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沖縄における経済発展と伝統的農業の変貌(農学科)

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Economic Development and Changes in Traditional Farming in Okinawa*

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Concluding Summary

This paper first discussed briefly Okinawa's postwar economic growth and urbanization in relation to agriculture, noting the rapid out-migration from agriculture. Out-migration and the continuous increase of part-time farmers can be explained as part of the common behavior of farmers who have a strong motivation to equalize their consumption and income with non-farm workers. Farmers have tried to narrow the gap by either expanding their holdings or by dividing their labor between farm and non-farm use.

On the other hand, price-supports, and market-secured policies for particular agricultural products such as sugar cane and pineapple change the cropping system from diversified farming to specialized farming, that is from subsistence food crops to cash crops. This change of cropping system also makes labor flexible because they can not expand farm-holdings sufficiently to utilize their labor fully.

From the ecological and long term point of view, it might be desirable to have more diversified farming which the most suitable main crop accompany a few fit crops and animal husbandry. But farm holdings are too small to obtain an income comparable to city workers by diversification.

It is necessary, therefore, to devise a policy to provide economic incentives in order to preserve a technical and economical balance.

I Introduction

This is a case study on the changing trend of the district agriculture.

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In the post-war Okinawan economy, there has been a drastic change particularly in the sector of agricultural economy, in comparison with other economic sectors. And it is due to this drastic change that the Okinawan agricultural economy faces the problems of strain and instability.

In this paper we would like to discuss on the process of the change from the traditional farming to the current state, considering especially such factors of change as urbanization of farm land, the rapid out-migration from agriculture, and specialized cropping system. Then, we will suggest the fact that farmers are quite sensitive to markets of products and labor, and their urbanization and changes in cropping system could be largely explained by market forces.

II Economic Growth and Urbanization

Okinawa has experienced a drastic change from the sleepy, impoverished, agricultural backwater, dependent on emigration to keep the population down to a supportable level, into a largely urban economy where living standards have improved tremendously in the postwar population explosion.

The population of Okinawa increased slowly from 487,000 (1905) to 572,000 (1920), then stagnated until after the war. The first reliable estimate for the postwar period was 699,000 for 1950. This figure included 150,000 people who had been repatriated to Okinawa from abroad between 1946 to 1948. Thereafter, population has continued to increase at a high rate. It was 883,000 in 1960, and reached 1,105,000 in 1980. The average annual increase rates during 1950-60, 1960-70, 1970-80 were 2.6%, 0.7%, 1.7% respectively.

Not only population but also the Okinawan economy has experienced an unprecedentedly high rate of growth after the war. From fiscal 1955 (the year when GNP estimation started) to 1971, immediately before reversion to Japanese administration, real GNP of Okinawa rose at an annual rate of 10.5% and 7.3% for the 1972-78 period. Despite the population explosion, the per capita income rose sharply from U.S. \$ 163 in 1955 to \$ 678 in 1971, more than four times. It was ¥ 410,000 in 1972 (the year that Okinawa's reversion to Japan realized) and jumped to ¥ 1,000,000 in 1978. It is estimated that the level of per capita income in 1934-36 was less than half that of Japan's average, 56% in 1972 and 70% in 1978. We should notice that relative income also has been improved tremendously, though Okinawa is still the lowest income region in Japan.

The high rates of economic and population growth are accompanied by drastic changes in the industrial and regional structures. First, let us look at the changes in the structure of the economy through the changing position of the labor force and income shares by industry. In 1934-36, 73% of the labor force was in agriculture but in 1979 it decreased to 14.3%, while the ter-

tiary industry's share has greatly increased from 14.3% to 64.8% during the same period, leaving the share of the manufacturing (not secondary) industry almost unchanged. A corresponding tendency is seen in the percentage share of income by industrial origin. The tertiary sector produced 30.1% of the Net Prefectural Income in 1934-36, but it accounted for 72.5% in 1978. The primary sector, on the contrary, lost its relative share by a large gap. In percentage composition it declined from 51.8% to only 6.9% during the same period. It should be noticed that the relative position of primary and tertiary sectors has completely reversed (See Table 1 and Table 2).

