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FACTORS AND SOURCES OF
INFORMATION RELATED TO
THE GROWING OF SUNFLOWER AS
A REPLACEMENT OF HASHEESH IN THE
NORTHERN BEQA'A, LEBANON

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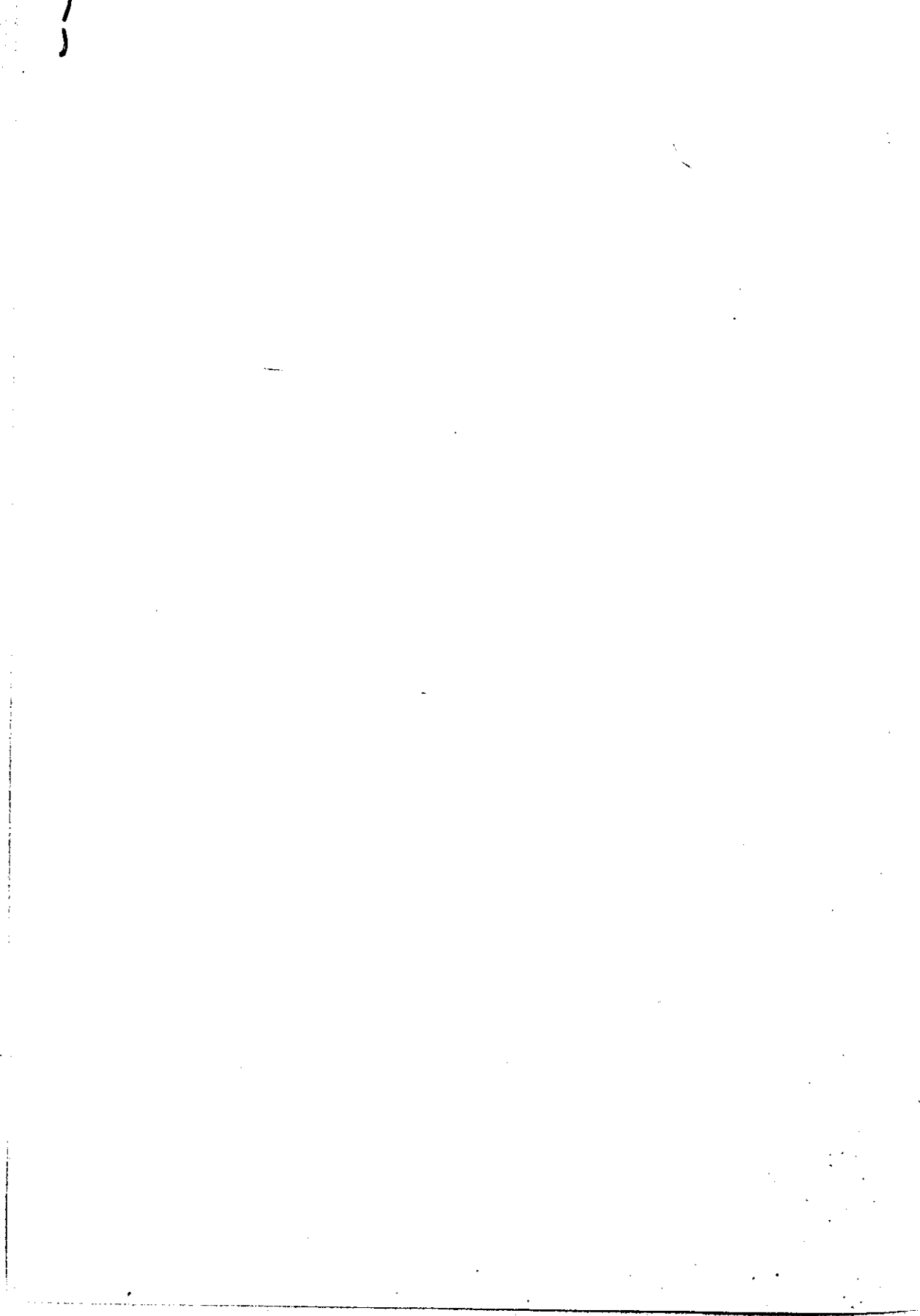
by
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FACTORS AND SOURCES OF INFORMATION RELATED TO THE GROWING OF SUNFLOWER AS A REPLACEMENT OF HASHEESH IN THE NORTHERN BEQA'A, LEBANON¹

Salah M. Yacoub² and M. Graeff Wassink³

HISTORICAL BACKGROUND OF THE SUNFLOWER PROJECT IN LEBANON

Hasheesh is the Arabic name of the true hemp plant (*Cannabis Sativa*) which is annually propagated by seed and widely used as a narcotic or intoxicant. The leaves and other tissues of the plant produce a resin from which the Cannabis drug is obtainable. As a narcotic, it is either smoked or eaten and is known as *bbang*, *charas*, or *ghanga* in India; as *hasheesh* in Egypt and Asia Minor; as *kef* in North Africa; and as *marijuana* in the Western Hemisphere. The history of *hasheesh* in Lebanon is very long and there is no record of when and how it was introduced. The main plantation of *hasheesh* is in an area North-West of *Baalbeck* and which includes about 20 villages. The overall area of plantation before the introduction of the sunflower project was 20,000 dunums⁴ (Ghandour 1969, pp. 3-4).

Smoking the *hasheesh* drug has always been forbidden by law. The Government has been fighting this plantation for about 15 years. The *gendarmes*

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(4) One dunum is approximately 1000 square meters.

were ordered to destroy the plantation wherever they found it. This method of fighting the plantation proved to be costly and futile (*Ibid*, p. 5).

