

Factors Affecting to Buy New brand of Herbicides: A Case Study With Special Reference to Rice Farmers in Sri Lanka

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Abstract

This study attempted to analyze factors affecting to select new brand of herbicides by rice farmers in Sri Lanka. A pre tested structured questionnaire was used for the marketing survey for the farmer. Study area was *Hambantota*, *Anuradhapura*, *Kurunegala* and *Polonnaruwa* districts in Sri Lanka. Data were collected from the three group of farmers which was done base upon farmers' awareness and use of newly introduce grass killing herbicide brands as, 'aware and used of newly introduced grass killing herbicides (G1)', 'aware about newly introduce grass killing herbicide but did not adopt to use it (G2)' and 'unaware and did not use the newly introduced grass killing herbicides (G3)'. Snowball sampling methods were used to select the samples for three group. Total sample was 168 (G1 – 55, G2 51 and G3 – 62). Innovative and progressive farmers have illustrated high willingness than others to apply new herbicides. Gain awareness and experience about new product, influence of fellow farmers, influence of the field staff, overcome the weakness of other products and impact of advertising were the major factors which influenced to purchase new herbicides. They have higher expectations from the new product; viz., to gain experience and to overcome weakness of the existing herbicides (innovative farmers / early adopters). Influence from peers and extension personnel also found to have played a major role in farmers decision making. Dealers and field-demonstrations have played a major role in making farmers aware about new herbicides.

Key words: Rice farmers, herbicide and awareness,

Introduction

Rice is the main crop cultivated in Sri Lanka contributes 1.5 percent of country's GDP, (Central Bank, 2011). Further, it is the livelihood of more than 1.8 million farmers. Rice is cultivated in almost all parts of the country, except at very high altitudes as a wetland crop, (Henegedara, 2002). Application of herbicides for commercial cultivation of rice is pre requisite because water management of rice field for weeds controlling is difficult at present Sri Lankan scenario. Therefore, rice farmers have illustrated high willingness to apply herbicides to control weeds. There are different types of herbicides available at the market which can be classified as pre and post emergence, selective and non selective or sedges and broad leaf and grass killing herbicides. On this background, many new herbicides coming to market under the different brand name by different agro chemical companies. These agrochemical companies have adopted different advertising, marketing communication and promotional campaign to popularize their herbicides among the farmers. On this background this study attempted to analysis factors affecting to apply new brand of herbicides by rice farmers in Sri Lanka with the specific objectives viz., to

identify the rice farmers' socio economic background who have applied newly introduced herbicides, to identify the factors affection to choose new herbicides and to evaluate farmers expectation for applying new herbicides.

Materials and Methods

Farmer survey was done in selected areas (where a new herbicide has been distributed and used) in *Hambantota*, *Anuradhapura*, *Kurunegala* and *Polonnaruwa* districts in Sri Lanka from first quarter 2012. For the study, farmers were classified into three categories on the basis of their awareness and use of newly introduce herbicide during the last season (major 2011/2012). They were 1. aware and used of newly introduced grass killing herbicides during the season (G1), 2. aware about newly introduce grass killing herbicide but did not use it (G2) and 3. unaware about newly introduced grass killing herbicides and did not use (G3). It was impossible to find the proper sample frame because agro chemical sellers or companies do not keep proper data base or farmers list. Therefore, snowball sampling methods were used to select the samples for three group. (Abeywickrama,

2010). A total of 168 (G1 - 55, G2 51 and G3 - 62) farmers were interviewed to represent all areas and farmer categories. A pretested structured questionnaire was used to collect the data. Types of rice cultivation, age, education, farming experience, land size, types of sprayer used and nozzle type, spray volume, mixed of herbicides, first source of awareness about new herbicides, major reason for the decision to use new herbicides, farmers' expectations about grass killing herbicides, level of satisfaction about other grass killing herbicides, ways of learning about herbicides were selected as other variables.

Results and Discussion

Many factors influenced farmers (G1 group) to purchase new herbicides such as to gain awareness and experience about new product (27%), influence of fellow farmers (22%), influence of the field staff (16%), overcome the weakness of other products (14%) and impact of advertising (14%). Adoption to apply new herbicides was higher among the farmers (category G1) in the 35-54 year age group, educated at least up to middle level (11 years in school- OL), with more farming experience (>25yrs) and larger holding size (>4ha) (Tables 1). These observations indicate important features of diffusion of agricultural innovation. New agricultural innovations are first adopted by the innovative and early adopters. Therefore, this finding is supported by the theory of the diffusion of innovation by Dasgupta (1989).