Table 1. Percentage Composition of Labor Force

	1934-36	1953	1963	1973	1975	1979
Primary	73.1	50.0	41.4	15.8	14.0	14.3
Secondary	12.4	9.9	13.6	22.2	20.8	22.4
Tertiary	14.4	39.1	45.2	61.8	64.8	63.0

Source: 1. The 1st 5 years Economic Development and Promotion Plan: 1955 Government of the Ryukyu Islands
 2. National Income Statistics: 1971 Government of the Ryukyu Islands
 3. Prefectural Income Statistics: 1979 Okinawa Prefectural Government

Table 2. Income by Industrial Origin

	1934-36	1953	1963	1973	1975	1979
Primary	51.8	21.2	17.3	6.1	5.6	6.9
Secondary	18.0	19.4	15.9	22.6	20.5	20.5
Tertiary	30.1	58.6	66.9	71.2	74.0	72.5

Source: Same as the Table 1

Okinawa's regional structure in terms of population and industrial concentration has also changed to a quite large extent during the period. Here the urbanization movement is only mentioned. For the last two decades, there has been large scale out-migration from agriculture to urban and non-farm occupations. As mentioned earlier, the population of Okinawa increased by 223,000 during 1960-80 and reached 1,105,000 in 1980. The increase of population, however, was not evenly distributed regionally, as shown in Table 4. There has been substantial population movement within Okinawa. The agricultural regions, northern Okinawa, Miyako, and Yaeyama, experienced an absolute decline of population. On the other hand, population increased in central and southern Okinawa and now 79% of the total population live in those regions of Okinawa. The urban population has risen from 40% (1940) to 70% (1980) indicating the trend to-

ward urbanization and the exodus from agriculture. The population of Naha (capital city) is 300,000 in 1980 (it was only 110,000 at peak before World War II). The greater Naha area embraces 500,000 people.

III Underlying Factors of Change

Despite the above-stated economic achievements, one should not hasten to conclude that Okinawa succeeded in industrialization and/or in the modernization of agriculture. It is true that drastic changes occurred in the industrial structure and through urbanization, but those are not the result of internal economic forces. When we discuss on the economic development of a nation, we may generally observe that economic factors such as capital, labor, and income share shift from the primary sector to the secondary and to the tertiary sectors as the economy develops. But a drastic improvement in agricultural productivity and a great upsurge in the manufacturing industry, preconditions of development, have not been taken place in Okinawa. Nevertheless, Okinawan economy attained a high rate of growth and underwent structural change. We can identify military expenditure and government subsidies for protection of agricultural products as main factors. But before discussing these factors, a few words are necessary concerning the institutional framework.

Okinawa was under U.S. military administration between 1945 and 1972, and basic postwar economic policies were determined by the U. S. government. The policy of free trade was important for development of Okinawan economy. Okinawan used as legal tender the B-typed yen (1948-57) and the U. S. dollar (1958-72). Since the U. S. dollar was the international currency, adoption of the dollar as the domestic currency meant free trade, which in turn, meant that agricultural products and others were freely imported. Okinawa's farmers and manufacturers faced competition with foreign producers including those in mainland Japan. Because a deliberate protective policy designed to foster infant industries was inefficient, free trade eventually eliminated the possibility of industrialization. Of course, We should not forget that the free trade system has brought various the good effects. It has contributed to Okinawan economic in the way of keeping the price levels stable and enabled the islands to procure necessary goods from abroad.

