RICE FORTIFICATION TECHNOLOGY MADE AFFORDABLE

Marcela C. Saises, Charlie E. Adona, Alex M. Palomo, Sandro S. Flores, John Lester G. Ramirez, Theresa Krista B. Jolejole, Abbie L. Padrones, Aiza B. Umali, and Junimer B. Lala

Background:
Based on the Food and Nutrition Research Institute (FNRI) 2013 National Nutrition Survey, about 40.5% of the total infants aged 6 to 11 months and 25% of the pregnant population are anemic. RA 8976 mandates rice fortification with iron to address the problem of anemia mostly due to iron deficiency anemia. Thus, DOST-FNRI initiated a study on the design and fabrication of low cost blending machine for scaling-up rice fortification.

Objectives:
The general objective of the study was to design, fabricate, and test a blending machine for rice fortification that will not damage grains and has an acceptable blending ratio and uniformity in wide limits of capacity to encourage rice millers to adopt the iron-fortified rice (IFR) technology.

Materials and Methods:
The blending machine for rice fortification was designed by DOST-FNRI and fabricated by Industry partner. The mechanical design of the blending machine was conceptualized by the project team based on compactness, affordability and efficiency to cater the small to medium rice millers interested in rice fortification.

Results and Findings:
Results showed that the machine has an acceptable flow rate capacity of 30kg/min, with a high percent whole grain test (95.1%) comparable to the control (95.8%). About ninety-five percent (95%) of the collected samples were within the acceptable blending ratio of 0.004 to 0.006 using the fabricated blending machine with bucket elevator. The fabricated blending machine cost approximately P250,000 with a savings of 35% to 65% compared to other fabricated machines. The fabrication of blending machine was technically and mechanically feasible.

Conclusion and Recommendations:
The fabricated blending machine performed well in terms of stability, robustness, compactness, affordability, capacity and breakage testing except for homogeneity test. The fabricated blending machine can benefit iron-fortified rice producers, rice millers, and population groups at-risk to micronutrient deficiencies. It is recommended to develop a smaller conveyor and bucket elevator for the fabricated blending machine and conduct pilot scale productions at the mill site.