

Performance on Groundnut Recommended Cultural Practices by Rahad Agricultural Scheme Farmers

Prof. El Badawi K. H. Khalifa*

ABSTRACT:

The objective of this study is to highlight the performance on groundnut recommended cultural practices by Rahad irrigated scheme farmers. A sample of 200 farmers was selected using the simple random sampling technique. A questionnaire was constructed comprising all questions required to achieve the objective of the study. Personal interview technique was used to administer the questionnaire. The collected data were analyzed by computer using the Statistical Package for Social Sciences (SPSS). The results revealed that Majority of the farmers applied the recommended herbicides and irrigation interval, most of them performed spacing between holes, sowing date and weeding. While, half of them adopted the recommended seeds/holes. Chi square test results reflect significant differences among adopters and non-adopters. It is recommended that agricultural extension agents should pay attention to the conscious use of communication to see the diffusion of each profitable innovation be as rapid as possible. Also make combination of mass media and group discussion to bring about substantial changes in behavior, and encourage the lower- status and least innovative clients to have more change agent contact; to avoid communication difficulties. In addition, use results demonstration to compare results of traditional practices with new practices or package of practices. Moreover, they should help clients become aware of the need to alter their behavior, and be in a position to improve their own decision- making to know their own farm business best.

* Sinnar University – Sinnar – Sudan.

ملخص البحث

أجريت هذه الدراسة بمشروع الرهد الزراعي بهدف تسليط الضوء على تطبيق المزارعين للممارسات الزراعية الموصى بها لزراعة الفول السوداني . أخذت عينة قوامها 200 مزارعا عن طريق العينة العشوائية البسيطة . تم جمع البيانات عبر صحيفة الاستبيان التي صممت لجمع المعلومات المطلوبة . بعد جمع البيانات تم تحليلها بالكمبيوتر بواسطة برنامج التحليل الإحصائي للعلوم الاجتماعي (SPSS) .

أوضحت النتائج أن غالبية المزارعين استخدموا مبيد الحشائش والفترة بين الريات الموصى بها وأن مجموعة كبيرة منهم تبنوا المسافات بين الحفر , في حين أن حوالي نصفهم تبنوا عدد البذور بالحفر , إزالة الحشائش ومواعيد الزراعة . كما أوضحت نتائج مربع كاي وجود فروق معنوية بين المتبنين وغير المتبنين من المزارعين . أوصت الدراسة بأن يهتم المرشد الزراعي بالاتصال الفعال لتفعيل عملية نشر المستحدثات , وأن يجمع بين وسائل الاتصال الجماهيري والاتصال الجماعي من أجل التأثير في سلوك المزارعين , واستخدام الإيضاح العملي بالنتائج لإقناعهم بالنتائج المتوقعة .

وحث المزارعين للاتصال بعملاء التغيير بالمشروع وتشجيعهم على معرفة احتياجاتهم المزرعية من أجل الارتقاء بالعمل المزرعي .

INTRODUCTION :

Groundnut is grown under a wide range of environmental conditions in areas between 40 degrees South and 40 degrees North of the equator. Most of the crop is produced where average rainfall is 600 to 1200 mm and mean daily temperatures are more than 20 degree C. It is grown in nearly 100 countries. Main groundnut producers in the world are : China , India , Nigeria , USA , Indonesia and Sudan .

Developing countries account for 96% of the global groundnut area and 92% of the global production. Groundnut is a valuable cash crop for millions of small- scale farmers in semi-arid tropics. It generates employment on the farm and in marketing, transportation and processing. It is the 13th most important food crop of

the world. It is the world's 4th most important source of edible oil and 3^d most important source of vegetable protein. Groundnut seeds contain high quality edible oil (50%), easily digestible protein (25%) and carbohydrates (20%). It is a valuable source of E, K and B vitamins . Groundnut cakes, formed after the oil is extracted, are a high protein animal feed. People also use the cake to make products, such as biscuits and baby food (FAO, 1994) .

