

Fungicides Prevent Massive Losses of Soybeans In Brazil

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Soybeans became an important crop in Brazil in the 1970s with area expanding from 400,000 hectares in 1960 to 22 million currently. Production has increased to 62 million tons (Figure 1).

Asian soybean rust was first reported in Japan in 1902 and is common throughout Australasia. In 2001 soybean rust was first detected in the Western Hemisphere spreading rapidly from Paraguay into Brazil [2].

After landing on a wet leaf, soybean rust spores form a germ tube that penetrates the leaf. Once lesions appear, defoliation is rapid. Pustules break open releasing clouds of spores. Rust thrives on moisture, high humidity and moderate temperatures — all characteristics of Brazil's soybean-growing area.

In 2002, rust was found on 60% of Brazil's soybean acreage. Yield losses reached 75% [1]. In 2003, soybean rust spread to almost all of Brazil. Total losses for 2003 were estimated at 10% of the crop, an increase from the 5% reported for 2002 [3].

Currently, the only effective control of Asian Soybean Rust is through the use of fungicides [4]. Current soybean cultivars lack resistance or tolerance to reduce damage caused by rust [4]. The disease readily mutates into different strains which quickly overcome resistant varieties.

The Brazilian government made registration of fungicides a priority. Registration of a new chemical in Brazil normally takes up to three years; new fungicides for rust control were registered in four months [5]. The number of fungicides registered in Brazil for soybean rust grew from 5 in 2002 to 62 currently (Figure 2). The soybean fungicide market in Brazil grew from about \$US 50 million in 2002 to \$200 million in 2003 and now totals about \$800 million [6]. Currently soybean losses in Brazil due to rust are close to zero [6]. Most of the acreage is treated twice [2].

Fungicides for soybean rust have been evaluated since 2003 in a network of field trials coordinated by Embrapa Soja, a unit of the Brazilian Agricultural Research Corporation. A recent meta analysis of the results of 71 trials involving 930 specific fungicidal treatments indicated that, on average, fungicide treatments increase soybean yield by 44% [2]. Thus, despite favorable environmental conditions for soybean rust epidemics in Brazil, fungicidal control of the disease is highly effective [2].

References

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Spraying for soybean rust



Soybean rust (untreated in center)

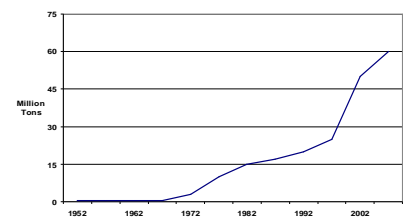


Figure 1: Brazilian Soybean Production

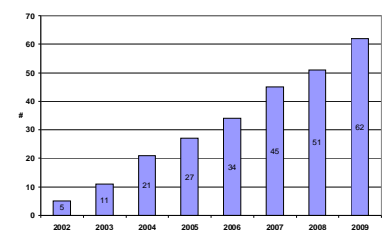


Figure 2: Labeled Fungicides for Soybean Rust