SOME SOCIAL IMPACTS OF CANCELING THE CONTROL IN CROP ROTATION IN SHARKIA AND MENIA GOVERNORATES

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ABSTRACT

The study aims at measuring the farmers' commitment degree to crop rotation (dependent variable) through a measurement indicator, identifying the differences between economic production and social relationships within rural families from on side and between farmers from other side resulted from changing crop rotation commitment, finally identifying the relationship between some personal characteristics of interviewed farmers and their commitment degree to crop rotation.

The study was carried out in "Talah" village, Menia district "markaz", Menia governorate, and "Teleen" village, Menia Al-Kamh" district "markaz", Sharkia governorate. In order to achieve the previous objectives, personal interview questionnaire was used, after testing its validity and data collection took place between (October-December) 2004.

The following statistical methods were used: Pearson simple correlation coefficient, analysis of variance, multi-correlation regression analysis (stepwise), frequencies and percentages.

The most important study's results can be summarized as follows:

• The significance of the following variables forming the measurement indicator of the dependent variable (farmers' commitment degree to crop rotation) was proven: frequent visits to services centers (before / after) cancellation of crop rotation, satisfaction upon economic liberalization policy, farmers attitude towards agriculture extension (before / after) cancellation of crop rotation and degree of novelty, as these four variables explain about 99% of variance in the total measurement indicator of the dependent variable.

• There was opposite correlative relationship between the following variables forming the economic production relationships within the rural family: land ownership, production, biological control, marketing, production inputs and the farmers' commitment degree to crop rotation (dependent variable) at significant level of 0.01.

• There was opposite correlative relationship between the pattern of social relationships within the rural family and farmers' commitment degree to crop rotation (dependent variable) at significant level of 0.01.

• There was opposite correlative relationship between the following variables forming the economic production relationships among farmers: irrigation processes, production, marketing, and the farmers' commitment degree to crop rotation (dependent variable) at significant level of 0.01.

• There was opposite correlative relationship between the pattern of social relationships among farmers and farmers' commitment de-

gree to crop rotation (dependent variable) at significant level of 0.01.

- There was opposite correlative relationship between the following independent variables: agricultural land ownership, agricultural machinery ownership, animal ownership, family size, organizations membership and geographic cosmopoliteness and farmers' commitment degree to crop rotation (dependent variable) at significant level of 0.01. Whereas it was direct correlative relationship between environmental damage degree.

- There were seven independent variables: agricultural land ownership, agricultural machinery ownership, animal ownership, organizations membership, geographic cosmopoliteness, family size that explain about 15% of the variance in the dependent variable.

- The most important farmers suggested mechanisms to return the crop rotation were as follows: raising farmers awareness through meetings and extension campaigns, provide agriculture inputs with reasonable prices, no governmental interference in selling crops, mechanical control through ministry of agriculture, monitoring seeds and fertilizers in markets, organize and divide agriculture land beds to ease biological control and spraying.

INTRODUCTION

Rural communities are the core of the Egyptian society, as about 34.5 million inhabitants live in it, representing about 54% of total population (63.8 million) in the average period 1996-2000. Agriculture and related activities represent the main rural people activities and rural income represents about 55%, whereas about 45% comes from other resources.

Therefore, the agriculture sector is one of the most important sectors in the Egyptian national economy, as it contributes with about 20% of GDP and about 32% work in it, agriculture exports represent about 20% of total national exports in the 90s. Additionally, this sector provides raw materials and inputs for both agriculture and industrial activities.

Although, the importance of rural communities and agriculture sector to national economy, but agriculture investment does not exceed 8% of total national investments and investments in rural areas of Egypt represent about 27% of total national investments.

Egypt witnessed three main stages in developing its economy and policies. First stage, after the 1952 revolution, Egypt witnessed new political and economic system and agriculture reform and interference of the state aiming to make economic and social changes in rural areas to improve people's livelihoods in the long term.

The new agriculture policy focused on redistribution of agriculture wealth and income to achieve social justice in the rural sector, besides developing agriculture resources and maximization of agriculture production, using various agriculture policies such as pricing, marketing and productivity and such trend continued until 1986.

Second stage, the period 1974-1985 was distinguished by forming the first integrated agriculture strategy in the 80s, which its main objectives to achieve food security, develop agriculture income, develop desert areas and people settlement in such areas, improve infrastructure, achieve social justice in the rural sector, provide job opportunities and increase agriculture institutions efficiency.