We now turn to the major factors underlying economic growth and structural change. Military expenditures, government payments, and preferential treatment for agricultural products have been pointed out as the main factors. One of the outstanding features of the postwar Okinawan economy is its extraordinarily heavy dependence on U. S. military expenditures. These once accounted for 30-40% of Okinawa's Gross products from the late 1950s through the early 1960s. Of foreign receipts, 62% accrued from

military expenditures in 1960, but decreased to 10.9% in 1978. At the peak (1967), the U. S. Forces directly employed about 50,000 Okinawans and it is estimated that 1/4 of the total labor force was hired in jobs made as a result of military expenditures. After reversion to Japan, military employees were drastically reduced, to 7,219 (as of Dec. 1979), and now account for only 1.7% of the total employed. Though the role of military expenditures has decreased, it is undeniable that the sustained expansion of military expenditures made the high rate of growth possible in earlier years.

Government transfer income has increased sharply and become the single most important factor contributing to the sustained growth of Okinawa since reversion. Its relative share in the income rose from 26.5% in 1972 to 39.5% in 1978. Its share accounts for 66.8% of foreign (or external) receipts of Okinawa, closing the tremendous trade deficits gap. Okinawa imports more than seven times what it exports, and the trade gap has barely been filled by military expenditures and government transfer income.

The Japanese government's preferential treatment for sugar cane and pineapple products also contributed to sustaining economic growth. These policies have assured markets as well as prices for Okinawa's main agricultural products, and have given incentives to farmers to specialize in labor saving cash crops, thus releasing agricultural labor to other sectors.

Lastly, we might point out the recent development of the tourist industry as a contributing factor. Tourism accounts for 15.7% in external receipts, now surpassing military expenditures as the major engine of growth.

IV Farmer Behavior and Traditional Farming

A relatively large amount of the military expenditures and government subsidies which sustained the high rate of growth has rapidly expanded the labor market, especially in the military bases, and in the construction and service sectors. Out-migrating farmers were mostly absorbed in these sectors. From 1964 to 1979, according to agricultural census data, farm households decreased from 77,129 to 44,823 and the agricultural labor force from 151,364 to 71,814. The number of farmers was more than halved (See Table 3). Two reasons for the exodus from agriculture must be mentioned here. One was the fact that after the war more than 150,000 people were repatriated to Okinawa from abroad and most of them settled in already overpopulated rural areas. Another reason was that only 63% (in 1951) of the pre-war farmland (59,390 ha) was left for cultivation because of wartime destruction and base construction. This placed in severe population pressures on rural areas. The situation led to the rapid out-migration from the agricultural to non-ag-

gricultural sectors as job opportunities expanded. Since the standard of living was at subsistence level, farmers were ready to move and engage in any job at even lower wages. This was the background for farmer out-migration to non-agricultural sectors.

Table 3. Farm House hold Movement (number)

	Farm Household Total	Full Time	Part Time Total	Farming Main	Non-Farm Main
1964	(100) 77,129	(31) 23,883	(69) 53,246	(25.4) 19,581	(43.6) 33,665
1971	(100) 60,346	(22.3) 13,478	(77.0) 46,868	(20.3) 12,253	(57.4) 34,615
1979	(100) 44,823	(22.5) 10,091	(77.5) 34,732	(23.8) 10,647	(53.7) 24,085
(annual rate) 64-71	(Δ 2.9) Δ 16,783	(Δ 5.8) Δ 10,405	(Δ 1.6) Δ 6,378	(Δ 5.0) Δ 7,328	(Δ 0.4) 950
(annual rate) 71-79	(Δ 3.1) Δ 15,523	(Δ 3.1) Δ 3,387	(Δ 3.2) Δ 12,136	(Δ 1.6) Δ 1,606	(Δ 3.7) Δ 10,530
64-79	(Δ 41.9) Δ 32,306	(Δ 57.7) Δ 13,792	(Δ 34.8) Δ 18,514	(Δ 45.6) Δ 8,934	(Δ 28.5) Δ 9,580

Source: The Agricultural Census: 1964, 1971 Government of the Ryukyu Islands, and 1979 Japanes Government

Although the absolute number of farm households decreased tremendously, fulltime farmers, contrary to what we might expect, have not increased both in number and relative share. From 1964 to 1979, fulltime farm households decreased by 13,792 (-57.7%) and the percentage share from 31% to 22.5%. In contrast with this the relative share of part-time farmers increased from 69% to 77.5%, though the absolute number of part-time farm households decreased by 18,514 (-34.8%). And we further observe that farmers engaging mainly in non-farm jobs increased their relative position (See Table 3).

