



Rice Technical Working Group

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PROCEEDINGS...

Thirty-Seventh Rice Technical Working Group

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A first analysis under the economic theory suggest some loss of efficiency on miller's side. Critics allege that millers usually hide the true nature of their cost structure while assuring some level of profit not based in market fundamentals. "What is left" after the deduction of the value added by the milling stage can or cannot be enough to reward the use production factors at the primary sector. Profit levels could be either positive or negative. Farmers face a level of uncertainty that millers do not face because the existence of asymmetric information. In principle, it would be possible for millers having no market incentives for seeking technical and economic efficiency, as farmers have. Nevertheless, any potential advantage millers could get can also be severely limited from the fact that they are completely price takers as suppliers in the international market.

In a more deep analysis, a potential price differential emerging between the actual pricing system and another one, closer to the ideal competitive supply-demand conditions can be seen as an insurance fee. Farmers are willing to pay to millers (usually also exporters) to ensure the placement of their production in the market. Millers are obliged to receive 100% of the production submitted by farmers. In that way, the latter transfer this marketing risk to the former, who will have to find the proper destinations of production. Farmer's engagement into this negotiated agreement is voluntary and they have been doing so for more than half a century, without any public intervention. The own agreement provides a private arbitrage process to be followed when direct negotiation does not comes out with a satisfactory outcome to both sides. This process, where each side appoint a referee, only happened twice in more than 50 years and this year could be the third such year. Other institutional and financial arrangements between farmers and millers have also allowed the development of different services (technical advice, purchase of inputs), also with the inclusion of other key players in this partnership, such as the national research institute, INIA (Instituto Nacional de Investigación Agropecua

Breaking Rice Yields through Sustainable Intensification Pathways

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With the expiration of the Millennium Development Goals at the end of 2015, the international community has agreed on an ambitious and transformational 2030 development agenda. While the new set of Sustainable Development Goals (SDGs) and the concrete targets and indicators for achieving these goals are crucial frameworks to guide the global understanding of complex sustainable development challenges, to encourage action and foster accountability, each country still needs to choose its own sustainable development path, with specific, achievable actions and outcomes at the national and sub-national levels. In 2013, Uruguay was selected as a pilot country for a study case analysis of agricultural transformation pathways, under the United Nation's Sustainable Development Solutions Network initiative (SDSN). Although the main focus of the international project was the beef cattle production system, Uruguay authorities decided to broaden the scope of the study and extend the efforts of setting up SDGs to other key agricultural sectors: dairy cattle, rice, soybeans, and forestry.

This research outlines the fundamental elements of a pathway for transforming Uruguay's rice sector in a way that is consistent with post-2015 SDGs. It introduces the productivity and environmental targets for 2030 that constitute the basis of the pathway as well as the methodological approach used to develop them. Uruguay is probably the most export-oriented producing country of the world, selling around 95% of its total production in the international market. No other country actually devotes a proportion as high as Uruguay does. Each year, rice exports reach around one million metric tons of rice products, shipping weight, to more than 50 destinations. This is equivalent to more than 1.3 million metric tons of paddy, placing the country sixth to eighth in the top ten ranking of world net exporters of the cereal.

Sustainable intensification of Uruguay's rice sector is a multi-objective optimization problem. The challenge is to maximize profits by increasing productivity and reducing costs, keeping country's high standards of grain quality, while minimizing the impact over a suite of environmental variables (greenhouse gas emissions, biodiversity loss, water footprint, nutrient loss, etc.). Since the beginning, the definition of sustainable development targets was carried out along with all actors in the rice production chain, combining in-person consultations and workshop activities as much as possible. In order to analyze the feasibility of the necessary pathways for achieving the targets, a mixed-methods approach was adopted, blending intensive literature reviews with modeling efforts and expert judgment from scientists and academics, stakeholders, and decision makers from the public and private sector.