Third stage, in the period 1986-1999 which was characterized with applying economic reform policies in all Egyptian economic sectors and the agriculture sector was pioneer in that regard. In this period condensed reform in state economic policies took place such as: canceling state control over cropping patterns, liberalization of agriculture pricing system, no subsidize in production inputs, private sector participation in production inputs trade and agriculture crops, re-adjusting the relationship between agriculture land owners and tenants, farmers free to produce and market. Beside, crop rotation was canceled, which actually had in the past positive impacts on soil fertility, productivity and remedy the occurred gabs in the production of many strategic crops.

Accordingly, and due to rapid changes in the world and free economic policies, many economic confederations merged, besides signing the EU partnership convention which allowed the Egyptian agriculture sector to increase its exported share of various agriculture crops with relative advantages and competitiveness. Though, Egypt had to shift towards new dynamic systems to cope with such changes, through the previous mentioned structural reforms policies in agriculture sector.

Most of the applied policies in the agriculture sector, particularly canceling the crop rotation had both positive and negative impacts on various stakeholders; farmers, agriculture service centers

and extension, economic production and patterns of social relationships within rural families from one hand and farmers from another. Besides some farmers were with or against such cancellation, all previous points reflect the importance of recent study and its objectives in same time.

Study's objectives

Accordingly, the study objectives can be determined as follows:
1. Measurement of farmers' commitment degree to crop rotation (dependent variable) through forming a measurement indicator.
2. Identify differences in economic production relationships and patterns of social relationships within rural families and among farmers as a result of changing commitment pattern of crop rotation.
3. Identify the relationship between some interviewees' personal characteristics and their commitment degree to crop rotation.
4. Identify farmers suggested mechanisms to return crop rotation or improve recent situation.

Study's Methodology

The study used both descriptive and quantitative methodologies in fulfilling its problem and testing its hypothesis.
The following shows studied variables and its numeric transformation techniques (Table 1):

1. **Dependent variable:** include the overall measurement indicator of farmers' commitment degree to crop rotation, formed from the following variables: frequent visits to services centers before / after cancellation of crop rotation, farmers' attitudes towards agriculture extension before / after cancellation of crop rotation, applying the recent non-obligatory crop rotation, satisfaction upon economic liberalization policy, and novelty degree. The pre-post impacts of the first three variables were measured, and then all five variables were computed and gathered in one indicator. The following shows the variables numeric transformation techniques:
   - Frequent visits to services centers before / after cancellation of crop rotation: includes farmers' frequent visits to services centers (e.g. agricultural cooperatives, village bank, and extension centre). A scale of four units was used (always, sometimes, rarely, no)

given a numeric code (4, 3, 2, 1) consequently before / after cancellation of crop rotation and gathered in a total value then subtracted.
   - Farmers' attitudes towards agriculture extension before / after cancellation of crop rotation: a group of positive and negative statements were formed and measured in the same previous way.
   - Applying the recent non-obligatory crop rotation: farmers were asked whether they apply or not the recent crop rotation and given a numeric code (2, 1) consequently then gathered in a total value and was considered the after impact of canceling crop rotation, while the before impact was hypothetical as all farmers were obliged to apply the crop rotation.
   - Satisfaction upon economic liberalization policy: a group of statements representing economic liberalization items were formed e.g. cancellation of crop rotation, no obligatory crops delivery to the state, private sector participation in agriculture inputs trade etc. A scale of three units was used (satisfied, to some extent, not satisfied) given a numeric code (3, 2, 1) consequently then gathered in a total value.
   - Novelty degree: A scale of five units was used (never apply, ask first, wait until trialed by others, trial first by myself, apply) given a numeric code (1, 2, 3, 4, 5) consequently then gathered in a total value.

2. **Independent variables:** include the following variables: educational status, age, agricultural land ownership, agricultural machinery ownership, animal ownership, family size, no. of family members working in agriculture, organizations membership, years of experience in agriculture work, culture cosmopolitness, geographic cosmopolitness, destiny faith, leadership, land distribution (in one piece/ fragmented), environmental damage degree, economic production relationships and pattern of social relationships within rural families and among farmers. The following shows the variables numeric transformation techniques:
   - Educational status: A scale of seven units was used (illiterate, read and write, elementary, preparatory, medium education degree, over medium education degree, university) and given a numeric code (1, 2, 3, 4, 5, 6, 7) consequently.

