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Title of Thesis: Adoption of some Environmentally Safe Practices in Handling Rice Straw Among Rice Growers in Dakahlia Governorate

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Summary

The technology of recycling agricultural wastes, has become one of the most important environmental issues at different levels starting from farmers, through farmers' groups, local communities, non-governmental organizations, specialized companies and interested Ministries. Rice straw, as one of the most popular agricultural wastes in the Delta of Egypt, was the focus of mass media within the past few years. The burning of this straw was accused of causing the black smoke cloud frequently observed over Cairo.

Rice growers' adoption of modern technology and science-based solutions for dealing with this straw, to maximize its benefits, are emphasized by the extension systems within the Ministry of Agriculture. Therefore, the extension system is planning and implementing extension educational programs and efforts targeting rice growers to increase their information and improve their skills in the area of wise handling of rice straw and maximizing its benefits.

The main problem of this study was to identify rice growers' actual practices of handling rice straw, their information concerning rice straw, in addition to the different factors affecting them.

The objectives of the study were as follows:

- To identify the practices of rice growers in dealing with rice straw.
- To measure rice growers' information about the risk of environmentally unsafe handling with rice straw.
- To measure rice growers' information about the most economically viable and environmentally safe methods of handling with rice straw.
- To explore the sources of rice growers' information about the most economically viable and environmentally safe methods of handling rice straw.

- To measure the rate of rice growers' adoption of some economically viable, and environmentally safe, practices of handling rice straw.
- To measure the total score of rice growers' application of some economically viable, and environmentally safe, methods of handling rice straw.
- To investigate the rice growers' intentions to continue the application of some economically viable, and environmentally safe, methods of handling rice straw.
- To explore the rice growers' opinions regarding some characteristics of economically viable, and environmentally safe, methods of handling rice straw, namely: relative advantage, complexity, trialability, observability and compatibility.
- To identify the role of agricultural extension in helping farmers in maximizing the utilization of rice straw.
- To explore the opinions of rice growers concerning maximizing the utilization of rice straw.
- To identify the stakeholders, other than rice growers, who utilize rice straw.
- To investigate the rice growers' points of views concerning the barriers of maximizing the utilization of rice straw.
- To identify the factors affecting the rice growers' application of some economically viable, and environmentally safe, methods of handling rice straw.

The study was conducted in Satamony village, Dakahlia Governorate. Data was collected from 266 rice growers comprising a systematic random sample of rice growers, representing about 27% of the total population of rice growers in the Satamony village.

Percentages, frequencies, Pearsonian simple correlation and Chi-square for data presentation and analysis.

The most important results of the study could be summarized as follows:

- Different methods of handling rice straw were found among rice growers. The majority of rice growers 85% sell it to traders, about 70% put it under animals to be collected after a period of time and used as an organic fertilizer, about 32% use it as an animal feed, and about 3% only burn it.

- The majority of the respondents 99% reported that burning rice straw leads to air pollution, and 93% reported that the smoke resulting from burning it causes diseases for people. The

majority of the respondents 95% reported that storing rice straw over the roofs of houses increases the spread of fires and facilitates the propagation of pests 92%.

- The majority of the respondents 99% know that rice straw could be utilized: as a cover base under animals, to protect seedlings from extreme cold in winter 96%, as an animal feed 81%.

- The extension worker was the first source of respondents' information about utilizing rice straw as an animal feed, as reported by 58% of the respondents in addition to utilizing it as an organic fertilizer (56%) whereas television programs was reported as a source of information utilizing it as a medium for growing mushroom.

- The rate of rice growers' adoption of utilizing rice straw as an animal feed reached 32%, whereas it reached 13% concerning utilizing it as an organic fertilizer.

- The total score of rice growers' application of some economically viable, and environmentally safe, methods of handling rice straw were found to be high among a low proportion (15%)of the respondents, compared with 38% having low scores.

- The majority of the rice growers' (98%) who applied the utilization of rice straw as an animal feed expressed their intentions to continue this practice. Compared with 94% in the case of utilizing it as an organic fertilizer.

- The relative advantage of utilizing rice straw as animal feed was reported as high by 19% of the respondents, and 50% reported it as an easy, highly understandable and triable practice. Around 63% reported it as highly observable and 25% as highly compatible. The relative advantage of utilizing rice straw as organic fertilizer was reported as high by 11% of the respondents, and 40% reported it as an easy, highly understandable and 49% as highly triable practice. Around 23% reported it as highly observable and 40% as highly compatible.

- The role of agricultural extension in helping farmers in maximizing the utilization of rice straw was reported as absent by 56% of the respondents. 21% reported that extension provides such facilities as: ammonia gas.

- To maximize the utilization of rice straw the respondents suggested: providing machines for pressure rice straw (77%), providing machines for cutting up the rice straw (56%), teaching rice growers how to transform rice straw into animal feed (77%).

- The traders who buy rice straw from rice growers were the most important stakeholder, as reported by (67%) of the respondents.
- Among the most important barriers of maximizing the utilization of rice straw were the following: lack of machines for pressure rice straw (93%), lack of skills concerning transforming rice straw to organic fertilizer (36%).

- The total scores of rice growers' application of some economically viable, and environmentally safe, methods of handling rice straw were significantly correlated with the following:

1. Male level of education,(r = 0.301),
2. Family level of education,(r = 0.246),
3. Number of male working permanently in agriculture(r = 0.129),
4. Number of male working part of the time in agriculture(r = 0.177),
5. Number of family members working part of the time in agriculture(r = 0.162),
6. Animal wealth (r = 0.382),
7. Ownership of agricultural machinery (r = 0.258),
8. Attitudes towards agricultural innovations (r = 0.438),
9. Informal social participation (r = 0.163),
10. Rice straw productivity per feddan (r = 0.257),
11. Area planted with sugar beat (r = 0.251),
12. Area planted with maize (r = 0.357),
13. Area planted with vegetables (r = 0.154),
14. Total Score for interviewed' opinion about economical value for field Wastes (r=0.340)
15. Number of males in the family (r = 274).