تحتیقات کشاورزی ایــــــــــران
جلددوم شماره دوم ۱۳۶۲

In the name of Allah

بنا مخدا

THE DIFFERENTIAL CHARACTERISTICS
OF FARMERS WITH REGARD TO THEIR
INNOVATIVENESS IN FARS PROVINCE,
IRAN[1]

خصوصیات زارعین استان فارس دررابطه
با گرایش نوگرائی آنها

Ezatollah Karami[2]

عزت الـه کرمی
استادیاربخش آموزش وترویج کشاورزی
دانشگاه شیراز

ABSTRACT

خلاصــــه

The main objective of this paper
was to explore the social and
economic characteristics which
differentiated agricultural
innovators from non-innovators
among farmers of the Fars pro-
vince of Iran. A total of 241
farmers were interviewed. It
was found that high innovative
farmers had higher family edu-
cation, owned larger farms,
were more productive, and used
credit more often than low
innovative farmers. The im-
plication of these findings for agricultural development is discussed.

هدف این مقاله تشریح خصوصیات اجتماعی ـ
اقتصادی است که زارعین نوگـــــرا را از
زارعین غیرنوگرا مشخص میسازد. دراین
مطالعه که دراستان فارس انجام شده جمعا"
با ۲۴۱ کشاورز مصاحبه بعمل آمده اســت .
نتایج بدست آمده نشان میدهد که زارعینی
که دارای درجه نوگرائی بالائی هستند در
مقایسه با زارعینی که دارای درجــــه
نوگرائی پائینی می باشند دارای سطـح
سواد خانوار بالاتر ،اندازه مزرعه بزرگترو
تولید بیشتردرواحدسطح بوده واز اعتبارات
بیشتراستفاده مینمایند .کاربردایـــن
نتایج درامرتوسعه کشاورزی موردبحـــث
قرار گرفته است .

INTRODUCTION

Agricultural development and the larger rural development
depend upon a system of related functions: production,
supply, marketing, governance, research, and education/
extension. The rate of agricultural development has been
said to be dependent on the degree of effectiveness of the
various components in the rural social system and on the
degree to which they function as an integrated system (1).

Indentification of innovators is important for extension
agents in developing countries since many programs are
designed to stimulate technological change, the acceptance
of which depends on a few individual farmers. In Iran,
little data have been collected on the social and economic
characteristics of farmers with regard to their degree of
innovativeness. However, a good deal of research has been
done in other countries regarding the characteristics of
innovators and laggards. Copp (5) and Fliegel (6) used
multiple correlation analysis of socio-psychological and
physical variables such as gross farm income, profession-
alism, mental flexibility, level of living, familism, in-
formation contact, and attitude towards innovation to ex-
plain variation in farm practice adoption. Moulik *et al.*
(14) concluded that four variables, i.e. attitude towards
nitrogenous fertilizers, knowledge about them, self-rating
on innovation proneness, and closeness to extension agents,
significantly influenced the adoption of nitrogenous fer-
tilizers among Indian cultivators. Chaudari *et al.* (4),
using data collected in two villages in Pakistan, found
that adoption was significantly related to age, education,
and size of holdings. Some researchers have noted a positive
relationship between education and adoption (10), while
others have found no such relationship (2, 7, 23). The
relationship between farm size and adoption behavior has
been studied frequently, but the findings have not been
consistent. Some researchers have observed a positive re-
lationship between farm size and adoption (22, 24).
McMillion (13) found that the capital value of a farm was
positively related to adoption.

Using number of wives, number of children, literacy,
number of years in cocoa growing, advisory role, cocoa
production, correctness of growers' knowledge, and formality
of growers' sources of information as independent variables,
Opare (15) found that growers' knowledge of principles
underlying recommended practices was the most important

predicator of adoption variance. The study by Greene (8) in Thailand indicated that fertilizer adoptors had higher indices of water availability, fertilizer availability, and motivation. Fertilizer adoptors also had larger gross farm incomes, higher village, urban, and government exposure indices, were somewhat younger, had higher family education, and greater yields per rai (1/6 ha) than those not adopting.

An attempt was made by Singh and Saini (18) to identify the factors affecting the adoption of improved technology by a sample of 60 farmers selected from Amritsar in Punjab, India. Their analysis showed that formal education of farmers was not an important factor in adoption of improved farm practices. About 67% of the total variation in the case of the adoption of wheat, maize, and rice and 80% of the variation in the adoption of tube-well, tractor and thresher, respectively, were explained by family size, age of the head of household, operational holding, and education in the family.