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Table 1. Numeric transformation of dependent and some independent variables for studied sample

Variables	Arithmetic Mean/Mode	Standard Deviation	Range		Categories													
			Minimum	Maximum	1		2		3		4		5		6		7	
					No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dependent variable:																		
Farmers' commitment degree to crop rotation	32.35	11.27	1.00	76	84	28.0	205	68.3	11	3.7								
Independent variables:																		
Educational status	2.67	1.7	1.00	7.00	89	29.7	104	34.7	22	7.3	17	5.7	48	16.0	9	3.0	11	3.7
Age	48.12	11.20	25.00	76.00	46	15.3	68	22.7	106	35.3	49	16.3	31	10.3				
Agriculture land ownership	87.27	159.38	0.00	1200.0	109	36.3	135	45.0	21	7.0	9	3.0	26	8.7				
Machinery ownership	2.04	1.7	0.00	9.00	37	12.3	176	58.7	59	19.7	28	9.3						
Animal ownership	4.08	3.02	0.00	16.86	26	8.7	39	13.0	108	36.0	127	42.3						
Family size	5.58	2.7	1.00	14.00	17	5.7	82	27.3	88	29.3	113	37.7						
Organization membership	7.8	9.11	0.00	57.00	39	13.0	240	80.0	17	5.7	4	1.3						
Years of experience in agriculture work	29.8	14.43	0.00	70.00	39	13.0	61	20.3	200	66.7								
Culture cosmopolitness	11.35	3.7	0.00	21.00	162	54.0	102	34.0	36	12.0								
Geographic cosmopolitness	8.9	2.37	5.00	16.00	149	49.7	125	41.7	26	8.7								
Leadership	15.7	4.04	6.00	24.00	72	24.0	159	53.0	69	23.0								
Destiny faith	9.00	3.35	3.00	16.00	149	49.7	100	33.3	51	17.0								
Environmental damage degree	18.03	4.108	5.00	25.00	40	13.3	160	53.3	100	33.3								

Source: study's sample (300 farmers)

Table 1-1. Follow Numeric transformation of the other independent variables for studied sample

| Variables | Mode | Categories | | | | | |
| | | 1 | | 2 | | 3 | |
		No.	%	No.	%	No.	%
Economic production relationship within the families:							
Land ownership	1	197	65.7	103	34.3		
Irrigation processes	2	47	15.7	253	84.3		
Production	1	185	61.7	115	38.3		
Biological control	1	153	51.0	147	49.0		
Marketing	1	173	57.7	26	8.7	101	33.7
Production inputs	1	165	55.0	134	44.7	1	0.3
Agriculture processes	3	10	3.3	37	12.3	253	84.3
Patterns of social relationships within rural families:							
Cooperative	3	32	10.7	122	40.7	146	48.7
Competitive	2	34	14.3	163	54.3	94	31.3
Conflict	2	110	36.7	133	44.3	57	19.0
Economic production relationship among farmers:							
Land ownership	1	159	53.0	141	47.0		
Irrigation processes	2	122	40.7	178	59.3		
Production	1	234	78.0	66	22.0		
Biological control	1	208	69.3	92	30.7		
Marketing	1	201	67.0	72	24.0	27	9.0
Production inputs	1	239	79.7	60	20.0	1	0.3
Agriculture processes	2	58	19.3	157	52.3	85	28.3
Patterns of social relationships among farmers:							
Cooperative	2	91	30.3	151	50.3	58	19.3
Competitive	2	52	17.3	145	48.3	103	34.3
Conflict	1	105	35.0	92	30.7	103	34.3
Land distribution (1bed/2 beds)	1	153	51.0	147	49.0		

Source: study's sample (300 farmers)

- Age: crude number and then divided into five categories.
- Agricultural land ownership: the size of land ownership and then divided into five categories.
- Agricultural machinery ownership: measured by number and type of machinery and then gathered in a total value after transforming it to its relevant measurement units of each type and then divided into four categories (own, small ownership, medium ownership, high ownership).
- Animal ownership: measured in the same previous variable measurement.
- Family size: crude number of family members living within same household and then divide into four categories.