Why do farmers have a tendency to become wage earners, or to be part-time farmers? One reason is that although 42% of farmers quit farming, between 1964 to 1979, average farm holdings increased from 0.66 ha to only 0.98 ha. The farming scale is too small for farmers to catch up with the income level of wage earners. They try therefore to devote their

labor resources more and more to non-farm jobs.

Table 4. Population Movement (in thousand person)

	1960	1980	1980 - 1960
Okinawa Is.	716 (81.2)	977 (88.4)	261 (36.5)
southern	330 (37.4)	458 (41.4)	128 (38.8)
central	269 (30.5)	414 (37.5)	145 (54.0)
northern	117 (13.3)	105 (9.5)	△12 (△10.0)
Miyako Is.	72 (8.2)	60 (5.4)	△12 (△17.0)
Yaeyama Is.	51 (5.8)	44 (4.0)	△7 (△14.0)
Other Is.	43 (4.9)	24 (2.2)	△19 (△44.0)
Total	882 (100)	1,105 (100)	223 (25.3)

Source: The Census of population: 1960 The Government of the Ryukyu Islands, and 1980 Japanes Government

Table 5. Relative Income Difference by Region

	1956	1961	1966	1971	1975	1978
Northern	75	80	84	84	84	91
Central	113	106	104	103	88	82
Naha	130	128	121	117	145	148
Southern	78	83	85	87	71	69
Miyako	86	73	74	72	68	96
Yaeyama	80	81	85	87	74	100
Okinawa	100	100	100	100	100	100

Source: 1956 1971 H. Tominaga's estimate, and 1975 1978 T. Oshiro's estimate

Table 6. Relative Income Difference by Sector (%)

	1934-36	1955	1960	1965	1970	1975	1978
Primary	34.2	30.7	17.5	18.2	20.0	35.1	44.6
Secondary	69.7	75.9	77.0	67.5	75.1	86.2	81.7
Tertiary	100	100	100	100	100	100	100

Source: Statistical Yearbook: Okinawa Prefectural Government and Government of the Ryukyu Islands

Figure 1 and 2 reveal some facts about farmer behavior. Farmer consumption is almost at the same level regardless of the farming scale, and has remained constant at around 60% of non-farm workers for a period before Okinawa's reversion to Japan, while the per capita income for farmers accrued from farming amounted to less than 20%, and around 25% of non-farm worker's income level before and after the reversion to Japan respectively. To narrow the income discrepancy with non-farm workers, farmers attempted to increase their income either by expanding their farming scale or shifting part or all of their labor resources to non-farm use. Since 1972, farmers per capita income surpassed that of non-farm workers on the average, although only 23% of total income comes from farming. That is to say, 77% comes from part-time jobs. The rapid increase of part-time farmers corresponds to this movement. Farmers seem to have a strong motivation to equalize their consumption level with non-farm city workers.

The fact that farmers shift easily into urban areas and engage in non-farm jobs has raised problems for both rural and urban areas. Out-migration has severely strained the social and economic structure of many rural communities, causing serious problems in education, medical care, and farm management. Rural areas face difficulties in retaining sufficient labor for agriculture and in keeping the traditional cooperative system working, because dwellers of farm village are no longer exclusively farmers. Part-time farmers and non-farm workers have increased. As a result, the system and spirit of traditional cooperatives have faded, causing unease in agricultural life.

