

# INTEGRATED PRODUCTION SYSTEM OF RICE FOR RISK PREVENTION IN BRAZIL

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## Introduction

Two rice production conditions exist in Brazil, which are responsible for the production of more than 12 million tonnes of grains annually. In lowland areas, rice is cultivated under irrigated flooding conditions, comprising more than 1.3 million ha. In land cultivated areas, without irrigation, rice cropping occupies more than 1.6 million ha. The Brazilian government invests large sums in research in order to improve its agricultural production. There are projects developed by the Brazilian Agricultural Research Corporation (Embrapa) in areas such as phenological cycle, plant protection, breeding, environment, agroclimatic zoning for various crops, including irrigated rice crop. The technologies, products and applied processes contribute to the sustainability of agriculture, creating wealth for the country and minimizing the scourges of hunger and misery. In this context, the Integrated Production of Rice (PIA), a high quality voluntary production system, protects the environment and boosts productivity, including maintenance of profitability and social requirements. PIA includes field and post-harvest segments, and certifies food and environmental safety by means of traceability, certification and quality seal. It aims to better structure and organize the rice production chain, including quality processes such as Best Agricultural Practices (BPA) and others for risk prevention measures. It seeks to implement interdisciplinary processes, recommending lower use of chemical inputs, especially pesticides, based on principles of Integrated Pest Management (IPM).

In PIA, the management of the agricultural property and the production of cereals must be in compliance with the principles of BAP and of a "Low Carbon Agriculture" (LCA), incorporating requirements of mitigation and adaptation to climate change and rational use of chemicals. For such, it becomes necessary to conduct diagnosis and environmental monitoring of pesticides in PIA for risk prevention. In the rice producing regions of the State of Rio Grande do Sul (RS), Brazil, located in the Pampa biome, where during the 2010/2011 harvest season 1.16 million ha of flooded irrigated rice was cultivated (CONAB, 2011), there is large concentration of natural hydraulic springs (brooks, lagoons, lakes, rivers...) (Figure 1) as well as weirs and dams. Furthermore, recharge points of the Guarani Aquifer are present where rice production activities are taking place.

The objective of this work is to present the Integrated Production of Rice (PIA) for risk prevention in Brazil. In 2005, the Department of Agricultural and Livestock Development and Cooperativism (SDC) of the Ministry of Agriculture, Livestock and Food Supply (MAPA) in partnership with Embrapa, implemented PIA as an instrument of support to the rice agribusiness.



Figure 1. Hydrics springs in RS: Patos Lake, Mirim Lake, Mirim Lake basin, Patos Lake basin (Japan International Cooperation Agency, 2000). The map covers the Internal and External Coastal Plains and the Campanha Plateau, of the Pampa biome, where irrigated rice production takes place around hydraulic springs.

## Results and Discussion

Environmental monitoring of pesticides performed in the context of PIA is necessary to gain knowledge about the agricultural practices utilized in rice crops and to demonstrate the applicability of PIA in indicating the quality of the natural resources of a particular agro-ecosystem where PIA is being practiced, making certification feasible. At the same time, when pesticides are detected above allowable limits according to Brazilian legislation, the need for applying IPM is indicated, seeking the rationalization of the use of pesticides, and consequently the prevention of environmental risk and an increased rice production safety, safeguarding the consumer's health (MATTOS et al., 2009).



Biodiversity in rice fields in Rio Grande do Sul, Brazil



The insertion of Brazilian cultivated irrigated rice in new markets, such as nations in South America, Central America, North America, Europe, Africa and Middle East, also presents challenges with regard to quality and safety of the product. In the past, the commercialization of rice was solely as a commodity, focusing mainly the quantity of product needed to satisfy internal markets. Currently, rice is being exported both in husk and beneficiated (polished and parboiled), adding value and increasing sales margins. There is an opportunity that Brazil, in the medium to long term, can become a large exporter of rice, considering the restrictions in area for cultivation of this cereal in other countries, especially in Asia, and their compromised quantity and quality of water (MATTOS et al., 2009b). PIA allows rice producers to comply with standards for safe production and opens business opportunities to serve growing markets, such as the external ones which are rigorous on phytosanitary requirements and safety product and environment qualities.

The know-how of rice producers and the rice industry as a whole on the obligatory quality requirements of PIA is supported by the MAPA, the National Institute of Metrology (INMETRO) and the National Association of Agricultural Defence (ANDEF). Training sessions and courses are offered on Best Agricultural Practices and Best Production Practices for producers, agents from technical assistance, chemical suppliers, rural creditors, representatives from industries, certifying agencies, educational institutions, environmental and agricultural inspections organizations, and third-party companies, including members of the Regional Technical Committees of PIA, and technical personnel of MAPA.

## Conclusion

The PIA is an important tool for risk prevention in the environment where rice is produced in Brazil

### REFERENCES

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