- No. of family members working in agriculture: crude number of family members working in agriculture.
- Organizations membership: measured by type of membership in local social organizations and their participation in its meetings, then gathered in a total value and divided into four categories (not member, limited membership, medium and high membership).
- Years of experience in agriculture work: measured by crude number of years of experience.
- Culture cosmopolitness: measured by: listening to radio agricultural programs, TV agricultural programs, reading newspapers, extension pamphlets etc. and a scale of four

units was used (always, sometimes, rarely, no) given a numeric code (4, 3, 2, 1) consequently and gathered in a total value, then divided into three categories.

- Geographic cosmopolitness: measured by frequent visits to other places out their village e.g. district "markaz", governorate capital etc. a scale of four units was used (always, sometimes, rarely, no) given a numeric code (4, 3, 2, 1) consequently and gathered in a total value, then divided into three categories.

- Destiny faith: measured by a group of negative and positive statements that reflect farmers' believes towards their lives, a scale of three units was used (agree, neutral, disagree) given a numeric code (3, 2, 1) consequently and gathered in a total value.

- Leadership: measured by a group of statements that reflect farmers' tendency towards leadership and participation in their community needs and problems, a scale of four units was used (always, sometimes, rarely, no) given a numeric code (4, 3, 2, 1) consequently and gathered in a total value.

- Land distribution (in one piece/ fragmented): measured by identifying whether their land is within same piece of land or fragmented, a scale of two units was used (in one piece/ fragmented), and given a numeric code (2, 1) consequently.

- Environmental damage degree: measured by a group of negative and positive statements that reflects the impact of canceling crop rotation on the environment. A scale of three units was used (agree, neutral, disagree) given a numeric code (3, 2, 1) consequently and gathered in a total value.

- Economic production relationships within rural families and among farmers: include the following variables: land ownership measured on a scale of two units (same, divided among family members) given a numeric code (2, 1) consequently, irrigation processes on a scale of two units (everyone takes his turn, there are problems on irrigation priorities) given a numeric code (2, 1) consequently, production measured on a scale of two units (similar production in same piece of land, different production in same piece of land) given a numeric code (2, 1) consequently, biological control measured on a scale of two units organized, not organized) given a numeric code (2, 1)

consequently, marketing measured on a scale of three units (cooperative, competitive, independent) given a numeric code (3, 2, 1) consequently, production inputs measured on a scale of two units (cooperative with family members, alone) given a numeric code (2, 1) consequently, finally agricultural processes measured on a scale of three units (cooperative, competitive, conflict) given a numeric code (3, 2, 1) consequently, besides a group of positive and negative statements reflects the economic impact in general e.g. everyone now is free to cultivate his own crops, marketing problems increased after cancellation, the most important thing in economic liberalization that they cancelled crop rotation etc. and gathered in one value.

- Pattern of social relationships within rural families and among farmers: measured on a scale of three units (cooperative, competitive, conflict) and each pattern was divided into three scales (high, medium, low) given a numeric code (3, 2, 1) consequently.

Geographic field and sampling

The study was carried out in both Sharkia and Menia governorates, as they represent one of the two biggest governorates in cultivated areas. The governorates were ranked to three categories according to the cultivated areas, though Sharkia governorate was selected representing second category in Lower Egypt governorates and Menia governorate representing second category in Upper Egypt governorates, as the cultivated areas in Sharkia was about 794592 Feddans and in Menia about 483280 Feddans. In the same way two districts "markazes" were chosen, "Menia Al-Kamh" from Sharkia and "Samalout" from Menia then two villages were chosen randomly "Teleen" from Menia Al-Kamh markaz and "Talah" from Menia markaz.

The sample was randomly withdrawn from agriculture land ownership lists in the agriculture cooperatives and sample size reached 300 farmers (150 from each village).

Data collection tools

A personal interview questionnaire was used to collect data from farmers after testing its validity during (October-December) 2004, besides secondary data.

Statistical analysis methods

The following statistical methods were used: Pearson simple correlation coefficient, analysis of variance, multi-correlative regression analysis "stepwise", frequencies and percentages.

Study's Hypotheses

In order to achieve objectives 2 and 3 the following theoretical hypotheses were formed:

1. There is a relationship between economic production relationships and patterns of social relationships within the rural families and farmers commitment degree to crop rotation (dependent variable) in study's sample.
2. There is a relationship between economic production relationships and patterns of social relationships among farmers and their commitment degree to crop rotation (dependent variable) in study's sample.
3. There is a relationship between studied independent variables and farmers commitment degree to crop rotation (dependent variable) in study's sample.