On March 21, 1966, the Council of Ministers decided to replace, in *Baalbeck* and *Hermel* districts in the Northern Beqa'a of Lebanon, the cultivation of *basbeesh* by sunflower through peaceful means. In order to implement this project, a committee composed of the Director General of Agriculture, the Director General of the Security Forces, the Director of the Wheat Office, and the Director of the Green Plan⁵ was formed. In order to publicize this campaign, the Green Plan, which is the government office responsible for the carrying out of the project, organized a meeting with the farmers in *Hermel*. Seven government officials were present at the meeting during which land reclamation projects and other means by which Government could help farmers were discussed. The sunflower development project was introduced and explained to the farmers in the meeting. Seventeen farmers owning 831 dunums distributed in 14 villages in *Baalbeck* and *Hermel* districts accepted to plant sunflower on a trial basis. The planting were carried out between April 22 and May 5, 1966 followed by signing a contract between the farmers and the Green Plan Office. The contract stipulated the following items:

1. The Green Plan will buy the harvested seeds at LL. 0.75/kilo which is about LL. 0.35 above the open market price.
2. To give and transport to the farmers the fertilizers needed.
3. The Green Plan will provide seeds to farmers.
4. The Green Plan employees will help and advise the farmers.

In order to implement part of the items stipulated in the contract, the Council of Ministers at its meeting on May 25 approved the support price

(5) An autonomous organization under the auspices of the Minister of Agriculture was established in Lebanon in 1965. The main objective is to reclaim lands through: (1) Providing the machinery needed for the construction of terraces to prevent erosion, (2) conducting technical and economic studies to determine the most suitable fruit trees to be planted and distributed to farmers at a low price, (3) offering farmers the technical advice needed for land reclamation, planting, and management, and (4) carrying out certain projects such as opening of new agricultural roads in the rural areas, land clearing, forestation, and improving pastures on public land (*Sadaka, et al.*, 1966).

of LL. 0.75/kilo, and gave the Wheat Office a LL. 200,000 loan to pay the support price to farmers.

Following the planting of the sunflower, a meeting was held at the Ministry of Information in July, 1966 during which the following decisions were taken:

1. To buy the harvest at LL. 0.75/kilo.
2. To extend in 1967 to cultivation of sunflower to 15,000 dunums.
3. To form a committee responsible to organize an information campaign for the sunflower project.

To implement the latter, a tour of the plantation area was organized to provide the journalists and reporters with a first hand information about the sunflower project. During this trip some journalists reported comments expressed by farmers regarding the program. It appeared that it is the belief of some farmers that *hasbeesh* is the only crop which can be grown in the area because of its adaptability to the local conditions.

In July, 1966 it was decided, based on the preliminary results of the sunflower project, to increase the area planted by sunflower up to 15,000 dunums, to use selected seeds, and to improve both the cultivation methods and the oil extraction process.

In order to take the necessary steps before the harvest of the sunflower crop, the four-man committee responsible for the implementation of the project met on October 8, 1966 and decided to:

1. Estimate the current year's production.
2. Prepare jute bags for transporting the crop by government trucks.
3. Take necessary steps in order to be able to plant 15,000-30,000 dunums in 1967.
4. Study problems of fertilizers and seeds.
5. Ask the directorate of the Security Forces to prepare an estimate of the area planted by *hasbeesh*.

As a result of government incentives, a large number of farmers, some of whom were previously *basbeesh* planters, were motivated in the year 1967 to grow sunflower (Table 1). On March 3 of that year, 9975 kg^b of selected sunflower seeds, 12 mechanical planters, 400 tons of fertilizers, and 17 tons of insecticides were received by the Green Plan to improve the 1967 sunflower crop for which there were requests to plant up to March, 1967 an area of 25,000 dunums.

Table 1. Sunflower plantation in Lebanon from 1966 to 1968.*

Year	No. of farmers	Area of irrigated Land in Dunums	Area of dry land in Dunums	Total
1966	19	861	171	1032
1967	272	9866	5948	15814
1968	763	17489	11388	28877

* Taken from Ghandour's Thesis, 1969, p. 6.

In 1968, the number of sunflower producers reached 763 and the total area planted was estimated by 28877 dunums (Table 1). As a result the *basbeesh* plantation area was reduced from 20,000 dunums to about 10,000.

PURPOSE OF THE STUDY

This study has two main objectives:

1. To investigate the factors which are associated with planting or non-planting of sunflower.
2. To investigate the sources of information which were used by sunflower planters throughout the various stages of the adoption process.

METHODOLOGY

In this study, a sample of 166 farmers were interviewed. Of those, 88 were sunflower planters and 78 were non-planters. The planters' group was

(6) One kg = 2.2 lbs.



selected randomly from the list of 272 farmers in *Baalbeck* and *Hermel* districts who applied and signed a contract to plant sunflower with the main Green Plan Office stationed at *Baalbeck*. They represented twenty two villages in the Northern *Beqa'a* of Lebanon⁷ (See Figures 1 and 2). From each of the villages represented in the sample of planters, approximately a similar number of sunflower non-planters (refusers) were selected. The size of the planters and the non-planters groups in the sample was not determined in proportion to their size in the population. Furthermore, the selection of the group of non-planters from each village was not done randomly or in proportion to the size of population in the villages studied because it was impossible to obtain the names and the exact number of farmers in these villages. In many developing countries, reliable population sources are lacking and it is even more so for Lebanon. This shortcoming must be recognized since it can cause some biases in presenting and interpreting the data.

The data collected were coded, punched into IBM cards and analyzed through the Computer Center of the American University of Beirut. The chi square test was used to test the significance of the relationships between certain selected variables and planting of sunflower.

FACTORS AFFECTING THE GROWING OF SUNFLOWER

In any situation of planned change, there are change-promoting and change-inhibiting societal and personal factors. In addition, there are factors which are related to the innovation itself or to the way it was introduced. In this section, the influence of some of these factors on planting or non-planting of sunflower were investigated.

1. *Economic Gain*

Generally, farmers are more motivated to replace an old practice with a new one after they realize that the new practice is more profitable to them than the already existing one. Therefore they have to weigh the advantages and the disadvantages of both before they make their decision.

(7) These villages were: Al-Qa'a, Baalbeck, Boudai, Btedi, Chaat, Charbine, Chlifa, Deir El-Ahmar, Douris, Haoche Tel Safieh, Hermel, Iaat, Kneissh, Laboue, Majdaloun, Maqni, Shwaighir, Taibe, Talia, Taraya, Yamoune and Younine.

