ASPARAGUS (*Asparagus officinalis* 'Franklim')
Rust; *Puccinia asparagi*

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Control of rust of asparagus with a scouting program and fungicide sprays, 2002.

This study was conducted at a cooperator's farm in Oceana County, MI in an established asparagus field. Experimental plots were arranged in a section of the field that was 10-rows wide by 100 ft long. Plots consisted of one 20-ft row with an untreated section of 5 ft separating plots within the row. Crowns were spaced 9 in. apart in the row and rows were spaced 5 ft apart. Treatments were replicated four times in a randomized complete block design. Weed control and fertilization were to commercial production standards. Weather data was collected on a Watchdog 450 (Spectrum Technologies, Plainfield, IL) weather station that was located at the side of the plot. Mean temperatures and rainfall totals are as follows: Apr 49.5 °F and 2.9 in.; May 52.1 °F and 3.3 in.; Jun 67.8 °F and 3.3 in.; Jul 75.0 °F and 3.4 in.; Aug 70.3 °F and 5.0 in; and Sep 65.5 °F and 0.8 in.. Fungicide sprays were applied with a CO_2 backpack boom sprayer equipped with three 11002XR nozzles spaced 19 in. apart, operating at 50 psi, and delivering 50 gal/A. Different initial applications were made based on either a standard 14-day spray program or at different level of rust infection. The grower standard program was started on 19 Jul and a fungicide application was made every 14 days. Another standard 14-day schedule was started after the final harvest of the crop to the asparagus stubble and emerging fern on 2 Jul. The first scouting treatment was initiated when the first trace of rust was detected in untreated sections of the field. The remaining treatments were started at different levels of increasing rust pressure. Rust pressure was evaluated weekly in untreated sections of the field. Separate 14-day schedules were started at a rust severity of 1, 2, 3, and 4 with the scale being 1=0% to a trace of rust; 2=trace-10%; 3=10-20%; 4=20-30% with a trace of defoliation; 5=30-40% with 1-10% defoliation; 6=40-50% with 10-25% defoliation; 7=50-60% with 25-50% defoliation; 8=60-70% with 50-75% defoliation; 9=70-80% with >75% defoliation; 10=>80% rust and complete defoliation. Folicur at 6 fl oz/A was used as the initial treatment for each program and then rotated with Bravo Weather Stik at 2 pt/A for the rest of the season.

Rust was present all season but dry weather only allowed light to moderate disease development with the untreated progressing to a severity value of only 4.0 on the last rating date. When applications were started at first trace of rust or at full fern disease development was held to a rating of 1.0 to 1.3, respectively, at the time of the final rating. Starting applications at stubble; full fern; trace of rust; and severity values of 1 and 2 provided significant control of rust compared to the untreated. Waiting to initiate applications until a disease severity of 3 was reached did not significantly reduce disease, but the disease level did not progress further. Since disease pressure never developed pass a value of 4 for the season applications were not made to the treatments slated to begin at severity levels of 5 and 6. The disease level in these treatments was similar to the untreated at the final rating. Delaying the initial applications until a trace of rust developed allowed for one fewer fungicide application compared to starting at stubble without the loss of disease control. Waiting to make applications until disease severity reached a level of 1 resulted in two fewer fungicide applications compared to starting at stubble and disease control was significantly similar to the calendar spray program. Applications of Folicur were very effective in holding disease levels at the point of initial treatment.

Treatment and rate per acre, application schedule	Dates of application	Rust severity* 9/13		9/24	
Untreated		4.0	c**	4.0	de
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at stubble	Folicur: 7/2, 8/2, 8/30 Bravo: 7/19, 8/16, 9/13	2.0	ab	1.3	ab
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at trace of rust	Folicur: 7/19, 8/16, 9/13 Bravo: 8/2, 8/30	1.0	a	1.0	a
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 1	Folicur: 7/31, 8/28 Bravo: 8/14, 9/9	1.5	ab	1.3	ab
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 2	Folicur: 8/9, 9/9 Bravo: 8/21,	1.8	ab	2.3	bc
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 3	Folicur: 8/16, 9/13 Bravo: 8/30	3.3	bc	3.3	cd
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 4	Folicur: 9/13 --	4.3	c	4.3	de
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 5	-- --	4.5	c	5.3	e
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at rust severity of 6	-- --	4.5	c	4.8	e
Folicur 3.6SC 6 fl oz alternated Bravo Weather Stik 2 pt, 14 day at full fern	Folicur: 7/19, 8/16, 9/13 Bravo: 8/2, 8/30	1.5	a	1.3	ab

*Based on a severity rating of 1 to 10 where 1=0% to trace of rust to 10=80% rust and complete defoliation.
**Column means with a letter in common are not significantly different (Fisher LSD; *P*=0.05).