Demand for agricultural products is increasing rapidly in many countries because of growing population and increasing incomes. In the past much of the growth in production was achieved by cultivating more land and irrigating a larger proportion of it. These options are no longer available in many countries because of urbanization, soil erosion, pollution and depletion of aquifers. Most future growth will have to come from increased yields and higher efficiency of resources use (Peterson ,1997) .

A major goal of the agricultural development policy in most countries is to increase food production at similar rate to that at which the demand for food is increasing, and at a cost which is competitive on world market. It is appreciated more and more that

such development must be sustainable, and that often it must be done in different way than it was in the past. An effective agricultural extension organization is crucially important in this situation, especially in less industrialized countries (Rivera, 2001).

The extension agent's role is to help farmers form sound opinions and make effective decisions. Farmers are encouraged to develop a high degree of independence in their decision- making (Pretty et al, 1995). All members of a group are unlikely to adopt innovations simultaneously. Less progressive group members are more likely to be influenced indirectly by their fellow members who are opinion leaders than directly by an extension agent. There is no standard shape for diffusion curve nor any standard percent of ultimate adopters. Some innovations diffused slowly; some rapidly. Some ultimately are accepted by nearly all farmers; some never spread to more than half, or tow – third or three quarters of farmers. Different farmers move from one step to the next in the adoption process at different speeds. Some farmers become interested in certain innovations almost immediately after becoming aware of them and

move through evaluation to readiness for the first trial very quickly . Other farmers are much more deliberate. The same farmer may advance quickly with respect to one innovation, but very slowly with respect to another (Rogers, 2003). Social values may inhibit adoption. Some times an innovation is not adapted at all because it conflicts with established social values. These cultural and social values may be general ; affecting all groups within a wide region , or they may be specific to some farm families but not all of them (Meyer et al , 2000).

MATERIALS and METHODS:

A sample of 200 farmers was selected from Rahad Agricultural Scheme by the simple random sampling technique. A questionnaire was constructed comprising all information required to stratify the objective of the study. Personal interview technique was used to administer the questionnaire. The collected data were analyzed

by computer using the Statistical Package for Social Sciences (SPSS) and interpreted using frequency and percentage. Binomial and Chi square test were calculated; based on the nature of the data to determine the significant differences between adopters and non – adopters.

RESULTS:

Groundnut sowing date:

Most farmers (60%) practiced the recommended sowing date (15th of May up to 20th of June) compare to 40% who sowed the plant after that . Binomial Test results reflect significant differences among adopters and non-adopters (Table1.) .Which indicates a high adoption rate of the recommended Groundnut sowing date .

Table 1. Distribution of farmers by sowing date

Sowing date	Frequency	%	Test proportion	Sig.*
15 May-20 June	120	60	.50	.006
21-30June	40	20		
1-15 July	20	10		
After 15 July	20	10		
Total	200	100		

* Binomial Test, at a level of significance of .05

Seeds per hole:

55% of the population sample practiced the recommended number of seeds per hole (2 pods per hole). While 45% of them did not. Binomial Test results reflect no significant differences among adopters and non-adopters (Table 2.), indicating a low adoption rate of the recommended number of seeds per hole.

Table 2. Distribution of farmers by seeds per holes

Seeds per hole	Frequency	%	Test proportion	Sig.*
2 Pods	110	55	.50	.179
3 -4 pods	50	25		
5 pods	40	20		
Total	200	100		

* Binomial Test , at a level of significance of .05

Spacing between holes:

Higher percentage of farmers (70%) performed the recommended spacing between holes (15 -20 cm), while 30% of them did not. Binomial Test results reflect significant differences among adopters and non-adopters.(Table 3.) , showing a high adoption rate of the recommended spacing between holes (15 -20 cm) .

Table 3. Distribution of farmers by spacing between holes

Spacing between holes	Frequency	%	Test proportion	Sig.*
15 cm	60	30	.50	.000
20 cm	80	40		
30cm	40	20		
40cm	20	10		
Total	200	100		

* Binomial Test, at a level of significance of .05

Irrigation interval:

The majority of farmers (80%) adopted the recommended irrigation interval (every 14 days), while 20% of them irrigated the crop with interval more than 14 days. Binomial Test results reflect significant differences among adopters and non-adopters. (Table 4), which indicates a high adoption rate of the recommended Irrigation interval .

