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Designing best weed management practices for mechanized rainfed and irrigated direct seeded rice systems in Cambodia and Lao PDR

Jhoana Opena, Jaquie Mitchell

The University of Queensland, St Lucia, Australia

The lowland rice cropping systems in Cambodia and Lao PDR continue to evolve in response to labor scarcity and increasing cost. The trend is shifting away from traditional transplanting method to direct seeded rice (DSR). Bringing in unprecedented challenges and opportunities for developing sustainable weed management in rainfed and irrigated DSR systems. The 5-year (2021-2025) ACIAR project, “Weed management techniques for mechanized and broadcast lowland crop production systems in Cambodia and Lao PDR” aims to address the weed problems for these fast-evolving production systems. Baseline surveys of the current weed management practices and constraints, socio economic and gender; determination of field weed infestation, soil weed seed bank and rice weed seed contamination were conducted in 6 and 8 target villages in Cambodia and Laos, respectively. Based on the assessment of weed problems and current weed management practices, farmers were invited to trial new promising interventions; and in conjunction with training and capacity building activities with farmers, grain yield and quality analysis, gender analysis, and economic analysis are being conducted to evaluate the success of the new interventions. Baseline surveys highlighted the importance of providing support and training on alternative integrated weed management, and effective and safe use of herbicides; the crucial role of women in implementing and ensuring safe, effective, and economical weed control strategies; and the significant variation in weed species and level of infestation, soil weed seed bank and rice weed seed contamination which warrants the need for region-specific weed management packages. In Cambodia, a weed management package of good land preparation, land levelling, certified seeds, and use of seed drill provided a 24-33% yield advantage and 24% increase in profit compared with the farmer’s practice. Mungbean intercropping packaged with the use of certified rice seeds, seed drill, and good land preparation in rainfed areas; and early application of water packaged with certified seeds and drum seeders in irrigated areas provided a suitable and economical herbicide-free weed control in the target villages in Laos. This information will lead to development of gender sensitive and effective integrated weed management package in specific conditions in Cambodia and Lao, PDR.