Adoption Of Agricultural Technology In Agric. Mechanization Field At Qualubia Governorate

Summary

Development is considered the main concern of all those working in human societies. They agreed that development can be realized in their developing countries through programs that include using new technology and utilizing the technological development that the world witnessed lately. Development in agriculture might be achieved by applying suitable technology recommended by an effective research system capable of producing such technology and test it to be compatible with farmers situation, as well as an efficient and sufficient extension system that has strong linkages with both research and farmers.

Agriculture extension has an effective and important role in the diffusion and adoption of agriculture machinery. Extension can reach early adopters, conduct demonstration in their fields, recommend the type of machines needed, using these machines through extension meetings farmers problems of using these new advantage in reflecting farmers problems of using these new machines.

Diffusion and adoption of agricultural machines, extension should focus on general and specific extension programs that is based on the needs and interests of target farmers. Extension should deal with the barriers limiting this diffusion and adoption.

Hence, this study was conducted to investigate the level of farmers' adoption of agricultural machinery as well as

examining some variables affecting and limiting their adoption level.

The study aimed to :

1. Identify farmers adoption behaviour of land preparation machines, seeds cultivation machines, growing crop machines, and harvest machines technologies, through :
    - the year the responded heared about the technology
    - first time to apply technology
    - needed period to adopt the technology
    - unintentional stop of applying the technology
    - willingness to continue of applying the technology
    - level of adopting the technology
2. Determin the farmers total adoption level for each of land preparation machines, seeds cultivation machines, growing crop machines, and harvest machines technologies
3. Define differences between farmers, adoption degree of land preparation machines, seeds cultivation machines, growing crop machines, and harvest machines technologies.

4. Define the relationship between farmers' adoption degree of the studied technologies and some personal, social, economic, and communicational dependant variable studied.
5. Define contribution ratio of the positively correlated variables with the farmers' total adoption degree of the studied technologies in explaining the total variance.
6. Identify the reasons behind farmers reluctance using the four studied technologies.

The study was conducted in 3 districts of Qalubia governorate (Benha, Toukh and Qalube). One village from each district was selected, and a random sample of these villages was drown using cries & Morgan eqnosion. The sample rated to 7.04 & of land holdings in each village. The sample composed of 176 farmers from Marsafa village (49%), 86 farmers Qaha village (24%), and 95 farmers from Sedion village (26%) which makes the total sample amounts to 357 farmers. Data were collected by personal interview using a pre- tested questionnaire during the first quarter of 2005. Data were tabulated, coded and computerized. Frequency and percentages tables were used to present descriptive data, weighted means, fredman test, Wilcoxon's test, Pearsons' product moment, Multiple Regression, and step wise to analyse data statistically.

The main results of the study revealed that :

1. Farmer's adoption behaviour for the studied 4 machinery technology was reflected through the following 6 aspects: the year when the respondent heared about the technology, the

year the respond and applied the technology for the first time, time period needed for adoption, un- inertial stop applying the technology, willingness to continue adoption, and adoption level for each technology studied. The study revealed that farmers behaviour varied as follows :

a) land preparation machinery : The highest rate of farmers heared about this technology was detected between 1984-89 by 72% of respondents, as it was applied by 54.9% of them as early adopters. Time lag of adoption was wide in 1984 and diminished gradually until 1990 as it reached zero when all respondents adopted the technology in 2002. although all respondents expressed their willing to continue their adoption, 2.5-0.3% of them stopped the adoption un-intentially. The farmers in the high adoption level rated to 77.6%, while the rate reached 11.5% and 10.9% in the medium and low adoption level sequentially.

b) The highest rate of farmers heared about this technology occurred between 1984-89 by 50.5% of the respondents, as it was applied by 25.4% of them for the first time. Time lag of adoption was steady between 1998-2002 as hearing rate was increased in the same rate of adoption rate.

c) The highest rate of farmers heared about this tech occurred between 1984-89 by 44.5% of the respondents, as it was applied by 31.1% for the first time, time lag between hearing about and

adopting the tech was wide in 1989 and diminished gradually from 1999 until 2002.

d) The highest rate of farmers heared about this tech occurred between 1984-89 by 43.7% of the respondents, as it was applied by 25.5% of total respondents for the first time. Time lag between hearing and adopting was rather wide in 1989 and diminished gradually from 1999 until it reached the minimum in 2001 and continued in 2002.