Farmers are quite conscious of economic incentives. We can observe this through their response to price support policies. Since the late 1950s, the Japanese government has supported the price of Okinawa's sugar cane by buying up raw sugar, and has also tried to ensure mainland markets for Okinawan canned pineapple by levying im-

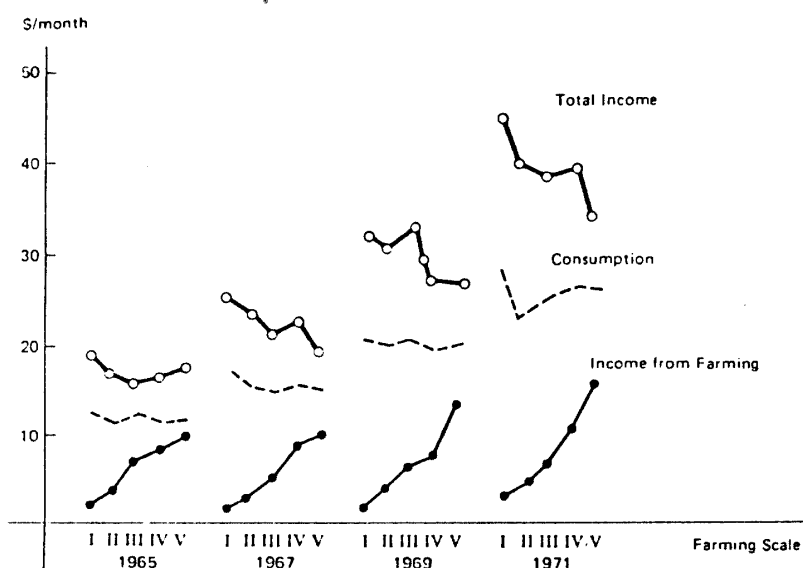


Fig. 1. Farmers Household Income & Consumption per Head per Month

Source: Household Income Statistics, The Government of the Ryukyu Islands

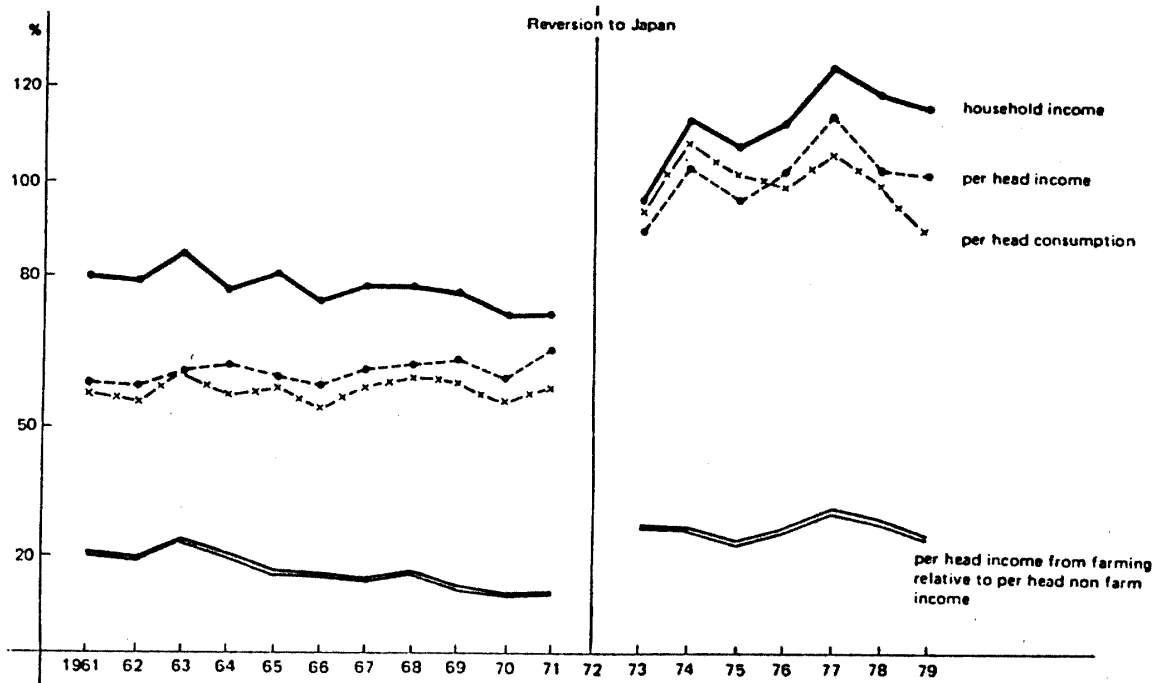


Fig. 2. Farmers Relative Income to Non-Farm Workers

Source: Household Income Statistics: The Government of the Ryukyu Islands, and Okinawa Prefectural Government