Table 4. Distribution of farmers by irrigation interval

Irrigation interval	Frequency	%	Test proportion	Sig.*
Every 14 days	160	80	.50	.000
Every 21 days	30	15		
Every 30 days	10	05		
Total	200	100		

* Binomial Test , at a level of significance of .05

Weeding :

The recommended weeding for groundnut is to be completely clean twice; during the first six weeks after sowing and before the plant makes its pegs .

Few farmers (40%) practiced the recommended weeding (twice) , while most of them (60 %) did one weeding . Binomial Test results reflect significant differences among adopters and non-adopters (Table 5) , indicating a very low adoption rate of the recommended Weeding .

Table 5. Distribution of farmers by weeding

Weeding	Frequency	%	Test proportion	Sig.*
One weeding	120	60	.50	.006
Tow weeding	80	40		
Total	200	100		

* Binomial Test , at a level of significance of .05

Herbicides application

Farmers were advised to use some herbicides such as Ronistar 1.8 liters / feddan , Stamp 2.5 liters / feddan and Goal 0.6 liters / feddan to control weeds .

85% of the population sample applied herbicides always or sometimes , while 15% of them did not apply it at all . Chi square test results reflect significant differences among farmers regarding Herbicides application (Table 6.) , showing a high adoption rate of the recommended Herbicides application .

Table 6. Distribution of farmers by herbicides application

Herbicides application	Frequency	%	Degree of freedom	Chi square	Sig.*
Always	80	40%	2	31.00	.000
Sometimes	90	45%			
Never	30	15%			
Total	100	100%			

* Chi square test , at a level of significance of .05.

Farmers' adoption of groundnut recommended cultural practices

Majority of the farmers applied the recommended herbicides and irrigation interval , most of them performed spacing between holes , sowing date and weeding . While , half of them adopted the recommended seeds/ holes . Chi square test results reflect significant differences among adopters and non-adopters (Table 7.) , which indicates a high adoption rate of the recommended groundnut cultural practices.

Table 7. Chi Square test for farmers' adoption of groundnut recommended cultural practices

groundnut cultural practices	Adopters		Non-adopters		Chi Square	df	Sig.*
	F	%	F	%			
Sowing date	120	60	80	40	15	8	.059
Seeds / hole	100	50	100	50			
Spacing between holes	140	70	60	30			
Irrigation interval	160	80	40	20			
Weeding	120	60	80	40			
Herbicides application	170	85	30	15			

* Chi square test , at a level of significance of .05

DISCUSSION :

Despite the fact that farmers in Rahad Agricultural Scheme grow groundnut since 1977 , supported by an efficient agricultural extension staff still many of them did not adopt many recommended

cultural practices . This may be due to lack of detailed knowledge about the innovation , such as when there is relatively little direct contact between the adopters and change agents or previous adopters . Or due to selective

exposure ; the tendency to attend to communication messages that are consistent with the individual's existing attitudes and beliefs . Dearing (1996) pointed out that individuals tend to expose themselves to ideas that in accordance with their interest , and existing attitudes . Individuals consciously or unconsciously avoid messages that are in conflict with their existing predispositions .

Also can be ascribed to the incompatibility of the innovations with the values and norms of the social system . Casterline (2001) cited that people think that the techniques and methods of cultivation practiced by their society are ideal . Borich et al (1990) reported that people adopted innovations very slowly because of their traditional or conservative attitude towards life . Van den Ban (1997) argued that all members of a group are unlikely to adopt innovations simultaneously .Most individuals don't adopt an innovation until after learning of their peers' successful experiences . Less progressive group members are more likely to be influence indirectly by their fellow members who are opinion leaders than directly by an extension agent .So individuals vary in the innovation – decision period , with some people requiring many years to adopt an innovation , while other people move rapidly from knowledge to implementation .