The following statistical hypotheses were formed:

1. The first statistical hypothesis tests the first theoretical hypothesis, as eleven (1-11) statistical hypotheses were deducted reflected in the following statement: "no relationship between economic production relationships within rural families (land ownership, irrigation processes, production, biological control, marketing, production inputs, agriculture processes, and economic impact) and farmer's commitment degree to crop rotation (dependent variable).
2. The second statistical hypothesis tests the second theoretical hypothesis, as eleven (12-23) statistical hypotheses were deducted reflected in the following statement: "no relationship between economic production relationships among farmers (land ownership, irrigation processes, production, biological control, marketing, production inputs, agricultural processes, and economic impact) and farmer's commitment degree to crop rotation (dependent variable).
3. The third statistical hypothesis tests the third theoretical hypothesis, as eleven (24-38) statistical hypotheses were deducted re-

flected in the following statement: "no relationship between independent personal characteristics (educational status, age, agricultural land ownership, agricultural machinery ownership, animal ownership, family size, no. of family members working in agriculture, organizations membership, years of experience in agriculture work, culture cosmopolitness, geographic cosmopolitness, destiny faith, leadership, land distribution (in one piece/ fragmented), environmental damage degree) and economic impact) and farmer's commitment degree to crop rotation (dependent variable).

Study's Findings

First: Sample consistency

Analysis of variance was used to identify sample consistency within the two studied governorates, results revealed no significant differences between the samples in both governorates, as "F" ratio valued 0.891 at significant level of 0.661, which means that the studied sample was considered as one consistent sample in regard of its characteristics and studied phenomena which reflects same attention and responses regardless the geographic area particularly in old lands.

Second: Study objective 1:

The first objective is concerned with forming an indicator to measure farmers' commitment degree to crop rotation (dependent variable).The following variables were used to form the measurement indicator: frequent visits to services centers before / after cancellation of crop rotation (y1), farmers' attitudes towards agriculture extension before / after cancellation of crop rotation (y2), applying the recent non-obligatory crop rotation (y3), satisfaction upon economic liberalization policy (y4), novelty degree (y5). A correlative relationship was found between indicator's components, except one variable y3, as y1, y2 and y5 were significant at 0.01 while y4 was significant at 0.05.

The results of Step-wise analysis **(Table 2)** to test the significant of indicator's components showed significance in the statistical model that includes four variables: y1, y4, y2 and y5 relatively. The adjusted determination coefficient (R^2) valued 0.99, which means that the four variables explain about 99% of total variance in dependent variable and about 1% of this variance can be related to other variables.

Table 2. Statistical model variables by stepwise analysis

Step	Variables	R	Adjusted R^2	Explained variance	"F" ratio [a]
1	Frequent visits to services centers (y1)	.791	.625	.625	499.318
2	Satisfaction upon economic liberalization policy (y4)	.912	.831	.206	737.214
3	Farmers' attitudes towards agriculture extension (y2)	.994	.987	.156	7641.919
4	Novelty degree (y5)	.999	.999	.012	51515.325

Source: study's sample
* significant on .000

Third: Study objective 2

The second objective is concerned with identification of differences between economic production relationship and social relationship patterns within the rural families from one hand, and among farmers from another hand resulting from changing the crop rotation commitment pattern.

In regard of testing the first theoretical hypothesis and its derived statistical hypothesis (1-11), results of Pearson simple correlation coefficient **(Table 3)** indicated opposite correlative relationship between the following independent variables within the rural families land ownership, production, biological control, marketing, production inputs and farmers' commitment degree to crop rotation (dependent variable) at 0.01. This could be due to farmers with big land holdings are

freer in cultivating cash crops with high productivity and market it as one bulk easily than small production which lack its market large areas which consequently need less effort and labor.

The results also revealed opposite correlative relationship at 0.01 between social relationship patterns within rural families (cooperation, conflict, competition), which could be attributed to the less committed farmers to crop rotation the more cooperation, conflict, competition relationships rules, as cooperation can be found in production and its inputs through exchanging experiences, while conflict exist in irrigation priorities, biological control, as crops varies in its needs from irrigation amount and pesticides and fertilizers, but competition can be in marketing. Though, that means to reject the statistical null hypothesis and accept the alternative one.