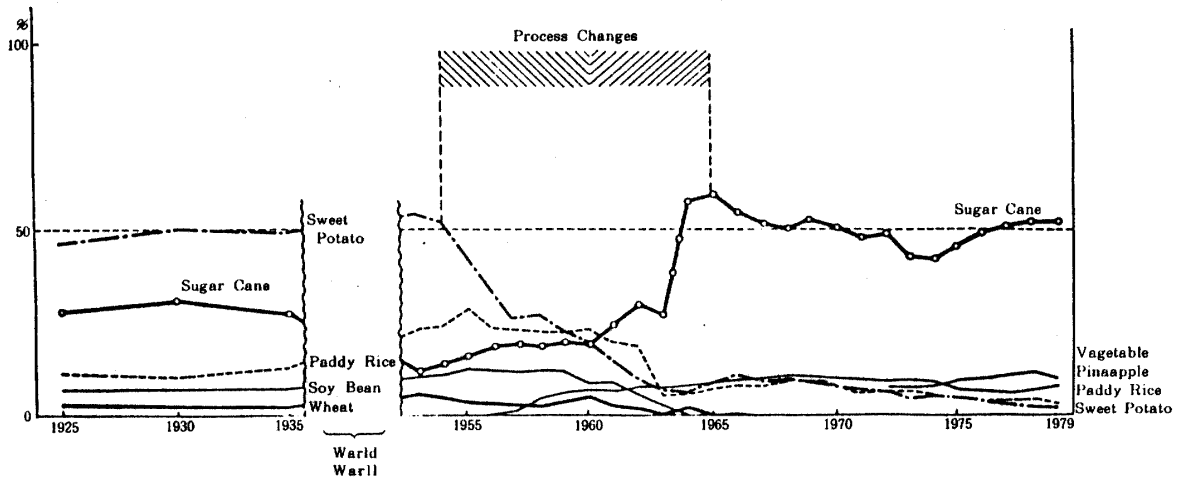


Fig. 3. Percentage Composition of Planted Farm Land

Source: Okinawa (Ryukyus) Statistical Yearbook, Okinawa Prefectural Government

1. Type of Traditional Diversified Farming (Pre - World War II);
Sweet Potato + Sugar Cane + Pulse & Cereals + Paddy Rice + Animal Husbandry
2. Type of Specialized Farming (Now a-days);
Sugar Cane (including Ratoon) only, Pineapple only, Vegetables only, or Animal Husbandry only

port quotas on foreign products. Farmers quickly responded to these policies. They shifted their cultivation from subsistence food crops to cash crops, as shown in Figure 3. Before and immediately after the war, subsistence food crops, such as sweet potatoes, rice, soybeans and wheat were cultivated together with sugar cane cash crops by individual farmers. However, from the mid-1950s, cash crops, such as sugar cane and pineapple, took the place of food crops (See also Table 7, 8, 9). The change in crops in response to market incentives applies not only to Okinawa as a whole but to the situation of individual farmers as well. Here we can observe that farmers have a tendency to specialize in monoculture that are cash crops. Even vegetables are not produced for personal consumption but for market today.

Specialization in one or two crops necessarily changes traditional farming. Farmers face difficulties in utilizing their labor for the full season, since the sugar cane, for example, requires labor force mostly at harvesting time. In off-season period most farmers have to find jobs in non-agricultural sectors. In any case, the statistics show that farmers are very market-oriented not only with regard to products but labor.