Low adoption rate among farmers may be attributed to the widened socioeconomic gaps among the members of the social system . Antonides et al (1999) wrote that adoption of an innovation can be expected only where profitability is high . Farmers who would lose money , or make only very little by adopting the innovation , can not be expected ever to adopt it . Less educated , lower – income clients need the assistance of change agents more than do more elite clients . Bottomley et al (1998) reported that farmers who have higher educational levels are more responsive to new ideas and technologies than those with lower educational level .

More over , rejection of an innovation may accrue to passive rejection . Brown (1999) cited that many farmers never really

considering the use of innovation , although they exposed to an innovation's existence and gain an understanding of how it function .

Also low adoption rate may be as a result of discontinuance . many Farmers reject an innovation after having previously adopted it . Christiansen (1997) concluded that in any given year , there were about as many discontinuers of an innovation as there were first – time adopters . Moris (1991) cited that discontinuance of an innovation is one indication that the new idea may not have been fully routinized into the ongoing operations of the adopter at the implementation stage of the innovation- decision process .

RECOMMENDATIONS :

Based on the results obtained it is recommended that agricultural extension agents should exert more effort to narrow the gap between adopters and non-adopters .They should pay attention to the conscious use of communication to see the diffusion of each profitable innovation be as rapid as possible and reach all the farmers who would profitably use it . Also benefit from mass media which play an important role in developing opinions and make combination of mass media and group discussion to bring about substantial changes in behavior towards implementing the recommended groundnut cultural practices , and encourage the lower- status and least innovative clients to have more change agent contact ; by selecting change agents who are as much like their clients as possible , to avoid communication difficulties . In addition , use results demonstration on demonstration fields or demonstration farms to compare results of traditional practices with new practices or package of practices . Moreover , they should help clients become aware of the need to alter their behavior , in order to initiate the innovation- decision process, and be in a position to improve their own decision- making to know their own farm business best .

REFERENCES :

1. Antonides, Gerit , H . Bas Amesz , and Ivo C. Hulscher (1999) . "Adoption of
2. Payment System in Ten Countries : A Case Study of Diffusion of Innovations "
3. European Journal of marketing 33 .
4. Borich , Timothy O . and Peter F. Korsching (1990) . " Community Image and
5. Community Innovativeness " Journal of the Community development Society 21 .
6. Bottomley , Paul A . and Robert Fieldes (1998) ." The Role of Price in Models of
7. Innovation Diffusion " Journal of Forecasting 17 .
8. Brown , Lawrence A . (1999) . Innovation Diffusion : A New Perspective ,
9. Methuem , New York .
10. Casterline , John (2001). Diffusion Process and Fertility Transition, National
11. Academy Press , Washington .
12. Christiansen , Clayton M. (1997) . The Innovator's Dilemma : When New
13. Technologies Cause Great Firms to Fail, Harvard Business School Press ,Boston .
14. Dearing , James W. (1996) . Agenda–Setting , Sage , Calif .
15. FAO (1994) . Encyclopedia of Agricultural Sciences . Vol. 3 , Academic Press .
16. WWW. Cgiar . org / Impact / Research / Groundnut .html .
17. Meyer , Jeffrey P . and William S . Davidson (2000) .Dissemination of
18. Innovation as Social Change , Kluwer Academic , New York

19. Moris , J .(1991) . Extension Alternatives in Tropical Africa , Overseas
20. Development Institute , London .
21. Peterson ,W. (1997) .The Context of Extension and Rural Development , FAO ,Italy.
22. Pretty , J . , Guijt , I .Thompson , J . and Scoones , J . (1995) . A Trainers Guide for
23. Participatory Learning and Action , International Institute for Environment and
24. Development , London .
25. Rivera ,William M . (2001) . Agricultural and Rural Extension Worldwide : Options
26. for Institutional Reform in the Developing Countries , FAO , Italy .
27. Rogers , Everett M.(2003) . Diffusion of Innovations 5th ed. , Free Press , New
28. York .
29. Van den Ban , A . W. and H. S . Hawkins (1999) .Agricultural Extension , Blackwell
30. Science , USA .