Table 3. Pearson simple correlation coefficient values for economic production relationships and social relationship patterns within rural families

Variable	Correlation coefficient value	Significance	Variable	Correlation coefficient value	Significance
Economic production relationships:			Social relation patterns:		
Land ownership	-0.261 *	.000	Cooperation	-0.218 *	.000
Irrigation processes	-0.021	.718	Competition	-0.261 *	.000
Production	-0.269 *	.000	conflict	0.155 *	.007
Biological control	-0.308 *	.000			
Marketing	-0.297 *	.000			
Production inputs	0.229 *	.000			
Agricultural Processes	0.007	.898			
Economic impact	-0.003	.956			

Source: study's sample
* significant on 0.01

In regard of testing the second theoretical hypothesis and its derived statistical hypothesis (12-23), results of Pearson simple correlation coefficient **(Table 4)** indicated opposite correlative relationship between the following independent variables among farmers: irrigation processes, production, marketing and farmers' commitment degree to crop rotation (dependent variable) at 0.01. This could mean that the less farmers commitment to crop rotation, the more irrigation processes, production and marketing increase, could be due to high production which as mentioned before easily marketed in one bulk than small production and irrigation process are easily done and everyone free to cultivate crops that gives profits, which couldn't be achieved if committed to crop rotation.

The results also revealed opposite correlative relationship at 0.01 between social relationship patterns among farmers (cooperation, conflict, competition), which could be attributed to the less committed farmers to crop rotation the more cooperation, conflict relationships rules, as cooperation can be found in production and its inputs through exchanging experiences, while conflict exist in irrigation priorities, biological control, as crops varies in its needs from irrigation amount and pesticides and fertilizers. Though, that means to reject the statistical null hypothesis and accept the alternative one.

Table 4. Pearson simple correlation coefficient values for economic production relationships and social relationship patterns among farmers

Variable	Correlation coefficient value	Significance	Variable	Correlation coefficient value	Significance
Economic production relationships:			Social relation patterns:		
Land ownership	-0.034	.553	Cooperation	-0.143	.013 *
Irrigation processes	0.196 *	.001	Competition	-0.075	.198
Production	-0.179 *	.002	conflict	0.167	.004 *
Biological control	-0.006	.921			
Marketing	-0.191 *	.001			
Production inputs	0.018	.762			
Agricultural Processes	-0.016	.786			
Economic impact	-0.003	.956			

Source: study sample
* significant on 0.01

Forth: Study objective 3: The third objective is concerned with identification of impact of personal characteristics on farmers' commitment degree to crop rotation (dependent variable). It was tested by the third theoretical hypothesis and its derived statistical hypothesis (23-38), results of Pearson simple correlation coefficient **(Table 5)** indicated opposite correlative relationship between the following independent variables: agricultural land ownership, agricultural machinery ownership, animal ownership, family size, organizations membership, geographic cosmopolitness and farmers' commitment degree to crop rotation (dependent variable) at 0.01. That means the more farmers possess agricultural land, agricultural machinery ownership, animal ownership, big family size, high organizations membership and geo-

graphic cosmopolitness, the less commitment they are to crop rotation.

This could be due to big land areas give farmers more opportunity to cultivate varieties which give high productivity and more profitable, besides marketing directly to merchandise and receiving their profits in one allotment not in installment like the case when selling to the government. In regard of organization membership and geographic cosmopolitness, as it helps farmers to increase their awareness of productivity requirements and market demands which enables him to know the cash and export crops that gives him profits that eventually improves their families livelihoods.

Whereas, the relationship was direct between environmental damage degree and dependent vari-

able, which means the more farmers committed to crop rotation the more environmental harm exists. This could be due to having rotated cropping patterns on same piece of land, leads in long term to deteriorate soil fertility that affect its productivity in future. The other studied variables showed no significance.

The results of Step-wise analysis to test the significant of studied independent personal characteristics variables which proved its significance, showed significance in the statistical model from first step, that includes the following seven variables: agricultural land ownership (x4), agricultural machinery ownership (x7), animal ownership (x8), organizations membership (x13), geographic cosmopolitness (x15), environmental damage degree (x30), family size, relatively. The adjusted determination coefficient (R^2) valued 0.149 and "F" ratio valued 9.742 (significant at 0.000) which means that the seven variables explain about 15% of total variance in dependent variable and about 85% of this variance can be related to other variables.

