112-3 - Testing of a Climate-Resilient and Eco-Friendly Crop Management Package on a Representative Range of Crops through Farmer-Participatory Adaptive Research in the Northern Province of Sri Lanka

Tuesday, November 12, 2019

1:35 AM - 1:50 AM

Henry B. Gonzalez Convention Center - 006C (River Level)

Abstract

Sustainable food production for the future should incorporate crop management practices to reduce the environmental cost by lowering the use of synthetic pesticides and inorganic fertilizers. Such practices also need to be successful in a future environment of higher temperatures and more variable rainfall. Crucially, crop management packages designed by researchers to address the above challenges should be accepted by farmers. Therefore, adaptive research forms an important step in the process of transferring new crop production technology from researchers to farmers. Here, we tested the performance of an eco-friendly, climate-adaptive crop management package (adaptation package - AP) which was developed, tested and validated in multi-locational research experiments, in farmer-participatory adaptive research in the Northern Province of Sri Lanka, a region of high vulnerability to climate change. The AP was tested on five crops (tomato, chilli, maize, mungbean, potato) over two seasons among 67 farmers in three locations (Nilavarai, Thiruvaiyaru, Mulankavil) with the existing crop management (existing practice - EP) as the control. The AP included integrated pest management (IPM), site-specific fertilizer management (SSFM) and soil moisture conservation through mulching. The EP did not have mulching while crop protection was predominantly through pesticides and fertilizer application based on farmer-dependent doses. Among 73% of crop x location x season combinations, yields under AP were significantly (p<0.05) greater than those under EP, while in the rest there was no significant difference. The yield advantages for the adoption of AP ranged from 16-40% (tomato), 6-38% (chilli), 10-113% (maize), 16-31% (mungbean) and 0-19% (potato). Except in potato, where pesticides are heavily used in EP, AP was expensive than EP. However, this was offset by the greater income of AP in 82% of tested plots. The adverse environmental impact, as quantified by the Field Environmental Impact Quotient (FEIQ), was 76-92% lower for AP than EP.

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