



Fig. 2. Main Reason and Annual when Farm Household Disappeared

Table 1. Contributory Factors of Farm Disappearance in Non-urbanization Region (Result of Discriminant Analysis)
n=162

Variable	Discriminant coefficient	T-statistic	P-statistic	Test
Number of total farm households (1990)	-0.0656	15.2692	0.0001	[**]
Distance to public office (1980)	0.1561	14.0693	0.0003	[**]
Utilization of cultivated land (1990)	-0.0428	9.6871	0.0022	[**]
Increase/decrease rate of number of farm households (1980-90)	-0.0372	8.4666	0.0042	[**]
Amount of snowfall at common year (1980)	0.9962	8.0612	0.0051	[*]
Average number of family members per farm household (1990)	-0.7045	5.7851	0.0174	[*]
Distance to elementary school (1980)	0.2587	5.3908	0.0216	[*]
Ratio of commercial farm households (1990)	-0.0264	5.0102	0.0267	[]
Ratio of abandoned farmland (1990)	0.0253	2.7984	0.0964	[]
Constant	4.5463			
Correctly classified (%)	91.4			
Error count estimates (%)	9.8			
Correlation ratio	0.6290			

Note: 1. The method for selecting variables = STEPWISE (Fin: 2.0, Fout: 2.0)

2. [**] : 1% level of significance [*] : 5% level of significance

Case Studies for Entry of Nonagricultural Business Organizations into Farming

Tomoaki ONO

1. Objective

Due to the small number of core farmers who support agriculture, there has been an increase in areas with a notable increase of abandoned cultivated land. Attention has been focused on the establishment of new farming entities through nonagricultural business organizations as a way of revitalizing this land for agricultural purposes, and a special agricultural zone system recognizes agricultural management by the nonagricultural business organizations themselves. This study clarifies measures required to promote the use of agricultural land, deregulation and other issues using examples of the entry of nonagricultural business organizations into agriculture.

2. Methods

I proceed by clarifying (1) issues relating to current systems based on examples of the agricultural revitalization of abandoned cultivated land and (2) issues relating to the promotion of agricultural land use and deregulation based on cases of special agricultural zones where entry into agriculture is being realized.

3. Outline of the Results

(1) Due to the reduction in construction projects brought about by cuts in the public works budget, regional construction companies are gradually moving into new fields, and agriculture is expected to be one of those fields. In a number of surveys conducted in 2003, about 10% of

the construction businesses moving into new fields had already moved into the agricultural field or were planning to do so.

(2) There are three modes of entry into agriculture by nonagricultural or other business organizations, as described below. Type A: outsourcing of agricultural operations, type B: hothouse cultivation or small livestock or other operations that do not use agricultural land, and type C: agricultural operations that use agricultural land. Type C is furthermore divided into the following two categories, type C1: establishment of new agricultural production corporations by nonagricultural business organizations, and type C2: implementation of agricultural operations by nonagricultural business organizations themselves. The latter are made possible by the special agricultural zone system. Type A is drawing attention in agricultural areas in Hokkaido, Kyushu and elsewhere.

(3) Cases of the entry of companies into agriculture in regions applicable to the special agricultural zones are introduced (Table 1). Company A was established to implement land

improvements. When the company president was planning to establish an agricultural production corporation, the company entered directly into agriculture at the recommendation of local government officials. Leasing land that was not being used, it is involved in the production of organic rice and inland water aquaculture. Prompted by the promotion of special zone operations by the local government office, Company B was established for the purpose of local revitalization by a construction company officer (former local government employee), a self-employed businessperson and a farmer. The company leased public land (former pasturage) and launched a tourist ranch and other operations.

The following can be pointed out as common to both (Table 2). 1) Both companies are set up as joint stock companies, while there is a strong element of the human character of a nonagricultural person (natural person) entering into agriculture due to an interest in agriculture. The local government places a strong emphasis on this human element. 2) In terms of the conditions of the management entity, one worker is employed full-time. Since a non-