Figure 1. Map of the study area in relation to Lebanon.

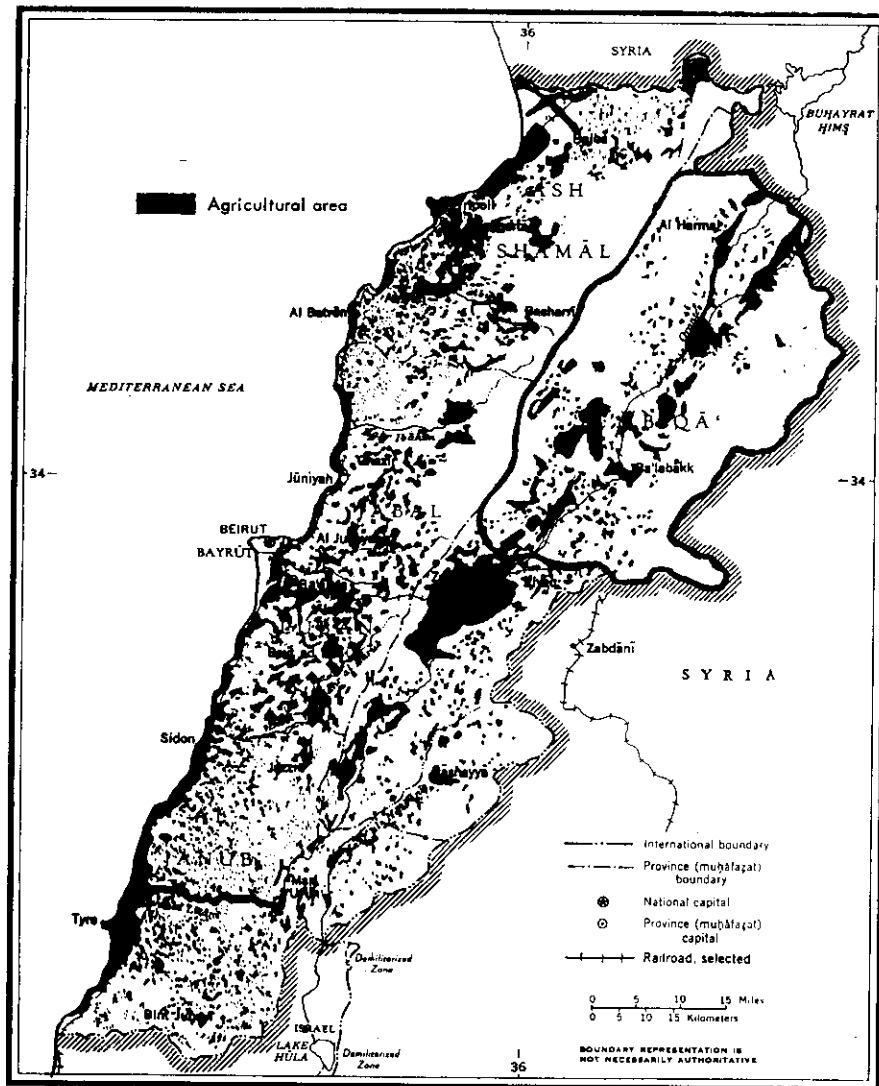


Figure 2. A detailed map of the study area.

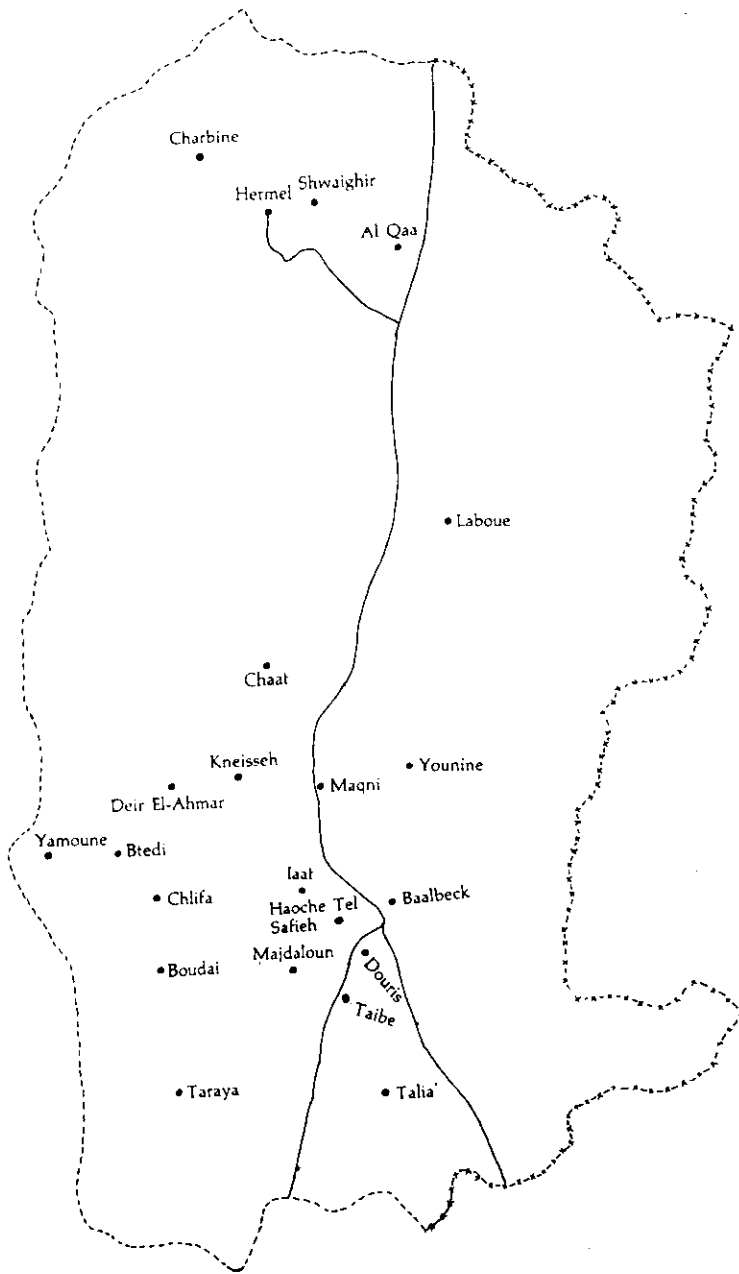


Table 4. Interest government has in introducing sunflower as perceived by respondents, April 1967 (N = 166).

