

Response of Soybean to Timing of Fungicide Applications in the Presence and Absence of *Phakopsora pachyrhizi* *

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Introduction

Timing of fungicide applications may be critical in managing soybean rust and may, if used effectively, reduce the number of applications needed for economic benefit. The objectives of these experiments were to evaluate the affects of different timings of fungicide applications on soybean rust severity and yields. Trials were conducted in Paraguay (three locations) and in the U. S. (four locations). In Paraguay, all three locations were infected with soybean rust; in two locations rust significantly impacted yield. Trials in the U.S. were located in Illinois, Mississippi, North Dakota, and Tennessee; none were infected with soybean rust.

Materials and methods

A representative soybean cultivar was planted in each region for this experiment. Treatments in each field included applications with: triazole (Folicur), strobilurin (Headline), or a triazole-strobilurin combination (Quilt) at either (i) growth stage (GS) R1, (ii) GS R3, (iii) GS R5, (iv) GS R1 and R3, (v) GS R3 and R5, or (vi) not sprayed. The fungicides were applied with a backpack sprayer with TeeJet XR8002 tips at 40 PSI.

Trt #	Treatments
1	Headline(9oz/a)@R1
2	Folicur(4oz/a)@R1
3	Quilt(13 oz/a)@R1
4	Headline(9oz/a)@R3
5	Folicur(4oz/a)@R3
6	Quilt(13 oz/a)@R3
7	Headline(9oz/a)@R5
8	Folicur(4oz/a)@R5
9	Quilt(13 oz/a)@R5
10	Headline(9oz/a)@R1 - Folicur(4oz/a)@R3
11	Folicur(4oz/a)@R1 - Headline(9oz/a)@R3
12	Quilt(13 oz/a)@R1 - Quilt(13 oz/a)@R3
13	Headline(9oz/a)@R3 - Folicur(4oz/a)@R5
14	Folicur(4oz/a)@R3 - Headline(9oz/a)@R5
15	Quilt(13 oz/a)@R3 - Quilt(13 oz/a)@R5
16	control

Figure 2: Treatment list for experiments



Figure 5: Pictures of trials in Paraguay

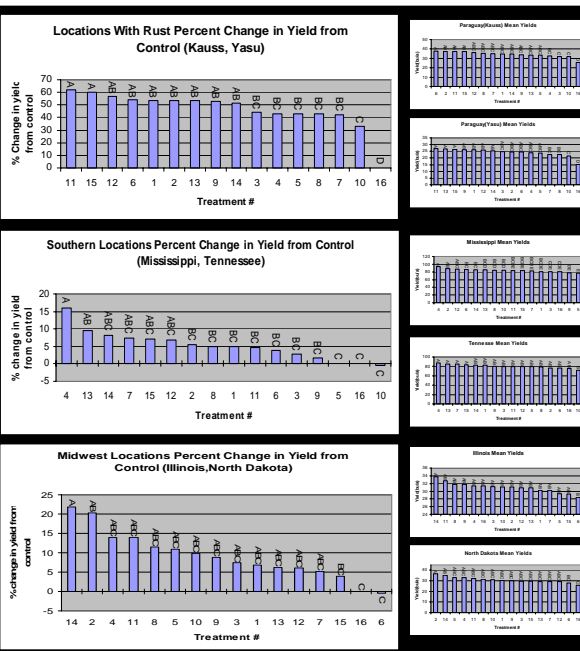


Figure 3: Data collected from six locations (Kauss, Yasu, MS, TN, IL, and ND) with four repetitions at each location

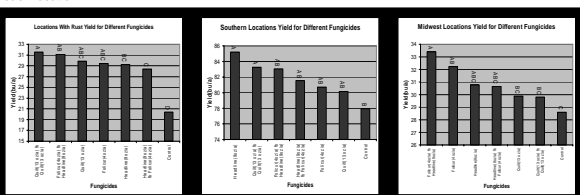


Figure 4: Comparison of fungicides and fungicide combinations at the three regions of the world (Paraguay, Southern US and the Midwest)

Mean Yield by Location

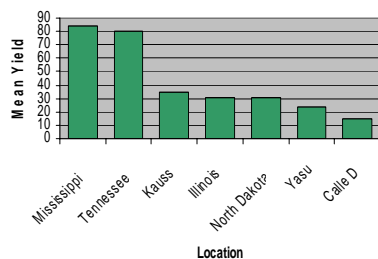


Figure 1: Mean yields of the seven locations

*Names are necessary to report factually on available data; however, the USDA neither guarantees nor warrants the standard of the product, and the use of the name by the USDA implies no approval of the product to the exclusion of others that may also be suitable.

Results

There was a significant treatment by location interaction due to different disease pressure and growing environments in each region. Locations were analyzed individually and regionally. The increased yield over the control due to the timing of fungicides was different for each fungicide in each region, so there was no statistical difference between the timing except over the control.

Paraguay locations with rust (Kauss, Yasu)

- All treatments yielded significantly better than the control

- Only Folicur@R3-Headline@R5 and Quilt@R3-Quilt@R5 treatments yielded significantly better than other treatments

- No apparent stimulation of yield caused by Strobilurins

Southern locations (MS, TN)

- Treatments of Headline@R3 and Headline@R3-Folicur@R5 treatments yielded significantly better than the control

- Strobilurin (Headline) had a significant increase of yield over the control

Midwest locations (IL, ND)

- Folicur@R1 and Folicur@R3-Headline@R5 treatments yielded significantly better than the control

- No apparent stimulation of yield caused by Strobilurins