



Quantifying farmers' preferences for cropping systems intensification: A choice experiment approach applied in coastal Bangladesh's risk prone farming systems

Sreejith Aravindakshan^{a,b,*}, Timothy J. Krupnik^b, T.S. Amjath-Babu^c, Stijn Speelman^d, Juan Tur-Cardona^d, Pablo Tittonell^{e,f}, Jeroen C.J. Groot^{a,g,h}

^a Farming Systems Ecology, Wageningen University and Research, Droevendaalsesteeg 1, Wageningen 6708PB, The Netherlands

^b International Maize and Wheat Improvement Center (CIMMYT), Sustainable Intensification Program (SIP), House-10/B, Road-53, Gulshan-2, Dhaka 1212, Bangladesh

^c International Maize and Wheat Improvement Center (CIMMYT), Socio-Economics Program (SEP), House-10/B, Road-53, Gulshan-2, Dhaka 1212, Bangladesh

^d Department of Agricultural Economics, Ghent University, Coupure links 653, B-9000 Gent, Belgium

^e Instituto Nacional de Tecnología Agropecuaria (INTA), Rivadavia 1439-1033, 1033, Buenos Aires, Argentina

^f Groningen Institute of Evolutionary Life Sciences, Groningen University, The Netherlands

^g Bioversity International, Viale dei Tre Denari, 472/a, 00054 Maccaresse (Fiumicino), Italy

^h International Maize and Wheat Improvement Center (CIMMYT), Carretera México-Veracruz, Km. 45, El Batán, 56237 Texcoco, Mexico

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ABSTRACT

CONTEXT: Sustainable intensification (SI) is envisioned as an effective strategy for developing countries to increase farm productivity while reducing negative environmental and social externalities. The development of regionally appropriate SI options however requires accounting for the knowledge and preferences of key stakeholders. In Bangladesh, the Government has requested international donors to support the development of dry season rice expansion in the coastal region. Policies however tend to be made without adequate study of farmers' preferences and ambitions; this can render crop intensification efforts ineffective. Understanding farmers' preferences for alternative crops and crop management practices are therefore crucial for success where agricultural development investments aim at incorporating the principles of SI.

OBJECTIVE(S): Using coastal Bangladesh as a case study– we aim to (1) quantify farmers' preferences for alternative irrigated crop and crop management options in comparison to the *status quo* (land fallowing), (2) analyze whether farmers' preferences are conditioned by concerns regarding the cost and availability of irrigation and fertilizer inputs in comparison to expected net revenues, (3) understand how the heterogeneity in preferences can be attributed to farmer and/or farm characteristics, institutional, and biophysical factors, (4) determine how much farmers' are willing to invest in different crops and crop management options – including those reliant and not reliant on irrigation.

METHODS: Taking 300 farmers in two diverse coastal environments, a choice experiment (CE) was employed to explore the heterogeneity in farmers' preferences for different dry “*rabi*” season intensification options (“*boro*” rice, maize, wheat and mungbean) against the *status quo* (dry season land fallowing after harvest of the monsoon season rice crop). Analyses included random parameter logit modeling followed by willingness-to-invest and profit simulations.

RESULTS AND CONCLUSIONS: Analyses revealed strong farmer preferences against rice and in favor of irrigated maize, and also in favor of rainfed or partially irrigated mungbean as an alternative to land fallowing. Irrespective of their location and environmental conditions, respondents had largely a negative preference for irrigation and fertilizer use due to high investment costs and associated production risks in the dry season. Nonetheless, a significant positive effect on their willingness-to-intensify cropping was observed where farmers felt it feasible to provide in-field drainage to limit waterlogging risks.

* Corresponding author.

E-mail addresses: sreejith.aravindakshan@wur.nl (S. Aravindakshan), t.krupnik@cgiar.org (T.J. Krupnik), t.amjath@cgiar.org (T.S. Amjath-Babu), stijn.speelman@ugent.be (S. Speelman), juan.turcardona@ugent.be (J. Tur-Cardona), tittonell.pablo@inta.gob.ar (P. Tittonell), jeroen.groot@wur.nl (J.C.J. Groot).

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