**Entry No. IRRC-0242**

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| Category | : International Rice Research Conference |
| Select Theme | : Sustainable and equitable farming systems |
| Endorsement email | : |
| Keyword 1 | : Mechanization |
| Keyword 2 | : Energy efficiency |
| Keyword 3 | : Nutrient management |
| Title of Entry | : INCREASING YIELD AND ECONOMIC EFFICIENCY IN RICE PRODUCTION BY MECHANIZATION OF FERTILIZER APPLICATION |
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| Abstract | : Fertilizer is considered as the second most important input to rice production next to labor, accounting for about 15-30% of the total production costs for irrigated rice in Asia. The effective and efficient application of fertilizers has been a continuing challenge to the sustainable use of commercial fertilizers since the right balance in fertilizer application is crucial to nutrient management that impacts the yield of the rice crop. Employing mechanization in fertilizer application is necessary to improve the uniformity of fertilizer distribution and labor productivity which are important aspects in sustainable rice production. In this study, a battery-operated disc spreader machine for spreading granular products like salt during winter in temperate countries was tested to be effective in applying granular fertilizer on the rice crop. The net effect on yield and labor savings in terms of energy efficiency was evaluated over two seasons of controlled field trials in the Philippines and in Vietnam. Results from field experiments in Laguna, Philippines showed that the use of a mechanical fertilizer spreader produced a 5-6% yield advantage over manual application with the labor efficiency almost doubled (x1.9) through a reduction of time spent applying fertilizer. Field trials in Can Tho, Vietnam also showed that the use of a mechanical fertilizer spreader reduced labor costs in fertilizer application by 78%. Farmers following the improved One- Must-Do-Five-Reduction (1M5R) method and applied fertilizer using the mechanical spreader has increased their profit by 14-36% per hectare. Farmers' field trials in Can Tho also showed that economic efficiency is improved by 40% when the mechanical spreader was applied following the 1M5R guideline. Overall, labor productivity and economic efficiency are increased when a mechanical fertilizer spreader is used with best management practices in rice production. Further farmer's field trial in different locations is recommended to establish actual benefits on the use of the mechanical spreader in fertilizer application in rice production. |

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