Hiriyannaiah (11) stated that the adoption behavior of the graduate, non-graduate, and illiterate farmers of Dharwar district of India was significantly associated with their respective age groups, landholding status, income status, material possession group, social participation group, and high mass-media group.

The objective of this paper is to determine the social and economic characteristics which differentiate agricultural innovators from non-innovators among farmers of three counties (Fassa, Mamassani, Eqlid) and one district (Kavar) in the Fars province of Iran.

METHODOLOGY

Sample

The data for this paper was taken from a project designed to study different aspects of farm innovations in sugarbeet

growing areas of the Fars province. Three counties (Fassa, Mamassani, Eqlid) and one district (Kavar) each with a sugarbeet refinery plant were selected. Within each of these areas, villages were divided into three strata on the basis of their population size. Thirteen villages were selected in proportionate stratified random samples within these areas. Within the selected villages, a proportionate random sample of farmers was selected for interviews. A total of 241 farmers were interviewed during the summer and autumn of 1982.

Measurement

Innovativeness, the tendency of an individual (or a unit of analysis) to be relatively early to adopt new practices or ideas, was measured in this study by the number of years prior to the interview at which the farmer reported having first used an innovation. It was then weighted based on the procedure of Presser (16). This was done for seven practices with regard to wheat cultivation which were re-levant to most of the farmers in the study. The practices consisted of tractor plowing, use of fertilizer distributor, improved seed, and pesticides, grain drilling, row planting, and combine harvesting. The general innovativeness scores were derived by summation of the seven innovativeness scores. Information collected from sugarbeet cultivation was not included in determining the general innovativeness scores because many of the farmers had shifted from sugar-beet to rice production at the time of data collection.

Farmers were divided into three strata on the basis of their general innovativeness scores. Operationally, the three strata were defined as (a) high innovative farmers (innovators and early adoptors, the upper 16% of the farmers on the basis of innovativeness scores), (b) medium innovative farmers (early majority and late majority, farmers with innovativeness scores between upper and

lower 16%), and (c) low innovative farmers (laggards, the lower 16% of farmers on the basis of innovativeness scores). Analysis of variance was used to compare different characteristics of the above farmer groups.

RESULTS AND DISCUSSION

Age

There were no significant differences in age of farmers with regard to their innovativeness (Table 1). This is consistent with generalization of Rogers and Shoemaker (17) who found inconsistent evidence about relationship between age and

Table 1. Mean age, education, and farmer's family education.

.Variable[†]	Degree of innovativeness		
	Low	Medium	High
Farmer age	46.90a[*]	47.00a	49.00a
Farmer education	0.29a	0.82a	0.97a
Family education	1.50a	2.00ab	2.25b
Education of all over 12 years old	1.21a	1.77b	2.25b
Education of males over 12 years old	1.79a	2.37ab	2.94b
Education of females over 12 years old	0.23a	0.64a	1.17b

[†]See the text for units.

[*]Means for each group within rows followed by the same letter are not significantly different (P < 0.05).

innovativeness. About half of the 228 studies reviewed by
them on this subject showed no relationship, 20% showed
that earlier adopters were younger, and 30% indicated that
they were older. Based on these data they generalized that
"earlier adoptors are no different from later adoptors in
age."

Education

Although the economics of education has an ancient heritage
(19), the idea of using education to accelerate the rate of
economic growth is relatively new. In recent years, the
educational sector of most countries has received increased
attention from economists and a large share of national
resources.

It is generally assumed that literacy is a pre-condition
for any technological change. In this paper, instead of
limiting the study of literacy standard to the farmers alone,
the literacy of the whole farm family was studied. To
compare the three groups in this respect, a literacy index
for the farm family was devised. An index was prepared
using the following arbitrary scores: College 15, high
school diploma 10, high school 7, middle school 5, primary
school 3, and illiterate 0.

The family index was prepared by summing the individual
scores of family members and then dividing the total by
the number of family members subdivided by age and sex
(Table 1). Although high innovative farmers had higher
individual education scores, this difference was not
statistically significant. This finding corroborates
results reported by Graham (7), Belcher (2), Verner and
Millerd (23), Singh and Saini (18), and 72 of 203 studies
reviewed by Rogers and Shoemaker (17) on this subject.
Average family education of high innovative farmers was
significantly higher than low innovative farmers.

The education score of over 12 year-old males and females