Table 7. Composition of External Receipts (%)

	1970	1972	1974	1976	1978
Commodity Exports	20.4	25.1	26.9	28.3	23.3
Sugar and pineapple	10.5	5.4	3.0	4.5	4.5
Petroleum	—	14.4	19.3	19.9	14.6
Tourism	10.4	12.4	8.0	8.4	15.7
Military Expend	37.0	23.7	13.6	13.7	10.9
Government Transfers	12.9	53.3	52.3	53.5	66.8
Total Receipts	100	100	100	100	100

Source: Same as the Table 6

Table 8. Changes of Cropping System

	1935		1979	
Sweet Potato	29,616 ha	49.2 %	765 ha	1.8 %
Sugar Cane	16,697	27.6	22,500	52.4
Pulse & Cereals	9,099	15.1	74	0.2
Pineapple	—	—	3,330	7.8
Vegetables	1,603	2.7	4,750	11.1
Paddy Rice *	7,963	13.2	1,260	2.9
Total Above	64,974	108.0	32,679	76.2
Total Farm Land	60,167	100.0	42,900	100.0

Source: 1. Annual Statistics of Agriculture and Forestry Agency; Japanese Government

2. Agricultural Statistics; Okinawa Prefectural Government

*Paddy Rice has the possibility of being cultivated twice a year in Okinawa.

Table 9. Cropping System by Individual Farmers

Types of Typical Cropping	Village O, Itoman (1976)		Village H, Katsuren (1977)	
	No. of Farm	%	No. of Farm	%
I Diversified Farming	31	34.8 (100)	55	38.2 (100)
1 Vegetable + Sugar Cane	20	64.5	15	27.3
2 Sugar Cane + Vegetable	4	12.9	12	21.8
3 Sugar Cane + Vegetable + Animal Husbandry	—	—	10	18.2
4 Animal Husbandry + Sugar Cane or Vegetable	7	22.6	18	32.7
II Specified Farming	58	65.2 (100)	89	61.8 (100)
1 Sugar Cane only	55	94.8	80	89.9
2 Vegetable only	3	5.2	8	9.0
3 Animal Husbandry only	—	—	1	1.1
Total Farm Households	89	100.0	144	100.0

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沖縄における経済発展と伝統的農業の変貌*

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要 約

戦後の沖縄における高い経済成長と急速な都市化による“農業離れ”の現象は著しいものがある。農業部門からの労働力人口の流出や兼業農家の増加は、農業者が自分の所得と生活を農業外の勤労者なみにしようとする強い動機にもとづいている。つまり、農家は自分の経営規模を拡大するか、あるいは労働力を兼業へ振り向けることによって、所得や生活の格差を縮小しようとするからである。しかし、他方ではさとうきびやパイナップル生産にみられるように、価格支持や流通安定のための何らかの政策によっても強く左右されている。

その結果、農村では過疎化が進み、農業経営は伝統的な複合経営から単作経営へと、1960年前後を転期にして、その内容を大きく変えた。それは、自給的な食糧作物の生産から換金のための原料作物への交替でもあるが、同時に生産組織と技術体系を大きく変えたために、農家の土地、労働力、資本財の利用などのひずみと生産力の不安定をもたらした。これは、農家の所得や生活水準の向上のかけで忘れられてはならないことである。

現在の農業経営は、農家の土地と労働力を十分に活用できる経済条件をもっていないこと、農業をとりまく自然の生態系ばかりでなく調和のとれた技術体系が崩れてきていることなどの問題に直面している。農業生産の長期的、安定的な持続をはかるためには、基幹作物を中心に必要なローテーション作物や畜産との結合による複合経営を確立することは基本的に正しいことである。しかし、現在の農業における技術体系とそれをとりまく経済的条件のもとでは、農業経営から都市労働者なみの所得をうることは困難である。それでも長期的には、地域の風土に根ざした複合的な家族経営の経済性が確保され、土地と家族労働力が合理的に活用されるような、経済的、技術的な条件をつくりだすことが基本的に重要である。

* 本論文は、国際農業シンポジウム「異った環境下におけるアジアの農業開発」において発表したものをもとにまとめたものである。

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