Yuzuncu Yil University
Journal of Agricultural Sciences
(Yüzüncü Yıl Üniversitesi Tarım Bilimleri Dergisi)
https://dergipark.org.tr/en/pub/yyutbd

ISSN: 1308-7576 e-ISSN: 1308-7584

Research Article

Social Dynamics Model of Farmers' Acceptance and Behaviour in the Implementation of Owl House Innovation (Rubuha) to Control Sustainable Rat Pests

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Article Info

Received: 05.04.2025
Accepted: 19.09.2025
Online published: 15.12.2025
DOI: 10.29133/yyutbd.1668281

Keywords

Innovation,
Paddy field,
Rat pest,
Rubuha,
Social dynamics

Abstract: Using natural enemies to control rats through Owl Houses (Rubuha) in rice fields in Pidie Jaya Regency has faced challenges, including improper implementation that limits effectiveness. Specifically, the objectives of this research are (1) analyze farmers' the response to the Rubuha innovation, (2) analyze the role of strategic partners in the application of the Rubuha, (3) analyzing social reviews of farmers' acceptance and behavior of using the Rubuha innovation to control rice field rat pests. This study was a survey and action method (demplot) study to see the response of farmers, the role of partners, social review of farmer behavior in the application of the Rubuha paddy field innovation to achieve food security in Pidie Jaya Regency. Data were analyzed qualitatively with Likert scale indices and quantitatively using Structural Equation Modeling (SEM). Results showed farmers rated the innovation's relative advantage and compatibility as high, complexity and trialability as easy, and observability as high. Agricultural extension workers were critical in implementation, while local governments, farmer institutions, and universities provided moderate support. SEM analysis revealed that farmers' acceptance and behavior toward Rubuha were strongly influenced by their responses, partnership patterns, and acceptance of the innovation.

To Cite: Budi, S, Nirzalin, N, Wardah, E, 2025. Social Dynamics Model of Farmers' Acceptance and Behaviour in the Implementation of Owl House Innovation (Rubuha) to Control Sustainable Rat Pests. *Yuzuncu Yil University Journal of Agricultural Sciences*, 35(4): 603-613. DOI: https://doi.org/10.29133/yyutbd.1668281

1. Introduction

Farmers' cooperative and collaborative attitude with environmentally friendly technological innovations in eradicating pests such as rat pests in wet rice farming is needed not only to overcome yield vulnerability but also to increase sustainable crop productivity (Wynne-Jones, 2017), but implementation of innovations in the agricultural sector often faces challenges in terms of acceptance and adoption by farmers. One innovation that has received attention in recent years is the use of Owl Houses (Rubuha) as a natural method of controlling rat pests. This innovation not only offers an environmentally friendly ecological solution, but also has the potential to increase agricultural productivity. However, the adoption of innovations such as Rubuha is highly influenced by complex social dynamics, including farmers' perceptions, attitudes, and behaviors towards the new technology (Tey et al., 2014). Understanding the social dynamics in the acceptance of innovations among farmers