2. Farmers adoption level of the studied technologies: 33.6% of the total respondents were in the high adoption level, while 34.5% and 31.9% of respondents were in the medium and low adoption level for all studied technologies.

3. Differences between farmers' adoption degree of the four studied machinery innovative technology :

the mean degree of farmer's adoption for the four technologies ranged between 35.51 degree and 14.02 degree. Ranged means varied also and ranged between 3.71 degree and 1.93 degree. There was significant differences between respondents degree of those couples of innovative technologies :

a. Technology of land preparation machines - technology seeds cultivation machines.
b. Technology of land preparation machines - Technology growing crop machines.
c. Technology of land preparation machines - Technology harvest machines.

d. technology seeds cultivation machines - Technology growing crop machines.

e. Technology growing crop machines -Technology harvest machines.

No significant difference was detected between technology seeds cultivation machines - Technology harvest machines.

4. Correlation between the farmers total adoption degree of the four studied machinery innovative technologies and some independan variables:

farmer's total adoption degree of the studied technologies wos correlated positively and significantly of 0.01 with and each of: innovation characteristics availability, farmers knowledge degree about economic liberalization policy, and knowledge degree about the effect of economic liberalization policy on the agricultural activities, and at 0.05 with each of : availability of machinery innovative technology, availability of some market information from farmers' point of view, and the degree of cultural openness. While this relationship was negative and significant at 0.05 level with the degree of benefiting from rural organizations' services.

5. Contribution rates of significantly correlated variables with the total adoption degree for the studied technologies in explaining the total variance.

The multiple regression between the significantly correlated variables with the total adoption degree of the studied technologies revealed that only the innovation characteristics availability degree, and the knowledge degree

of the effect of economic liberalization on agricultural activities were contributing in explaining the total variance of farmers adoption of the four studied technologies. The contribution of both variables rate to 7.3%, as 3.4% of this was contributed by the innovation characteristics availability degree, while 3.9% was made by the knowledge degree of the effect of economic liberalization on the agricultural activities.

6. Reasons behind farmers reluctance using the studied technologies farmers mentioned five reasons causing their reluctance that were: small farm area, narrow roads to the farm, far distance from the machinery places, unavailability of the machine, and high rental of the machine.

Applicable benefits :

1. All aspects of the technology should be presented to farmers as one package to maximize the technology use in increasing yield per feddan and get the highest quality
2. Integrate various efforts by different organizations to overcome the reasons behind farmers' reluctance to adopt using it.
3. A necessity to increase extension effort in programs diffusing the technologies of new machines like technology of seeds cultivating machine, and the technology of a service machines is the growing yield, and the technology of the harvest machines.

4. A necessity for the planners and the outlets of extension programs in the central administration of the agricultural extension to plan for the reducing of the periods between the diffution and the adoption of the technology of the new machines specially which the study prooved they are still in need for diffusion effarts like seeds cultivation machines, and the harvest machines technology, this can accur saving information by means of composed the conferences, seminars, ampllcts, and symposiums
5. A necessity for the extension and workers in the mechanization research institute to infrom farmers about how to use technologies of seeds cultivating machines the service machines technologies, harvest machines technologies and attempt to change theie attitudes toword these technologies through extension programs which help in forming farmars in saving seeds, resistinge herbs and pests reduving the blights and the loose in the yield, getting clean yield, speed of earth cleaning the land for following yield, which risen the level of adoption.
6. A necessity that planners and the outlets of the future extension programsto give great importance to the following: innovation characteristics availblity, the effect economic liberization policy on the agricultural the activities becouse they have good effect on the rate of diffusion and adoption of new machines technologies.

7. Future researches in field adoption and diffusion of machinery technologies must study of ther variables which may have sinifical contribution in explaining the degree of machinery technologies adoption in the study zone and in same ather similarity r zones.
8. gavernamental agriculturel extension must have an imporant role in the feld of the diffusion and adoption of the previous technologies by using ampllcts, conferences, seminars, ampllcts, and symposiums