Government Interest	No.*	Percent
Prevent <i>basheesh</i>	102	61
Better life for farmers	68	41
Increase national income	2	1
Prevent rural migration	2	1
Do not know	16	10

* More than one reason is sometimes given by respondents which caused the total to exceed the original N.

adoption of certain olive practices in Abey area of Mount Lebanon (Hammad, 1968). This study also showed a significant relationship between size of farm operated and planting of sunflower. Non-growers, generally, operated a smaller farms than growers (Table 5).

Table 5. Growing of sunflower by size of farm owned, April 1967.

Size of Farm in Dunums	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
100 or less	32	36	44	56	76	46
101-200	19	22	20	26	39	23
201 and over	37	42	14	18	51	31
Total	88	100	78	100	166	100

$$\chi^2 = 11.73; \quad 2 \text{ d.f.}; \quad P < 0.05$$

3. Farm Ownership

Land tenancy status and the growing of sunflower crop were not significantly related (Table 6). Al-Haj (1968) reported similar findings; while Hammad (1968) showed that there was some relationship between land tenancy status and the adoption of only one olive practice; pest control, out of four which were investigated.

Table 6. Growing of sunflower by farm ownership of respondents, April 1967.

Farm Ownership	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Owner	74	84	65	83	139	84
Not owner	12	14	12	16	24	14
No answer	2	2	1	1	3	2
Total	88	100	18	100	166	100

$$\chi^2 = 1.36; 3 \text{ d.f.}; P > 0.05$$

4. Age

Some studies showed that age was not related to the adoption of recommended farm practices, while others showed that such a relationship existed. In Al-Haj's (1968) study, for example, there was a significant relationship between age and the two wheat practices namely "seed treatment" and "rate of fertilization." Hammad's (1968) study, on the other hand, showed no significant relationship between this demographic variable and any of the olive practices investigated.

This study indicated that age was not related to the growing of the sunflower crop. There was an almost equal distribution of age groups, and whether the sunflower growers were young or old, the same pattern of adoption was encountered (Table 7).

Table 7. Growing of sunflower by age of respondents, April 1967.

Age	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
35 years or less	22	25	20	26	42	25
36-45 Years	26	29	19	24	45	27
46-55 Years	20	23	15	19	35	21
56 or more	20	23	24	31	44	27
Total	88	100	78	100	166	100

$$\chi^2 = 1.66; 3 \text{ d.f.}; P > 0.05$$

5. Level of Education

Among the Lebanese wheat growers there was a significant relationship between education and the adoption of each of the "seed treatment," "rate of fertilization," and "time of fertilization" practices (Al-Haj, 1968). Educational level was also an important factor in influencing olive growers to accept improved practices (Hammad, 1968).

In this study, the educational level of respondents was not significantly related to the planting of the sunflower crop (Table 8).

Table 8. Growing of sunflower by educational level of respondents, April 1967.

Education	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Illiterate or first grade education only	41	47	32	41	73	44
Below grade school	39	44	33	42	72	43
Above grade school	8	9	13	17	21	13
Total	88	100	78	100	166	100

$$x^2 = 4.32; 2 \text{ d.f.}; P > 0.05$$

6. Listening to Radio Agricultural Programs and Attending Agricultural Demonstrations at the AREC*

It was assumed in this study that farmers who were exposed to sources of information outside their immediate locality will have more "cosmopolitan" orientation than those who were not. On the other hand, farmers with a "local" orientation tend to depend mainly on their neighbors and on other farmers in the village as their source of information. Studies have shown that farmers with a cosmopolitan orientation are generally more receptive to change than those with a local orientation (Lionberger, 1960, and Yacoub, 1963). Thus, it was assumed that farmers who listen to radio agricultural programs

* Agricultural Research and Educational Center of the American University of Beirut, *Beq'a*, Lebanon.

and attend agricultural demonstrations conducted at the AREC would receive sufficient and more reliable information about the sunflower project than those who do not; therefore, their adoption rates of the new crop would be affected. This assumption, however, did not hold since there was no significant relationship between growing of sunflower and listening to radio agricultural programs or attending of agricultural demonstrations at the AREC (Tables 9 and 10).

Table 9. Growing of sunflower by listening to radio agricultural programs, April 1967.

	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Yes	51	58	39	50	90	54
No	37	42	39	50	76	46
Total	88	100	78	100	166	100

$$x^2 = 1.05; 1 \text{ d.f.}; P > 0.05$$

Table 10. Growing of sunflower by attendance of agricultural demonstrations at the AREC, April 1967.

Attendance	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Yes	13	15	14	18	27	16
No	75	85	64	82	139	84
Total	88	100	78	100	166	100

$$x^2 = 1.49; 1 \text{ d.f.}; P > 0.05$$

7. Individual's Self-Rating of his Adopting Behavior

In another study (Yacoub, 1963), self-rating of ones adopting behavior was considered to measure farmer's progressive and traditional orientations. Progressive farmers view themselves as being among the first to adopt new ways of doing things; while traditional ones view themselves as being among the last. Individual's self-rating of his adopting behavior was found to be significantly related to his actual adoption of the recommended practices (Yacoub, 1963). Therefore, it was hypothesized in this study that farmers

who rated themselves as being ahead of average on the adoption of new farm practices will tend to be among the sunflower growers; while those who rated themselves as being behind the average will tend to be among the non-growers.