Furthermore, Table 1 clearly illustrated that farmers were not adopted to apply new herbicides (in the category G2 and G3) were old, low educated, and relatively small holding size. These observations indicate important features of diffusion of agricultural innovation which were later adopters. Lack of confidence and expectations for more experience have prevented a majority of farmers, who aware about new herbicides (G2 category), from accepting and using this product during the first season. Moreover, it was clearly observed that the same group of farmers (G2) has received negative feed-backs from their peers about new herbicides. Therefore, this finding is supported by the theory of the diffusion of innovation by Dasgupta (1989)

Majority of the interviewed farmers in three group (G1= 78%, G2= 77% and G3= 80%) have used Knapsack sprayers with double hollow cone nozzles for herbicide application and their spray volume (16 L tanks/ha) ranged from 8 to 50 with an average of 22. However, farmers who applied new herbicides (G1) has followed the recommended spray volume ranging from 15 - 30 X (16 L) tanks (Table 1) than others. Furthermore, it was observed that the G1 farmers have followed the recommended application window for new herbicides. Further, as recommended, a majority of farmers (59%) have applied new herbicides at 2-3 leaf stage of grasses and around 32% at 4-5 leaf stage of grasses. This is due to innovativeness of this group of farmers. These findings were supported by the finding of Dasgupta (1989).

It was further observed that about 56% 53% and 40% of the farmers in the G1, G2 and G3 categories also preferred in-tank mixing of herbicides for weed control. Hence, it would be extremely difficult to divert farmers from spraying in-tank mixed herbicides.

Other important point of this study was that there was no any difference in the weed profile of the rice fields coming under the 3 farmer categories. According to the farmers response, the main weeds reported by farmers included *Batadella- I globosa*: *Heen maaruk- E colonum*: *Gogara- I rugosum*: *Bagiri- E glabrescens*: *Ashvaliga L chinensi*: *Atavara - P repens*: *Kudamatiya - Scirpus sp.* and *Fimbristylis sp*: *Kaladuru- Crotundus: Thunessa- Cyperus sp.*

Half of the of farmers (50%) who applied new herbicides were satisfy about the product and nearly 80% of them would use the product in the next season. Nearly 30% of the farmers indicated that the product did not meet their expectations. About 28% of the farmers interviewed have undertaken demonstrations on various pesticides, and 34% of them have adopted their own observations and 66% have communicated with peer farmers of their finding. Therefore, farmer to farmer communication as a strong medium for marketing and hence importance of farmer-field demonstrations should not be underestimated. It was further observed that there

was a certain level confusion among farmers about the efficacy and effectiveness of some herbicides including their recommendations. A majority (86%) expected that grass killing herbicides available in the market to kill all the weeds in rice fields; around 50% indicated

that they are satisfied about the performance of grass killing herbicides. Contrary, 83% farmers ranked the performance of the grass killing herbicides as weak/poor. This indicates that farmers desire for a better performing grass killing herbicide. Furthermore, it is

Table 1 : Demographic information about respondents

Variables and categories	G 1	G 2	G3
Age Category (Years)			
Young (Less than 35)	17%	26%	12%
Middle (35 - 54)	61%	32%	41%
Old (higher than 55)	22%	42%	47%
Average age (year)	45.3	48.2	51.76
Education level			
Less than Grade 5 (Primary)	03%	23%	07%
5..10 (Junior)	30%	32%	51%
OL (Middle)	67%	32%	40%
AL (Higher)	0%	13%	02%
Average education (grad)	9.5	9.8	8.07
Experience (years)			
Less than 10 Years	18%	23%	04%
10..14 Years	08%	13%	09%
15..19 Years	08%	08%	06%
20...24 Years	16%	18%	17%
Higher than 25 years	48%	38%	64%
Average experience (year)	22.53	21.24	27.51
Land size (ha)			
Less than 1	07%	04%	11%
1-1.9	18%	34%	42%
2-2.9	27%	28%	28%
3-3.9	07%	11%	07%
Higher than 4	41%	23%	12%
Average land size (ac)	4.2	2.77	2.23
Water Sources			
Irrigated	96%	100%	100%
Rain fed	02%	00%	00%
Both	02%	00%	00%
Used Sprayer Type			
Power	20%	21%	20%
Knapsack	78%	77%	80%
Both	02%	02%	00%
Nozzle			
Double hollow cone	73%	95%	96%
Single hollow cone	02%	05%	04%
Spray Volume (No. 16L tanks / ha)			
Average spray volume	22	22	22
Herbicide application schedule adopted by the responding farmers (No. of days after broadcasting)			
Average days	13.5	12.1	11.5