Table 1. Examples of companies entering special agriculture zones

	Company A	Company B
Capital	–	¥10 million
Investors		1 company (construction)+5 individuals
Officers & employees	60 employees	6 officers
Personnel involved in agriculture	2 officers, 2 males, 5 females	5 officers (including 1 farmer)
Agricultural land	Lease of private land, 2 ha	Lease of public land (former pasturage), 1.5 ha
Current state of agriculture	Organic rice: 58a, organic vegetables: 28a, <i>iwana</i> aquaculture: 26a	Raising ponies, goats and sheep, pruning nearby cedar forest
Future plans	Expansion in area, cultivation of organic vegetables, production & processing of wild edible plants, etc.	Expansion to 20 ha for aquaculture, fruit orchards, vegetable, restaurant, agricultural processing, organic rice cultivation, etc.
Relationship to parent organization, course of establishment	Had planned the establishment of an agricultural production corporation but decided to enter directly at the recommendation of the local government office	Examined the establishment of a company prompted by the special agricultural zones. The president is a former employee of the local government and the company was organized by companions for social & educational activities
Purpose	Measure for using surplus labor. The president was oriented toward entry into agriculture	The local government encouraged the use of the special zone system and the company was established in response.

Note: Based on interviews

Table 2. Characteristics of companies and agriculture

Company characteristics	* Entry into agriculture in the form of a joint stock company * Strongly influenced by the human character of the officers
Management conditions	* There is at least one worker at all times. * The companies have strong bottom lines thanks to support by a nonagricultural organization in the background
Purpose	* Utilization by the company of surplus labor * Pursuit of enjoyment by officers and employees * Regional vitalization through the utilization of fallow land
Profitability	* The goal is to secure a profit in the medium term * Profitability for the present is an unknown element

agricultural business organization provides backing, the company entering agriculture has a solid bottom line. 3) The primary purpose is local revitalization through the use of surplus labor within society in the case of Company A and through the use of pastureland in the case of Company B. Secondary purposes include the revitalization of the region and agriculture

through the utilization of agricultural land not being used and also for the president and employees to enjoy agriculture. 4) In terms of profitability, the aim is to secure a profit through agricultural management in the medium term while revenues for the present remain an unknown factor.

Research on the Potential of Food Production Taking into Account Environmental and Resource Limiting Factors in Major Regions Around the World

Koichiro AKASHI

The global food supply is unstable in the medium to long term, because it is limited by population increase, as well as economic development and resource and environmental limiting factors. It is therefore necessary to thoroughly comprehend developments regarding global warming and other environmental factors as well as soil deterioration, competition for water supplies, and other resource limitations. The modalities of these factors are furthermore widely varied depending on the region. As a result, in this research, we conduct an evaluation of environmental and resource limiting factors that have an impact on agriculture and food production in major regions (countries) around the world, with the aim of contributing to a more precise understanding of trends within the food supply.

We conducted analyses of the potential for food production, taking into account the environmental and resource limiting factors that have an impact on agriculture and food production in the form of country studies. Countries targeted for analysis include China, Mongolia, CIS member countries, Vietnam, Africa, Australia, and Brazil. A summary of the results obtained is given below.

(1) With regard to China, we examined measures for the stable supply of food from the current state of agricultural land deterioration, water resources, and other environmental factors, and clarified the need for measures to conserve land area for food production, and the need for investment for the reform of agricultural land due to the extensive waste of water resources in water systems.

(2) We clarified the need for the development of joint management and monitoring activities in the steppes in order to resolve the issue of desertification in the arid areas of the Nei Mongol region of China and Mongolia, and for the dissemination of livestock farming technology

for the improvement of land productivity.

(3) Based on an analysis of statistical data from the CIS member countries, we clarified that agriculture in the CIS region has been in a trend of gradual improvement since the end of the 1990s, and that the increase in abandoned farmland and the loss of cultivated land as a result of agricultural reform within the process of transformation to a market-driven economy may become serious limiting factors in agriculture in the CIS region.

(4) With regard to Vietnam, we conducted an analysis taking into account land resources, a limiting factor in agriculture, and clarified that there is a need for the further development of the market economy, deviation away from rice and increased non-agricultural employment in rural areas and that industrial crops may become a key industry in Vietnam in the future.

(5) We attempted a multifaceted approach to the problem of food in Africa and clarified the actual situation of the increase in population that is unrelated to economic growth, low agricultural productivity, inefficient distribution and other factors that exist in the background of the food problem, while pointing out that agriculture will be positioned as the central issue in economic development in the future.

(6) We introduced the SRI agricultural method developed in Madagascar in Africa. This method realizes high-yield harvests without using any additional investment whatsoever, excluding labor for weeding and harvesting, using Madagascar's low-fertility soil, and indicated that it would be sustainable with the existing environmental and resource limitations.

(7) We conducted an international comparison of Australia with New Zealand, the US, France, Japan and the Philippines. We clari-