More growers than non-growers rated themselves as being "ahead of average" in their adoption behavior; while the percentage of non-growers who considered themselves as being "behind the average" was higher than that for the growers (Table 11). The relationship between individual's self-rating and the growing of sunflower crop was in the expected direction but such relationship was not significant at the .05 level.

Table 11. Growing of sunflower and self-rating in the adoption of new farm practices, April 1967.

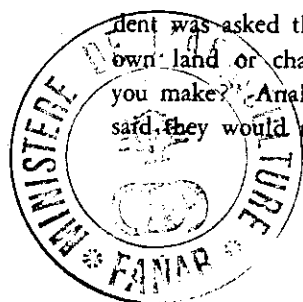
Self-Rating	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Ahead of average	25	29	12	15	37	23
Average	46	52	46	59	92	55
Behind the average	17	19	20	26	37	22
Total	88	100	78	100	166	100

$$\chi^2 = 4.22; 2 \text{ d.f.}; P > 0.05$$

8. Satisfaction with own Farm

Farmers' satisfaction with their own farms in the village can influence any future action they may want to undertake in regard to farming. If a farmer was not satisfied with his own farm, his willingness to invest in it and to accept new farm practices, in general, will decrease. On the other hand satisfaction with the farm might serve as a further motive to farmers to invest in it in order to increase its productivity and the income derived from it.

To find out whether farmers were satisfied with their farms, each respondent was asked this question: "If you were to choose between keeping your own land or changing it to a more productive one, which choice would you make?" Analysis of responses showed that three fourths of the growers said they would rather keep it while only one fourth preferred to change it.



Nearly three fifths of the non-growers said they would keep their land, as compared to two fifths who indicated they would rather change it (Table 12). The relationship between their choices and growing of sunflower was significantly related at the .05 level. Those who chose to keep their land were more willing to grow sunflower than those who chose to change it.

Table 12. Growing of sunflower and satisfaction with farms, April 1967 (N = 164).

Respondents Choice	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Would rather keep farm	66	76	44	57	110	67
Would rather change farm	21	24	33	43	54	35
Total	87	100	77	100	164	100

$$x^2 = 6.48; 1 \text{ d.f.}; P < 0.05$$

Another measure of dissatisfaction with farming as a way of life is the respondents' willingness to leave the village and the farm and accept a job in the city. Less growers than non-growers expressed their willingness to do so; while the proportion of those who were not willing to leave the village and the farm was larger for the growers than for the non-growers (Table 13). The relationship between farmers choice to stay or to leave the village and the growing of sunflower was significantly related at the .05 level.

Table 13. Growing of sunflower and willingness to leave the village and the farm and accept a job in the city, April 1967.

Willingness to leave.	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Willing	37	43	45	59	82	51
Not willing	48	57	32	41	80	49
Total	85	100	77	100	162	100

$$x^2 = 4.39; 1 \text{ d.f.}; P < 0.05$$

9. Reference Group Influence

Lionberger (1961, p. 8) defines the reference group as being "a group

to which an individual refers when forming an opinion, making a judgement, or deciding to act." Reference groups play an important part in influencing actions and behavior of individuals. The influence that reference groups have on behavior is dependent upon the importance a person attaches to the group, the norms of the group as he perceives them, and his expectations regarding the group.

Individuals can also serve as referents. Rogers and Beal (1958) have indicated that both individuals and groups serve as significant referents in the behavior of individuals farmers. Therefore, the influence of reference groups on accepting or refusing to accept sunflower was investigated. It was hypothesized that the more farmers were influenced by others to grow sunflower the more likely they would do it and vice versa.

The influence of reference groups on sunflower planting was evident. When respondents were asked whether they were influenced by others to grow sunflower, 70 per cent of the growers responded positively, while 30 per cent responded negatively. Sixty per cent of the non-growers, on the other hand indicated that they were influenced by others to grow sunflower, while 40 per cent said they were not (Table 14). The reason for having a high proportion of non-planters who were influenced by others to plant, can be due to the fact that 44 per cent of them wanted to grow sunflower; but because of the too late contract with the Green Plan they were not able to

Table 14. Influence of others on planting of sunflower, April 1967
(N = 164)

Influence of others	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
I was influenced	61	70	46	60	107	65
I was not influenced	27	30	30	40	57	35
Total	88	100	76	100	164	100

$$\chi^2 = 1.40; 1 \text{ d.f.}; P > 0.05$$

do so (Table 2). The majority of those who wanted to grow sunflower were influenced by other persons. Reference group pressure, therefore, was present among both planters and non-planters groups; but it was more so

among the former group. Even though the relationship between influence of others and planting of sunflower was in the expected direction, it was not significant at the .05 level.

When those who were influenced by others positively or negatively to plant sunflower were asked to identify the sources of such influence, three fifths of those who were influenced positively mentioned fellow farmers, while about an equal proportion mentioned Green Plan agents. Family members were mentioned by about one third; while religious leaders and General Security forces were mentioned by about one fifth each (Table 15).

Fellow farmers and *hasbeesh* buyers were important negative pressure groups which attempted to influence growing of sunflower. Nearly three fourths as compared to two fifths of those who were influenced by others not to grow sunflower mentioned these two sources respectively. Other less important pressure groups which exerted negative influence were commercial dealers, family members and *hasbeesh* growers (Table 15).

Table 15. Positive and negative sources of influence on planting sunflower, April 1967.

Source of Influence	No. of times mentioned	Percent
<i>Positive Influence</i>		
(N = 107)		
Fellow farmers	63	59
Green Plan Agents	60	56
Family members	32	30
Religious leaders	19	18
General security forces	19	18
Commercial dealers	7	7
<i>Negative Influence</i>		
(N = 17)		
Fellow farmers	12	71
<i>Hasbeesh</i> buyers	7	41
Commercial dealers	3	18
Family members	2	12
<i>Hasbeesh</i> growers	2	12

10. Influence of Knowledge

One factor which may affect farmers acceptance or rejection to grow a new crop or to accept a new practice is their degree of knowledge about the crop or the practice being introduced, the agency introducing it and the opinions of the previous farmers accepting it in the area. Sizer and Porter (1960) found that farmers' degree of knowledge about certain farm practices was significantly related to the degree of their adoption to these practices. Therefore, it was hypothesized that the more knowledge farmers have about the sunflower crop, the Green Plan Agency introducing it and the farmers who had accepted it in the area the more likely they will grow sunflower and vice versa.

