).

As was seen in 2005, Provost 433SC was equally effective in 2006 in controlling late leaf spot and rust on peanut at rates from 4.0 to 10.7 fluid ounces per acre (Table 4). All rates of Provost 433SC as well as the Echo 720, Absolute/Echo720, Echo 720/Echo 720+Moncut 70DF, and Echo 720/Abound 2SC programs were equally effective in controlling late leaf spot and rust on peanut. Highest leaf spot and rust ratings were seen with programs that included two or four applications of Folicur 3.6F. The at-plant application of Proline fungicide had little if any impact on leaf spot and rust control with Provost 433SC. White mold hit counts for the Provost 433SC-treated peanuts were significantly below those recorded for the Echo 720 standard. White mold control with Provost 433SC did not improve when the application rate was increased from 4.0 to 10.7 fluid ounces per acre. Generally, all rates of Provost 433SC gave nearly the same level of white mold control as the programs that included applications of Absolute, Abound 2SC, and Echo 720+Moncut 70DF. Of the three diseases, white mold may have been the only one to

reduce pod yield. Except for the 4.0 fluid ounce per acre rate, yield for the Echo 720-treated peanut alone was significantly below those treated with Provost 433SC. Yield response to the 5.0, 8.0, and 10.7 fluid ounces per acre rate of Provost 433SC as well as the programs that included applications of Absolute, Folicur 3.6F, and Abound 2SC was very similar.

Table 4. Provost 433SC performance against late leaf spot, peanut rust, and white mold compared with that of other recommended fungicides at the Gulf Coast Research and Extension Center in 2006.

Treatment and Rate/A	Application Timing ^z	Disease Rating			Yield lb/A
		Late Leaf Spot	Rust	White Mold ^y	
Echo 720 24.0 fl oz.	1-7	3.1 bc ^x	3.8 cd	6.2 a	3854 b
Echo 720 24.0 fl oz.	1,2,7	3.0 bc	3.7 cd	3.5 bc	4833 a
Provost 433SC 8.0 fl oz	3,4,5,6				
Proline 5.7 fl oz.	In-furrow	2.9 c	3.5 d	2.0 c	4795 a
Echo 720 24.0 fl oz	1,2,7				
Provost 433SC 8.0 fl oz	3,4,5,6				
Echo 720 24.0 fl oz.	1,2,7	2.9 c	3.8 cd	3.8 b	4772 a
Provost 433SC 5.0 fl oz	3,4,5,6				
Echo 720 24.0 fl oz.	1,2,7	3.0 bc	3.8 cd	3.8 b	4450 ab
Provost 433SC 4.0 fl oz	3,4,5,6				
Absolute 500SC 3.5 fl oz ^w	1,3,5	3.0 bc	4.0	4.3 b	4450 ab
Echo 720 24.0 fl oz	2,4,6,7		bcd		
Absolute 500SC 7.0 fl oz ^w	1,3,5	3.0 bc	4.0	4.0 b	4741 a
Echo 720 24.0 fl oz	2,4,6,7		bcd		
Echo 720 24.0 fl oz.	1,2,7	3.0 bc	4.2 bc	3.2 bc	4795 a
Provost 433SC 10.7 fl oz	3,4,5,6				
Echo 720 24.0 fl oz.	1,2,7	3.7 a	4.8 a	2.8 bc	5009 a
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Abound 2.08SC 6.0 fl oz.	In-furrow	3.1 bc	4.2 bc	3.3 bc	4460 ab
Echo 720 24.0 fl oz	1,2,4,6,7				
Abound 2.08SC 18.5 fl oz	3,5				
Echo 720 24.0 fl oz.	1,2,4,6,7	2.9 c	4.2 bc	3.5 bc	4557 a
Abound 2.08SC 18.5 fl oz	3,5				
Echo 720 24.0 fl oz.	1,2,4,6,7	2.9 c	3.7 cd	2.7 bc	4928 a
Echo 720 24.0 fl oz + Moncut 70DF 1.1 lb	3,5				
Headline 2.09EC 9.0 fl oz.	1.5	3.2 b	4.5 ab	3.7 bc	4389 ab
Folicur 3.6F 7.2 fl oz	3,5				
Headline 2.09EC 12.0 fl oz	4				
Echo 720 24.0 fl oz	6,7				

^zFungicide applications timing was 1 = 26 June, 1.5 = 5 July, 2 = 10 July, 3 = 24 July, 4 = 8 August, 5 = 21 August, 6 = 5 September, and 7 = 20 September.

^yWhite mold incidence is expressed as the number of hits, 1 foot or less in length, per 60 feet of row.

^xNumbers followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test, P=0.05).

^wInduce adjuvant was added to Absolute tank mixtures as a rate of 0.06% v/v.

Summary

Provost 433SC is a useful addition to the arsenal of fungicides needed to protect peanuts from leaf spot diseases, rust, and white mold. Our trial results clearly show that this fungicide gives good control of early and late leaf spot over a range of labeled application rates. The drop off in leaf spot control that's been seen with the triazole fungicide Folicur 3.6F is not a problem for Provost 433SC. Apply label rates of Provost 433SC as well as adding a non-triazole fungicide to Provost 433SC tank mixtures will also help prevent the shift to more fungicide tolerant forms of the leaf spot fungi. Rust and white mold control with labeled rates of Provost 433SC with other fungicides with foliar and soil disease activity also is fairly similar. While the addition of the Proline at-plant treatment to an 8 fluid ounce per acre Provost 433SC program usually did not enhance the control of leaf spot diseases, rust, or white mold, the combination of these at plant soil and post-plant foliar fungicide treatments gives superb control of CBR on peanut in several Georgia field trials. With additional trials are being conducted in 2007 with Provost 433SC programs, considerably more information concerning the performance of this fungicide will be available next year.