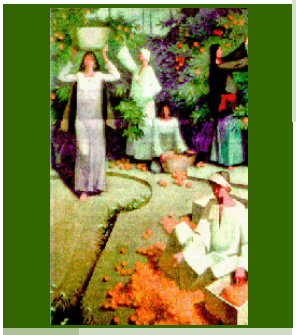
Partnership in Development Research

Research Briefs No. 6

Recycling Agricultural Waste: Developing Knowledge and Skills of Farmers in Sharkeia Governorate



By Dr. Saadeddin Mohamed Abdel Aal and Dr. Ahmed Fuad Abdel Motaleb

Introduction:

Given the strong belief in the importance of advanced agricultural and scientific research in the coming period, the Ministry of Agriculture has adopted a comprehensive strategy to enhance agricultural production by raising the awareness of farmers and guiding them towards the development of their environment and the preservation of its resources.

Development is a product of the interaction between man on one hand, and nature and resources on the other. Thus, development cannot take place without attention to man's behavioral, normative and environmental practices, which guide him/her in their interaction with the environment. It is therefore important that farmers learn how to benefit from agricultural waste, by recycling materials that have high economic value, to generate additional income which could help raise their standard of living. In light of the above, this study examines the knowledge and skills associated with the practices of peasants in the agriculture field.

Research problem:

Agricultural waste is defined as the outcome of agricultural production following the different harvesting activities. With the introduction of technology in the agricultural process, waste has become a burden because of the entailed destruction and pollution of the environment

Statistics point out that agricultural waste reaches 23.7 million tons on the national level. In Sharkia, the figure is 1.6 million tons of cotton, corn and rice waste, in addition to animal waste. The quantity of rice straw in 280178 feddans in Sharkia was 616391 tons according to the statistics of the 1999/2000 agricultural season (Sharkia Agricultural Directorate; unpublished data; statistics of the 1999/2000 agricultural season).

Several factors have aggravated the problem including the absence of environmental awareness and the low level of knowledge and skills affecting the behavior of peasants in handling agricultural waste. In addition, burning agricultural waste in the rice cultivated fields, generates many poisonous and harmful oxides and hydro-carbonates (the black cloud).

Despite the state efforts particularly the ministry of agriculture and the ministry of the environment to find solutions for the problem and avoid environmental degradation, the problem remains without radical solution, thus the importance of the current study in raising the level of knowledge and skills of peasants in recycling agricultural waste.

Objectives of the study:

The study addresses two main issues:

First, it seeks to enhance the technical knowledge, behaviors and skills of farmers in treating and recycling agricultural waste in an economically remunerative fashion.
It also seeks to raise the level of communications among agricultural workers in order to facilitate the implementation of the recommendations in the area of treating and recycling agricultural waste.

The second aspect addresses engineering issues and seek to:
-Enhance and upgrade the performance of the *baladi* compressor
-Upgrade the level of professional safety and security for workers using the present *baladi* compressor
-Enhance the participation of young farmers in the implementation of various waste re-cycling and treatment activities as follows:

1. Transform agricultural waste into non conventional fodder by applying urea solution to it.
2. Use the waste of the industrial environment (rice straw) to cultivate fodder by fixing wheat, barley or corn seeds on the rice straw
3. Use agricultural waste to manufacture compost fertilizers. A manual to help farmers manufacture fertilizers, has been designed in the form of messages entitled "Do it yourself".

Methodology:

The study adopted a descriptive and exploratory approach to throw light on the behavior of farmers and describe the study environment and site. The study was implemented in the land reform associations of Berdin, Talhet Berdin, Kafr El Danouhia, El Aslougy, Al Zankaloun, al Hessa and Al Zagazig, which are all affiliated to the land reform directorate of Sharkia governorate, most famous for the cultivation of rice. Data was recollected using a questionnaire, which was approved by the project administration. A random sample of 250 farmers was selected from a listing of all farmers. In order to ensure accuracy, some researchers were trained on the rapid rural participatory research methods and data was collected and classified for analysis.

On the engineering side, some designs were generated to modify and upgrade the *baladi* compressor. Experts and engineers made experimental attempts to operate the compressor and approved the technical amendments from a safety perspective. On the "field day" a practical demonstration took place which was documented by photographs and video films.

Findings:

The study indicated the following:

1. Two thirds of the respondents (63.3%) in the age group 36-55 are involved in agricultural activities and could benefit from guidance and education.

2. The majority of respondents (88%) have low educational level. This asserts the need for demonstrations and using simple and illustrative methods

3. 55.2% of the households comprise an average of 8 members and more, while 40% have an average of 5-7 members. Again, this asserts the need for awareness raising programs in the area of population

4. 64.4% of the family members are engaged only in agricultural activities. Practical illustrations are therefore needed.

5. 86% of the sample own 2-6 feddans and 48,4% own 4-7 animal heads.

6. 99% of the sample cultivate rice which occupies 47% of the total area of land. The result is large quantities of rice straw which causes a seasonal problem. 53% of the sample cultivate corn which also causes environmental problems.

7. Half the sample burns agricultural waste in the fields and one third of the sample applies faulty methods to dispose waste.

8. 95.6% of the sample has prior knowledge about the damage burning waste brings onto the rural and agricultural environment.

9. 89.2% justify burning waste by the need to clear and clean the land for the next agricultural crop. More than half the sample believes it is necessary to burn waste because it stops the spread of pests and insects. They also attribute burning waste to the shortage of compressors.

10. 98% pointed to the limited guidance and awareness raising efforts and said that they do not measure up to the size of the problem.

11. The whole sample said that their sources of knowledge on environmental and agricultural guidance is the agricultural engineer, television and neighbors.. This asserts the importance of education through social transfer of knowledge, guidance by participation and agriculture field schools.

12. 96% of the sample were in favor of the implementation of agricultural waste recycling projects.

13. According to the majority of farmers (96%) the most important problem is the shortage of compressors, while 60.8% said the main problem was lack of practical guidance and breakdown of compressors.

14. Most of the sample suggested an increase in the number of compressors in order to clear the land for the next crop.

Recommendations:

In light of the above findings on the farmers' low level of knowledge and skills about the treatment and recycling of agricultural waste particularly rice straw, and their perception of the problems, the following recommendations are drawn:

1. Design a strategy to support land reform agricultural cooperatives in upgrading the performance of *baladi* compressors through modifications
2. Design a strategy to encourage local manufacturing, and upgrade the performance of national workshops within the framework of encouraging small agricultural projects to manufacture compressors locally.
3. Introduce new methods of agricultural guidance which entails enhancing the training of agricultural engineers and introducing "guidance by participation", and field guidance schools, and expounding the role of facilitators, developers and experts..
4. Introduce illustrative and practical activities in the area of injecting waste by ammonia gas
5. Make available the necessary financial allocations within the framework of a central policy of agricultural guidance to train engineers and enhance their directive communications skills. This will contribute to the transfer of the waste recycling and treating technology to young farmers.

About the Author

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The Egyptian Partnership in Development Research Program aims to inform development policies and strategies by linking those who conduct research with those who can utilize its findings to promote development in local communities. It promotes a research agenda which is responsive to the needs and priorities of local communities. The program is characterized by a multi-disciplinary, demand-driven, and participatory approach. The program began in Egypt in 1999. The program is directed by an Advisory Board of prominent members who are concerned with development issues.

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