Knowledge of previous sunflower cultivators can influence farmers' decision to grow sunflower. Such knowledge may reduce the suspicions which they might have regarding the project and could give them more support and encouragement to conform. Eighty nine per cent of those who grew sunflower knew previous cultivators of the crop in their areas as compared to 56 per cent of the non-growers who did so (Table 16). The relationship between knowledge of the previous cultivators and growing of sunflower was significant at the .001 level.

Table 16. Growing of sunflower by knowledge of its previous cultivators, April 1967.

Respondents' Knowledge	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Knew previous cultivators	78	89	43	56	121	73
Did not know them	10	11	35	44	45	27
Total	88	100	78	100	166	100

$$\chi^2 = 24.69; 1 \text{ d.f.}; P < 0.001$$

A mere knowledge of the previous sunflower cultivators by farmers might not be as effective as discussing with them various matters related to the crop. Such a discussion will help farmers evaluate the feasibility of growing the crop and whether it would be a success or a failure. The final

decision which farmers make will be influenced by the way previous cultivators feel about it. Therefore, it was hypothesized that talking to previous cultivators about the sunflower and the opinions expressed by them will influence the degree of its acceptance by other farmers.

More growers than non-growers talked to previous sunflower cultivators about the new crop. Eighty nine per cent of the growers as compared to 43 per cent of the non-growers enquired about sunflower from the previous cultivators (Table 17). Only 11 per cent of the growers said they did not talk to previous cultivators about it before they decided to grow it as compared

Table 17. Growing of sunflower by talking to previous cultivators, April 1967. (N = 121).

Talking to Previous Cultivators	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Yes	67	89	20	43	87	72
No	8	11	26	57	34	28
Total	75	100	46	100	121	100

$$\chi^2 = 30.86; 1 \text{ d.f.}; P < 0.001$$

to 57 per cent of the non-growers who did so. The relationship between talking to previous cultivators and growing of sunflower was significant at the .001.

The opinions of the previous cultivators with whom the growers had talked to regarding the new sunflower crop were more favorable than the opinions of those with whom the group of the non-growers had talked to. Over three fifths of the growers indicated that the opinions of the previous cultivators with whom they talked to were favorable. They felt that the new crop was a success. On the other hand, about two fifths of those who did not grow sunflower said that the previous cultivators felt that the crop was a success as compared to one third who said that the previous cultivators felt that the crop was a failure (Table 18). The relationship between opinions of previous sunflower cultivators and growing of such a crop was significant at the .001 level.

Table 18. Growing of sunflower by opinions of previous cultivators with whom they talked to, April 1967. (N = 97).

Opinions	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Success	39	62	13	38	52	54
Failure	5	8	11	32	16	16
Could have been done better	19	30	10	30	29	30
Total	63	100	34	100	97	100

$$\chi^2 = 32.0; 2 \text{ d.f.}; P < 0.001$$

Knowledge of how the sunflower crop will be planted can influence the degree of its acceptance by farmers. The more informed they are on how and when to plant and the conditions of planting the more likely that they will grow it and vice versa. Ninety per cent of those who grew sunflower knew how it should be planted as compared to only 39 per cent of the non-growers' group who knew this. The majority of the non-planters, 61 per cent, indicated that they did not know how the new crop was to be planted (Table 19). Once again, knowledge of how the crop is to be planted and the degree of its acceptance by farmers were significantly related at the .001 level.

Table 19. Growing of sunflower by knowledge of how it will be planted, April 1967. (N = 164).

Knowledge	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Yes	79	90	30	39	109	67
No	9	10	46	61	55	33
Total	88	100	76	100	164	100

$$\chi^2 = 49.49; 1 \text{ d.f.}; P < 0.001$$

Before they accept to grow a new crop such as sunflower, farmers need to know the purposes for which it can be used. If they are not aware of what sunflower seeds can be used for, the chances of growing it will not be great. It was hypothesized, therefore, that farmers who knew what seeds can be used for will be more willing to grow sunflower than those who did

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not. More growers knew what seeds can be used for. On the other hand, 24 per cent of the growers compared to 35 per cent of the non-growers did not know what sunflower seeds can be used for (Table 20). "Extracting

Table 20. Knowledge of what seeds can be used for by growing of sunflower, April 1967.

Knowledge	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Knew	67	76	50	65	117	70
Did not know	22	24	27	35	49	30
Total	89	100	77	100	166	100

$$x^2 = 2.9; 1 \text{ d.f.}; P > 0.05$$

of oil" was mentioned by 93 per cent of those who knew what sunflower seeds can be used for; while "for feed purposes" was mentioned by 11 per cent of them. Six per cent mentioned "selling it to government industry." While the relationship between knowledge of what seeds can be used for and the growing of sunflower was in the expected direction, such relationship was not significant at the .05 level.

Respondents' knowledge of the Green Plan, which is in charge of the sunflower project, and their acquaintance with its objectives may influence their acceptance of the crop being introduced. More growers than non-growers knew what the Green Plan was. About one fourth of the planters as compared to one third of the non-planters did not know anything about such an organization (Table 21). The relationship between knowledge of what the Green Plan was and farmers acceptance to grow sunflower was not significant at the .05 level.

Table 21. Growing of sunflower and knowledge of the Green Plan, April 1967. (N = 164).