Fifth: Study objective 4

The forth objective is concerned with identification of farmers suggestions regarding crop rotation, as results revealed that about 61.3% of total sample demanded the return of crop rotation with new mechanisms (Table 6), while about 38.7% were against return of crop rotation. Table (6) shows that the most important suggested mechanisms from farmers point of view can be summarized as follows: raising farmers awareness through meeting and extension programs, provide fertilizers with reasonable prices, no governmental interference in selling crops, paying more attention to mechanical control through ministry of agriculture, regulate supervision over seeds and fertilizers, organize and divide land areas to ease biological control and spraying, paying more attention to marketing issues and open new markets for Egyptian agricultural products, organize meetings with relevant authorities to exchange experiences around production improvement and maintain soil fertility, unify rent value per feddan, form an association among farmers in same land areas to cultivate same crops i.e. conduct crop rotation of their own, consider farmers needs to cultivate profitable crops and fits with market demand, provide fodders, reduce production costs (labors, land rent), paying more attention to agriculture extensionests, consider farmers opinions when organizing crop rotation, find new cooperation mechanism between farmers and study centers, agricultural cooperatives and extension should pay more attention to farmers and provide services, form agricultural cooperatives among farmers and finally, establish a collective system for crops.

Table 5. Pearson simple correlation coefficient values for studied independent variables

Variable	Correlation coefficient value	Significance	Variable	Correlation coefficient value	Significance
Age	-.104	.071	Organizations membership	-.173 *	.003
Educational status	.043	.459	Culture cosmopolitness	-.052	.366
Agricultural land ownership	-.379 *	.000	Geographic cosmopolitness	-.200 *	.001
Years of experience in agriculture work	-.003	.955	Leadership	-.032	.586
Land distribution (in one piece/ fragmented)	-.092	.003	Destiny faith	-.003	.961
Agricultural machinery ownership	-.254 *	.000	Family size	-.077	.186
Animal ownership	-.224 *	.000	No. of family members working in agriculture	-.167 *	.004
Environmental damage degree	.196 *	.001			

Source: study sample
* significant on 0.01

Table 6. The most important suggested mechanisms to return crop rotation from farmers' point of view ranked according to percentages

Mechanisms	Frequencies	%
Form agricultural cooperatives among farmers	47	20.2
Reduce production costs	37	15.8
Agricultural cooperatives and extension should pay more attention to farmers	27	11.5
Provide fertilizers with reasonable prices	24	10.30
Raising farmers awareness through meeting and extension programs	23	9.8
Consider farmers needs to cultivate profitable crops	18	7.7
Organize meetings with relevant authorities to exchange experiences	15	6.5
Establish a collective system for crops	15	6.5
Consider farmers opinions when organizing crop rotation	10	4.3
Pay more attention to agriculture extensionests	4	1.7
No governmental interference in selling crops	3	1.2
Provide fodders	3	1.2
Pay more attention to marketing issues	2	0.8
Pay more attention to mechanical control	1	0.5
Regulate supervision over seeds and fertilizers	1	0.5
Organize and divide land areas to ease biological control and spraying	1	0.5
Unify rent value per feddan	1	0.5
Find new cooperation mechanism between farmers and study centers	1	0.5
Total	233	100

Source: study's sample

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بعض التأثيرات الاجتماعية الناجمة عن إلغاء التحكم فى الدورة الزراعية فى محافظتى الشرقية والمنيا

[٤١]

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وكانت اهم النتائج التى تم التوصل اليها كما يلى

ثبتت معنوية المتغيرات الداخلة فى مؤشر قياس المتغير التابع (مدى الالتزام بإتباع المزارعين للدورة الزراعية) وهى: التردد على مراكز الخدمات (قبل/ بعد) إلغاء الدورة الزراعية، الرضا عن سياسة التحرر الاقتصادى، إتجاه المزارعين نحو الارشاد الزراعى (قبل/ بعد)، ودرجة التجديدية، حيث تسهم فى تفسير نحو ٩٩% من التباين فى مؤشر القياس الاجمالى للمتغير التابع.

