



Tropentag 2024, Vienna, Austria
September 11-13, 2024



ECONOMIC VIABILITY AND IMPACT OF LALGUARD JAVA BIOINSECTICIDE ON THE BIOLOGICAL CONTROL OF THE WHITEFLY ON COMMON BEAN

Alcido Elenor **WANDER**^{1,2,3}, Osmira Fátima DA SILVA¹, and Eliane Dias QUINTELA¹

¹ Embrapa Rice and Beans, Rodovia GO-462, km 12, 75375-000 Santo Antonio de Goiás-GO, Brazil. Email alcido.wander@embrapa.br.

² Graduate Program in Agribusiness, Federal University of Goiás (UFG), Goiânia-GO, Brazil.

³ Graduate Program in Regional Development, Centro Universitário Alves Faria (UNIALFA), Goiânia-GO, Brazil.



OBJECTIVE

To measure the impact and economic benefit of the new bioinsecticide, Lalguard Java, made available by Embrapa and its partner Lallemand Plant Care to common bean producers in the third harvest in the main production regions of Minas Gerais and Goiás states, Brazil, in 2023.

METHODOLOGY

Strategy: Comparison between adopters and non-adopters.

Data:

- Adopters: Survey with 10 adopting farms.
- Non-Adopters: Secondary data (standard production cost sheets).

Analyses: Compare the production cost sheets of adopters to the standard cost sheets (non-adopters).

Technique: Economic Surplus Method to estimate the regional economic surplus generated by Lalguard Java adoption.

RESULTS AND DISCUSSION

Figure 1

(a) The crop: Common bean under irrigation (3rd cropping season)



Source: <https://www.researchgate.net/profile/Luis-Stone-2/publication/358629977/figure/fig1/AS:11431281155572787@1683211428282/Figura-1-Irrigacao-de-lavoura-de-feijao-por-pivo-central-Este-artigo-descreve-o.png>

(b) The problem: whitefly (*Bemisia tabaci*) and the solution



Sources: <https://agro.genica.com.br/2020/05/26/mosca-branca-feijao/>, https://media.lidn.com/dms/image/C5622AQE9RWh2UsRAPQ/feedshare-shrink_800/0/1673989283821?e=2147483647&v=beta&t=IOOFV9iNus4zXsVJ5d4T3zC7rptEBs_G4S7-ucZS4

Figure 2: Spraying equipment that could be used to apply the bioinsecticide Lalguard Java in common bean crop.



Source: <https://blog.aegro.com.br/wp-content/uploads/2022/08/1-pulverizador-agricola.jpg>

Table 1. Economic benefit of Lalguard Java bioinsecticide adoption to control whitefly in the third common bean crop of 2023 in Minas Gerais and Goiás states, Brazil.

Part A:

Year	Yield non-adopters (kg/ha)	Yield adopters (kg/ha)	Unit price ¹⁾ (BRL/kg)	Additional costs ¹⁾ (BRL/ha)	Net benefit ¹⁾ (BRL/ha)
2023	2,880	2,880	4.666	(355.84)	355.84

Part B:

Year	Embrapa's share of benefit (%)	Embrapa's net benefit (BRL/ha)	Area of adoption (ha)	Economic benefit (BRL)
2023	50	177.92	34,000	6,049,280.00

¹⁾ Input prices of April/2023 (USD 1.00 = BRL 5.0637). Bean prices of September 2023.

This economic surplus of over BRL 6 million (USD 1.2 million) already in the first year of adoption shows a tremendous economic potential over the following years, beside all environmental and social benefits of using biological control.

CONCLUSIONS AND OUTLOOK

- 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 surplus (benefit to the society) via agribusiness was BRL 6,049,280.00 (USD 1,194,636.33) generated by Embrapa's research, 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.
- Economic benefits will raise in the coming years due to increase in adoption in common beans as well as other crops, since whitefly also occurs in other field crops.

ACKNOWLEDGEMENT

This research was supported by Brazilian Government through the Ministry of Agriculture and Livestock (MAPA) and the National Council of Scientific and Technological Development (CNPq). The participation of the presenting author at Tropentag was also supported by Goiás State Research Support Foundation (FAPEG).