Uruguay rice production in Uruguay was modelled by using the ORYZA V3 model adapted to the local conditions. The productivity target was based on closing current exploitable yield gap between the average national yield and the potential yield adjusted for commercial capacity. According to the simulations, theoretical potential yield (TPY) achieved with the best technology is 14 metric tons per hectare (MT/ha). Assuming exploitable yield as 80% of TPY, that is 11.2 MT/ha, and that actual average yield of 8.1 MT/ha at the national level, there would be an exploitable yield gap of 3.1 MT/ha. After a thorough discussion with researchers, technicians, and farmers, the target for 2030 was set in 9.7 MT/ha. Using the final price of 2015/16 season as the price of paddy in 2030 (USD 245 PMT), and same costs per unit of inputs, profits are expected to rise from 50 to 210 USD/ha.

In the recent past, Uruguay's rice sector has experienced significant increases in total national production because of agronomic improvements and high-yielding locally developed varieties. This growth did not bring any negative environmental consequences, mostly due to some characteristics of rice production in Uruguay such as the rotation with perennial pastures. The most common set of practices applied by rice producers currently obtaining the highest yields in Uruguay were defined as the technological alternatives that would turn possible the necessary transformation pathways for achieving 2030 production goals. Management practices applied today by leading farmers should be the common practices in 2030.

The environmental impacts were assessed through a set of 8 indicators, for which baseline and target measures were estimated and compared. According to the results, half of the environmental indicators will exhibit a positive evolution: net energy yield (GJ/ha), water use efficiency (kg rice/m³), and nitrogen use efficiency (kg rice/kg applied N) should increase 15.2%, 22.6%, and 13.2%, respectively, while yield-scaled carbon footprint (kg CO₂ eq/Mg grain) should decrease 17.3%. On the other hand, net energy consumption (GJ/ha) is expected to rise 7%, nitrogen use (kg/ha) and nitrogen loss (kg/ha) are expected to increase 8.4%, whereas gas emissions (kg CO₂ eq/ha) are expected to increase 1.8%.

Uruguay Rice Production: Efficient in the International Market and Supportive of the National Economy

Fernández, E., Ferraro, B. and Lanfranco, B.

Uruguay is a very efficient export-oriented rice producer, exporting 95% of its national production. This large export market makes Uruguay the seventh largest rice exporter globally. Production has multiplied by 27 in the past 50 years, driven in the last two decades mainly by the increase in yields, reaching an average of 8571 kg.ha⁻¹ for the 2016/2017 growing season on 165000 ha. Rice represented 5% of the country's exports in 2016 accounting for more than US\$ 434 million. Recently, external and internal factors are threatening historical competitiveness. Low international prices and higher production costs are particularly hampering competitiveness. This paper examines the evolution of the competitiveness of Uruguay rice sector and its contribution to national economy in the last decade.

Competitiveness of the rice sector was analyzed using a modified approach of the Policy Analysis Matrix. Private and social annual benefits were calculated for the last decade. Private benefits refer to economic returns received by private actors operating at various levels of the rice production chain (farm producers, transporters, millers and processing plants, etc.) given the current private prices with the existing taxes, interest rates and social security contributions. Social benefits are economic returns received by all the operators calculated under the assumption of social prices, with no taxes, interest rates or social security contributions considered. The difference between social and private benefits corresponds to the economic transferences from the rice sector to the Uruguayan economy.

After three singular years at the beginning of the decade affected by a drop in rice prices (US\$.t⁻¹ 328, 241 and 250 respectively for 2008, 2009 and 2010), both social and private benefits have experienced a slow decreasing trend, being steeper in the last two seasons. Meanwhile transferences have kept almost the same level since 2010/11 with small variations among cropping seasons. Using current values, in 2016/17 social benefits were estimated in US\$ 79 per processed metric ton of paddy rice, private benefits US\$ 21 and transferences in US\$ 58. Transferences from domestic factors cost (labor, capital costs, etc.) divergence between private and social prices calculation accounted for 68% of total transferences, while tradable factors cost (production and processing inputs, energy, etc.) divergence represented 2. % and gross income divergence was 29.5%.