Knowledge of the Green Plan	Growers		Non-Growers		Total	
	No.	Percent	No.	Percent	No.	Percent
Yes	67	77	51	66	118	72
No.	30	23	26	34	46	28
Total	87	100	77	100	164	100

$$x^2 = 2.35; 1 \text{ d.f.}; P > 0.05$$

From the discussion presented above, it can be concluded that out of the sixteen variables investigated only seven were found to be positively and significantly related to the growing of sunflower. These were: size of farm operated, satisfaction with own farm, unwillingness to leave the village and the farm and accept a job in the city, knowledge of previous sunflower cultivators, talking to previous cultivators, opinions of previous cultivators with whom they talked regarding the new crop, and finally knowledge of how sunflower will be planted (Table 22). Several demographic variables which were thought to be related to sunflower planting such as farm ownership, age, and level of education were not found to be so related. This may be due to the nature of government support which accompanied the introduction of the sunflower crop and which farmers wanted to take advantage of regardless of their land tenancy status, age, or level of education.

Table 22. Relationship between independent variables and the growing of sunflower, April 1967.

Independent variables	d f.	x ²
Size of farm operated	2	11.73*
Farm ownership	3	1.36
Age	3	1.66
Level of education	2	4.32
Listening to radio agricultural programs	1	1.05
Attending agricultural demonstrations at the AREC	1	1.49
Individual's self-rating of his adopting behavior	2	4.22
Satisfaction with own farm	1	6.48*
Willingness to leave the village and the farm and accept a job in the city	1	4.39*
Reference group influence	1	1.40
Knowledge of previous sunflower cultivators	1	24.69**
Talking to previous cultivators	1	30.86**
Opinions of previous cultivators with whom they talked	2	32.0**
Knowledge of how sunflower will be planted	1	49.49**
Knowledge of what sunflower seeds can be used for	1	2.9
Knowledge of the Green Plan	1	2.35

* Significant at the .05 level

** Significant at the .001 level

SOURCES OF INFORMATION USED IN THE VARIOUS STAGES OF THE ADOPTION PROCESS

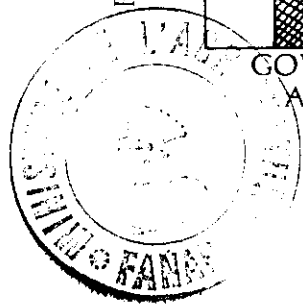
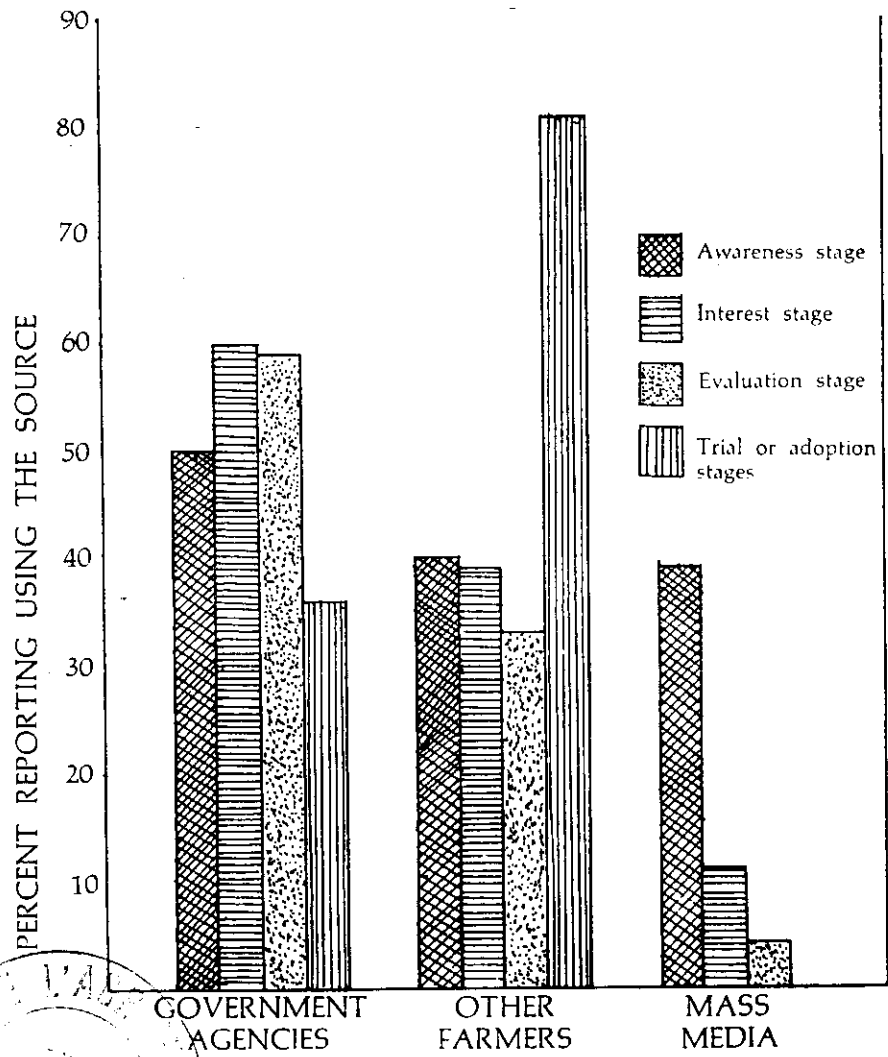
Research studies on adoption of new farm practices in the United States have shown that farmers do not adopt a practice as soon as they hear about it. They normally go through five stages before they finally make such a decision, these are: awareness, interest, evaluation, trial and finally adoption.

Research has also shown that the use of information sources by farmers differs as they move from one stage to another. During the awareness and interest stages, farmers in the United States were found to use mass media more than any other source of information. Friends and neighbors, on the other hand ranked first during the evaluation and trial stages. Personal experience was found to be the most important factor in continued use of a practice followed by friends and neighbors (Lionberger, 1960, p. 32).

In the developing countries, where the majority of the farmers are still illiterate, one would not expect the mass media to be as effective in spreading information among farmers as it is in the more advanced countries. Government agencies and informal sources of information are expected to be more effective in spreading new ideas among farmers than the formal sources. Al-Haj (1968) and Hammad (1968) found that technical information related to eleven recommended wheat and olive practices was largely disseminated by neighbors and friends as well as by both the AREC and government extension agents among wheat and olive growers in two different areas of Lebanon.