وجود علاقة إرتباطية عكسية بين المتغيرات المستقلة التالية المكونة لعلاقات الانتاج الاقتصادية داخل الاسرة الريفية: ملكية الارض، الانتاج، المكافحة الحيوية، التسويق، ومستلزمات الانتاج، وبين مدى إلتزام المزارعين بالدورة الزراعية (المتغير التابع) عند ٠,٠١.

وجود علاقة إرتباطية عكسية بين متغير نمط العلاقات الاجتماعية داخل الاسرة الريفية، وبين مدى إلتزام المزارعين بالدورة الزراعية (المتغير التابع) حيث ثبتت معنويته عند ٠,٠١.

وجود علاقة إرتباطية عكسية بين المتغيرات المستقلة التالية المكونة لعلاقات الانتاج الاقتصادية

استهدفت الدراسة الحالية بناء مؤشر لقياس درجة الالتزام المزارعين بإتباع الدورة الزراعية (المتغير التابع)، والتعرف على أوجه الاختلاف بين كل من علاقات الانتاج الاقتصادية ونمط العلاقات الاجتماعية داخل الاسرة الريفية من جانب، وبين المزارعين من جانب أخر من جراء تغير نمط الالتزام بالدورة الزراعية، والتعرف على أثر المتغيرات الشخصية على درجة الالتزام بإتباع الدورة الزراعية.

وقد أجريت الدراسة بقريتى "تلة" من مركز المنيا، محافظة المنيا، وقرية "التلين" من مركز منيا القمح، محافظة الشرقية. ولتحقيق الاهداف السابقة، تم إستخدام الاستبيان بالمقابلة الشخصية نجمع البيانات وذلك بعد إختبار صلاحية الاستمارة لتحقيق أهداف الدراسة بصفة مبدئية، ثم أدخلت التعديلات اللازمة لتصبح الاستمارة صالحة فى شكلها النهائى، وقد تم جمع البيانات خلال الفترة (أكتوبر – ديسمبر) ٢٠٠٤، كما تم الاعتماد على البيانات السجلية. وإستخدم فى تحليل البيانات معامل الارتباط البسيط لبيرسون، تحليل التباين، ونموذج التحليل الارتباطى الانحدارى المتعدد الصاعد " Step-Wise"، بالإضافة الى العرض الجدولى بالتكرار والنسب المئوية.

بين المزارعين: عمليات الرى، الانتاج، والتسويق، وبين مدى إلتزام المزارعين بالدورة الزراعية (المتغير التابع) عند ٠,٠١.

وجود علاقة إرتباطية عكسية بين متغير نمط العلاقات الاجتماعية بين المزارعين، وبين مدى إلتزام المزارعين بالدورة الزراعية (المتغير التابع) ، حيث ثبتت معنويته عند ٠,٠١.

وجود علاقة إرتباطية عكسية بين المتغيرات المستقلة التالية: الحيازة الزراعية، ملكية الالات الزراعية، ملكية الحيوانات الزراعية، حجم الاسرة المعيشية، عضوية المنظمات، الانفتاح الجغرافى، وبين مدى إلتزام المزارعين بالدورة الزراعية (المتغير التابع) عند ٠,٠١. بينما كانت العلاقة طردية بين متغير درجة الضرر البيئى والمتغير التابع.

تبين وجود سبعة متغيرات مستقلة تسهم فى تفسير التباين الحادث فى المتغير التابع وهى: الحيازة الزراعية، وملكية الالات الزراعية، وملكية الحيوانات الزراعية، وعضوية المنظمات، والانفتاح الجغرافى، ودرجة الضرر البيئى، وحجم الاسرة المعيشية وذلك على مستوى عينة الدراسة.

أن من أهم مقترحات المبحوثين لعودة الدورة الزراعية بحيث تكون فى صالح المزارع، أن تتم من خلال إتباع الاليات التالية لضمان نجاحها: توعية المزارعين عن طريق الندوات والبرامج الارشادية، توفير الاسمدة بأسعار مناسبة، عدم التدخل فى بيع المحصول، الاهتمام بالمكافحة الميكانيكية من وزارة الزراعة، تنظيم عملية الرقابة على على التقاوى والاسمدة، تقسيم الاحواض وتنظيمها حتى تسهل عمليات المكافحة الحيوية والرش.

الكلمات الدالة: الدورة الزراعية، علاقات الانتاج الاقتصادية، نمط العلاقات الاجتماعية، سياسة التحرر الاقتصادى