



Tropentag, September 11-13, 2024, hybrid conference

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Economic viability and impact of Lalguard Java bioinsecticide on the biological control of the whitefly on common bean

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Abstract

The bioinsecticide Lalguard Java, developed in a public-private partnership between Embrapa and Lallemand Plant Care, was registered at the Brazilian Ministry of Agriculture in August 2022 to control the whitefly (*Bemisia tabaci*). The whitefly attacks several crops in Brazil, including common beans (*Phaseolus vulgaris* L.), soybeans (*Glycine max*), and cotton (*Gossypium hirsutum* L.). In 2023, technical coefficients in the main common bean-producing regions in the 3rd harvest season were surveyed to measure the impact and economic benefit of the new bioinsecticide. The input and product prices were from 3rd April 2023 (USD 1.00 = BRL 5.0637) and 1st September 2023 (USD 1.00 = BRL 4.9312), respectively. The average yield of common beans (cultivar Pérola) with Lalguard Java was 2,880 kg ha⁻¹, at a production cost of USD 1,402.66 (BRL 7,102.63) ha⁻¹. In the conventional cropping system, using chemical insecticides, the farmers' production costs were USD 1,472.93 (BRL 7,458.47) ha⁻¹, a higher cost to obtain the same yield of 2,880 kg ha⁻¹. The average unit cost of a kg of common beans in the conventional cropping system was USD 0.51 (BRL 2.59), and with Lalguard Java, it was USD 0.49 (BRL 2.47) (-4,77%). The new bioinsecticide provided farmers with a profitability of 62% with the cropping system; for those who used the conventional system, the profit was 54%. The regional economic benefit for society via agribusiness was USD 1,226,735.89 (BRL 6,049,280.00), given the cost reduction, the adoption area of 34,000 ha and Embrapa's 50% participation in the research and development of this technological innovation.

Keywords: Economic benefit, production cost, yield