Rice Technical Working Group

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PROCEEDINGS. . .

Thirty-Seventh Rice Technical Working Group

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Edited by: Michael Salassi, Bruce Linquist and Lee Tarpley

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/m^3), 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 CO_2 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 CO_2 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%.

When accounting for transferences the three main sources of divergence between social and private benefits are: taxes paid, country´s differential capital costs and social security contributions. Using deflated values, during the last decade taxes as a proportion of total transferences to the economy, decreased from 42.4% to 32%, capital costs maintained a value around 24% and social security contributions climbed from 34.3% to 43.8% in the last cropping season. The important drop of the tax transferences proportion is partially consequence of the diminished income tax collection from sector´s operators as result of the negative trend in private benefits registered. The relevance of social security contributions reflects the significant improvement in real value salaries paid in the sector and in the country in general, evolving above the inflation rate and the smooth upward trend in the US dollar exchange rate during the period.

Besides salaries, which changed from a value index of 67 to 126 in the last decade (based in constant value and referred to value index of 2011/12=100), other factors that affected the competitiveness of the rice sector were related to the decrease in domestic and export rice prices (186 to 76 and 166 to 93 respectively).

Proportion of private benefits as part of social total benefits (benefit ratio) generated from the entire rice production and processing chain decreased from 46% to 27% in the last seven years. Is expected that the situation shown by the figures will contribute to an endless and important political argue about country´s costs, labor productivity, equilibrium among sectors of the economy, within others. Nevertheless, from the stand point of an agricultural research organization like INIA (Instituto Nacional de Investigación Agropecuaria) the main question is to what extent technology development and extension can still contribute to the economic sustainability of the rice production business and it´s important role in supporting the country´s welfare, in a sector that already achieves high efficiency and productivity levels with no subsidies or external support.

The economic and environmental feasibility of engaging in a production intensification process towards 2030are addressed. The potential economic returns derived from a thorough application of the improved and adjusted technological package, seeking yield increases and higher export surplus are promising. Environmental impact indexes projections also show positive trends. Production intensification achieved through more efficient and environmental sustainable cropping systems, is believed to be the potential leading factor in keeping acceptable private economic benefits in the rice industry while continuing to contribute to the rest of the economy.

How Rice for Feed Consumption Affects Feed Markets

Skorbiansky, S.R., Childs, N.W and Hansen, J.

The U.N. Food and Agriculture Organization estimates that in 2011 over 33 million mt of rice were devoted to feed, 10 percent higher than in 2006 and 27 percent higher than in 2005. Historically, rice has been consumed as a food grain. The recent increasing trend of rice in feed markets, particularly in Asia, is tied to policies that distort incentives for growers to plant rice. These policies saturate stocks and have eventually led to government releases of rice for feed use at a small fractions of the procurement cost. There is little research on the effect of protectionist rice policies in Asia on other feed grains and oilseeds markets, partly due to the lack of data. The governments of Japan, South Korea, and Thailand have recently diverted rice into their feed markets; when rice becomes a substitute for other feeds, general economic principles suggest that it lowers demand for other grains. The USDA-ERS Baseline model shows that if China were to follow in these footsteps, an introduction of rice into its feed market would have an effect, albeit small, on the global and domestic corn markets.

Feasibility and Impact of Rice Self-Sufficiency Strategies in East Africa

Durand-Morat, A., Muthee, F. and Wailes, E.J.

The 2008 food crisis prompted many food importing nations to reconsider the need to be self-sufficient especially in their staple food needs. This awakening led to the launch of the Coalition for Africa Rice Development (CARD) initiative with a goal to double rice production in Africa. Under the CARD umbrella member countries drafted individual National Rice Development Strategies (NRDS). This study is a quantitative assessment of four East African countries' NRDS: Kenya, Rwanda, Tanzania and Uganda within dynamic global rice economy models. The NRDS targets and strategies are not realistic and included under estimation of rice consumption for Kenya, an incorrect rice production area for Tanzania and overly ambitious production targets for Rwanda and Uganda. Under a business-as-