Government agencies, particularly the Green Plan, was found to be the most important source of information used by the sunflower planters during the awareness, interest, and evaluation stages of the adoption process. This is expected since the Green Plan is in charge of the project and through its employees information about sunflower was disseminated among the majority of the farmers of the area. During the trial or the actual adoption of the new crop, friends and neighbors were found to be the most important source of information used by planters (Tables 23, 24, 25 and 26). Other farmers, including friends and neighbors, were also important source of information for the awareness, interest and evaluation stages. It ranked second after government agencies. Mass media was the third important source of information used by the sunflower growers during the awareness, interest and evaluation stages. The importance of this source, though, seemed to decline as farmers move from one stage to the next on the adoption process (Figure 1). Mass

Figure 3. Percentage of adopters reporting three major types of information sources used in various stages of the adoption process (N = 88), April 1967.



media seemed to be more important for the awareness stage than for the trial or adoption stages, since two fifths of the growers compared to none reported using this source during the awareness and adoption stages respectively. Other sources of information mentioned by a small number of farmers were security forces, American University of Beirut, religious leaders and commercial dealers.

Table 23. Sources of information during the awareness stage arranged in sequence of importance for growers, April 1967. (N = 88).

Source of Information	No. of times mentioned*	Percent
Government Agencies	(44)	(50)
Green Plan	39	44
Extension Service	5	6
Other Farmers (informal sources)	(35)	(40)
Last Year Planters	22	25
Neighbors and Friends	13	15
Mass Media	(34)	(39)
Radio and Television	22	25
Newspapers	12	14
Security Forces	1	1
A.U.B.	1	1

* In some cases more than one source was mentioned by the respondent.

Table 24. Sources of information during the interest stage arranged in sequence of importance for growers, April 1967. (N = 82).*

Source of Information	No. of times mentioned**	Percent
Government Agencies	(49)	(60)
Green Plan	42	51
Extension Service	7	9
Other Farmers (informal sources)	(32)	(39)
Last year planters	19	23
Neighbors and friends	13	16
Mass Media	(9)	(11)
Radio and Television	4	5
Newspapers	5	6
No Additional Information was obtained	(4)	(5)

* Six planters gave no answer to this question and they were excluded from the table.

** In some cases more than one source was mentioned by the respondent.

Table 25. Sources of information during the evaluation stage arranged in sequence of importance for growers, April 1967. (N = 79).*

Source of Information	No. of times mentioned**	Percent
Government Agencies	(47)	(59)
Green Plan	43	54
Extension Service	4	5
Other Farmers (informal sources)	(26)	(33)
Last year planters	16	20
Neighbors and friends	10	13
Mass Media	(3)	(4)
Radio and Television	2	3
Newspapers	1	1
Security forces	(1)	(1)
No Additional Information was Obtained	(8)	(10)

* Nine gave no answer and were excluded from the table.

** In some cases more than one source was mentioned by the respondent.

Table 26. Sources of information during the trial or actual adoption stages for growers, April 1967. (N = 88).

Source of Information	No. of times mentioned	Percent
Friends and neighbors	72	81
Family members	(39)	(44)
Wife	20	22
Children	19	21
Green Plan	32	36
Security forces	7	8
Religious leaders	5	6
Commercial dealers	1	1
No information was obtained	4	5

SUMMARY AND CONCLUSIONS

The two main purposes of this study were to investigate some of the factors which may have influenced farmers to plant or not to plant sunflower as a replacement of *basbeesh*, and the sources of information which were used by the growers in each stage of the adoption process. A sample of 166 farmers were interviewed and represented twenty two villages in the Northern Beq'a of Lebanon. Eighty eight of those were sunflower planters, while 78 were non-planters.

The study showed that the majority of those who planted or wanted to plant sunflower were motivated to do so by making higher profits through government help and support given to them. More than one-half of the planters indicated their unwillingness to continue to plant the new crop if government help discontinued.

Farm ownership, age, level of education, listening to radio agricultural programs, attending agricultural demonstrations at the AREC, individual's self-rating of his adopting behavior, reference group influence, knowledge of what sunflower seeds can be used for, and knowledge of the Green Plan were not found to be related to the adoption of sunflower crop. On the other hand, size of farm operated, satisfaction with one's farm, unwillingness to leave the village and the farm and accept a job in the city, knowledge of

previous sunflower cultivators, talking to them about the new crop and their attitudes towards it, and knowledge of how sunflower will be planted were found to be positively and significantly related to the adoption of the new crop.

As to the sources of information used by the sunflower growers, it was found that the Green Plan was the most important source for the awareness, interest and evaluation stages of the adoption process. Friends and neighbors was more important source of information during the trial or actual adoption stages than The Green Plan. Other farmers were the second most important source of information during the awareness, interest, and evaluation stages; while mass media ranked third in importance for these stages but at a decreasing rate as farmers move from one stage to the next.

The data indicate that as long as the Green Plan continues to provide subsidies and support price to sunflower planters, the chances of their wanting to continue to plant the crop will remain high. Farmers realize that without such help the returns which they will get from growing sunflower will be far below the returns from growing *basbeesh*. Furthermore, farmers are not fully convinced yet that sunflower is a good replacement of *basbeesh*. Many of them accepted it because of the high incentive provided by the Green Plan. Educational efforts, on the part of the Green Plan, to inform farmers about the various uses of the sunflower seeds were not carried out. About one-fourth of those who planted the new crop did not even know what the seeds can be used for.

Finally it is important to point out that before introducing any new crop to replace *basbeesh* it is necessary for the Green Plan to conduct an economic evaluation study of various irrigated and dry land crops grown in the Northern *Bega'a* of Lebanon in order to be able to determine, more scientifically, the best replacement possible. To the authors' knowledge, the Green Plan has not done so before a decision was taken to introduce sunflower as a replacement of *basbeesh* plantation. It is possible that other crops might have been more profitable to farmers and less costly to government than sunflower.

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