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Determinants of Farmers' Adoption of Clearfield Production System in Malaysia

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Abstract

The weedy rice is one of the serious problems causing lower yield of paddy/rice production. In order to solve the weedy paddy/rice problem new herbicide-resistant paddy/rice variety was introduced in 2003. Although the new herbicide-resistant paddy/rice varieties have been scientifically proven as a good solution to manage weedy rice, however there is list of procedure that the farmers has to follows, which sometime is quite difficult for them to do so. Thus it is inevitable from the socio-economic aspect to investigate the opinion of paddy/rice farmers towards using the new herbicide-resistant paddy/rice known as Clearfield Technique (CLRS) as their farming systems. Exploratory Factor Analysis (EFA) and the Binary Logit regression were being employed as the methodology to analyze the data. The EFA analysis shows that the dimension of farmers opinion towards using CLRS such as effective controlling of weeds, increase production yield, government initiative and farmers' knowledge as the determinant for adopting CLRS.

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Keywords: Farmer, Clearfield, Malaysia

1. Introduction

In 2007, the world was faced with the food crisis which caused many countries to significant decrease in rice production. This experience has made Malaysian government to take further step in strengthening the food security

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by increasing the rice production yield rather than increasing acreage and it is being the main focus in agriculture sector. The KADA (Kemubu Agriculture Development Area) as one of main granaries areas situated in Kelantan has been one of the least productive among other granaries. The government is focusing in this area to further increase it potential to increase yield of paddy by introducing new varieties and farming system. One of the biggest challenges in this area is the existence of weedy rice. Weedy rice is one of the serious problems causing lower yield of paddy/rice production. In order to solve the weedy paddy/rice problem new herbicide-resistant paddy/rice variety was introduced in 2003. Although the new herbicide-resistant paddy/rice varieties have been scientifically proven as a good solution to manage weedy paddy/rice, however there is list of procedure that the farmers has to follows, which sometime is quite difficult for them to do so.

Weedy rice is one of the serious problems causing lower yield of paddy/rice. In 2004 for example, the production loss is estimated equivalent to RM90 million due to the weedy rice infestation in Malaysia (Azmi and Abdullah, 2008). Hence Clearfield technology was introduced to Malaysia from USA. The Clearfield technology is basically the new herbicide-resistant rice variety that has been developed by the collaboration of chemical company BASF (originally stood for Baden Aniline and Soda Factory) and MARDI (Malaysian Agriculture Research Development Institute). This new paddy/rice variety that was launched in 2003 and known as Clearfield Rice Production Systems (CLRS).

Clearfield rice production system seem to give benefits to rice cultivars since it is offering farmers a good opportunity to manage weedy paddy/rice and other weeds as well in order to increase the yield of paddy/rice (Azmi et al., 2012). Sudianto et al. (2013) reported that satisfying outcome from fields planted with CLRS is double from 3.5 to 7.0 MT per hectare as reported by BASF Malaysia. According to Levy (2004), CLRS is deemed a safe product because it does not contain any microbial transgene or in other terms, it is not genetically modified organism (GMO). The IMI (Imidazolinone) herbicides that are being used for the CLRS are harmless to animals because the ALS (Acetolactate Synthase) biosynthetic pathway is only present in plants and some bacteria.

Since CLRS is still a new technology with new packaged, some of paddy farmers liked to use it and some of them did not. Since introduction in 2003 not many areas and farmers adopted the CLRS as they were officially launched on the 8th July 2010 in FELCRA Seberang Perak rice granary (Azmi et al., 2012). Thus it is timely to explore the factors and determine the issues regarding the adoption of CLRS by the paddy farmers. Their opinion on the effectiveness of CLRS as income enhancer and also problems in using the new technology is worth to look at as it still at the stage of early adopter.

2. Methodology

This study was conducted by a field survey mainly by face to face interviews of paddy farmers in KADA granaries area, Kelantan under the irrigation project with the estimation of 1,200 paddy farmers who registered with Pertubuhan Peladang Kawasan (Area Farmer Organization Authority), Sungai Ketereh. Sixty six (66) paddy farmers were interviewed who have already using the CLRS. In order to clarify their opinion towards using Clearfield technique (CLRS), exploratory Factor Analysis (EFA) will be applied in the study.

3. Results and Discussion

Demographic profiles of the interviewed 66 farmers are shown in Table 3. Nearly half of the respondents was younger than 40 years old, and the rest is above 40 years old. The majority of the farmers have completed secondary school as their educational background and work as full time farmer in paddy sector, while only 4 farmers were working as part time farmers. More than half of the farmers cultivate less than 10 acres.

3.1. Factor analysis

In order to determine the underlying factors related to factor to have positive opinion toward CLRS, 28 statements has been used to run the factor analysis. Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett's test of Sphericity were performed on all statements to confirm the appropriateness of applying the factor analysis. The KMO test is used to measure the sampling adequacy while the Bartlett's test is used to test the correlation matrix in