
Agriculture in North Carolina: Large Scale Farm and Family-run Farm

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1. Preface

This is a teaching material on contemporary change of farming in the United States. As to farming of United States a Japanese high school textbook of geography says that it operates by big machine and produces high labour productivity and it desires usually high degree efficiency. But there is no detailed description of those. This material is a concrete example to understand farming of the United States.

The textbook also says that in the United States a big incorporated farm has prospered, while a medium or small size farm has declined. And it doesn't explain in detail about this, either. This material will be able to be a key to understand this.

This material is made up of reports on visitation of two big incorporated farms and two medium sized farms. The big ones and the medium sized are in the east of North Carolina and the other medium sized is in the south part of Minnesota.

This material is made by interviews to the local farmers or employees.

The agricultural outlines of the two states to understand this material are as follows.

North Carolina is a state of the South and it had many plantations by slavery.

It produced a lot of cotton and tobacco by labour of black slaves.

After the Civil War, the plantation by black labour or share cropping had continued, but the acreage of cotton has decreased in this state. The state is the



biggest tobacco producing state in the United States and tobacco is cultivated almost the whole farming area.

Other crops are soybeans, corn, peanut and small grains. We can see mixed farming that feed cattle in this states. too.

Minnesota is located north of the United States and east of Lake Superior.

It was reclaimed chiefly by Scandinavian and German immigrants. In this region most farms are run by families. This state is regarded basically as commercial dairy farming area among the agricultural areas of the United States.

2. Incorporated farms-Tucker farm and Davenport farm-

Tucker farm

This big farm is in Farmville, Green County, east of North Carolina.

We look at a signboard which reads 'Tucker Farm Incorporated' on the front lawn garden.

Our guide is Bill Tournage, who explains and answers to us. He is one of field supervisors of this farm. He is 28 and graduated from business course of the



Mr. Bill Tournage

the University of East Carolina. He has worked 2 years at this farm.

The farm was started by Ralf Tucker, a former banker and he is a noted man in Greenville. His son, Chap, now owns the farm. He has enlarged this farmland year after year. This farm has 2000 acres of farmland, 600 acres of it is leased. We can not meet Chap Tucker because he is out. Our meeting room is Bill's office room in the first floor of the owner's old house.

The main crops of this farm are soybeans, corns, small grains (barley, wheat and oats) and tobacco, which is a main and essential crop in North Carolina.

Soybean is cultivated in the largest area (800 acres) of this farm. It needs low investment and gets medium return. All of this crop is sold for cash. Corn is cultivated in the second largest area, 560 acres. Though it is not a big money crop, it is planted mainly for rotational purposes.

This corn is used exclusively for animal feeds. A high risk crop is corn, which is easily damaged by weather. Owing to the drought of Mid-Atlantic this year, very poor crop of corn, 40 or 50% of decrease than usual, is expected.

Tobacco is cultivated 300 acres in this farm this year. To this farm, tobacco is the most important crop, because it accounts for 65 or 70% of this farm's whole annual income. Since cultivation area of tobacco to each farm is allocated strictly by the state government every year, it is prohibited for tobacco farmer to extend the area of tobacco cultivation without permission.

Though this crop brings high income, it needs high cost, too. Tobacco is cultivated three times a year in same field in this farm.

Tobacco farming needs hard work and high intensive cultivation. This farm raises small grain of barley, wheat and oats. Most of these are grown for seeds to be planted next year.

Peanuts is a good money crop for this farm and it is planted on a quota system of the government, too.

Cucumbers are grown only 40 acres and this is mainly a source of work for field employees during the time between planting and harvesting of tobacco.

About 60% of crop selling is paid for harvesting labor.

A centipede sod generates approximately \$15,000 per acre. Since its market is very small and it takes three years to grow and sell it, this is cultivated only 30 acres in this farm.

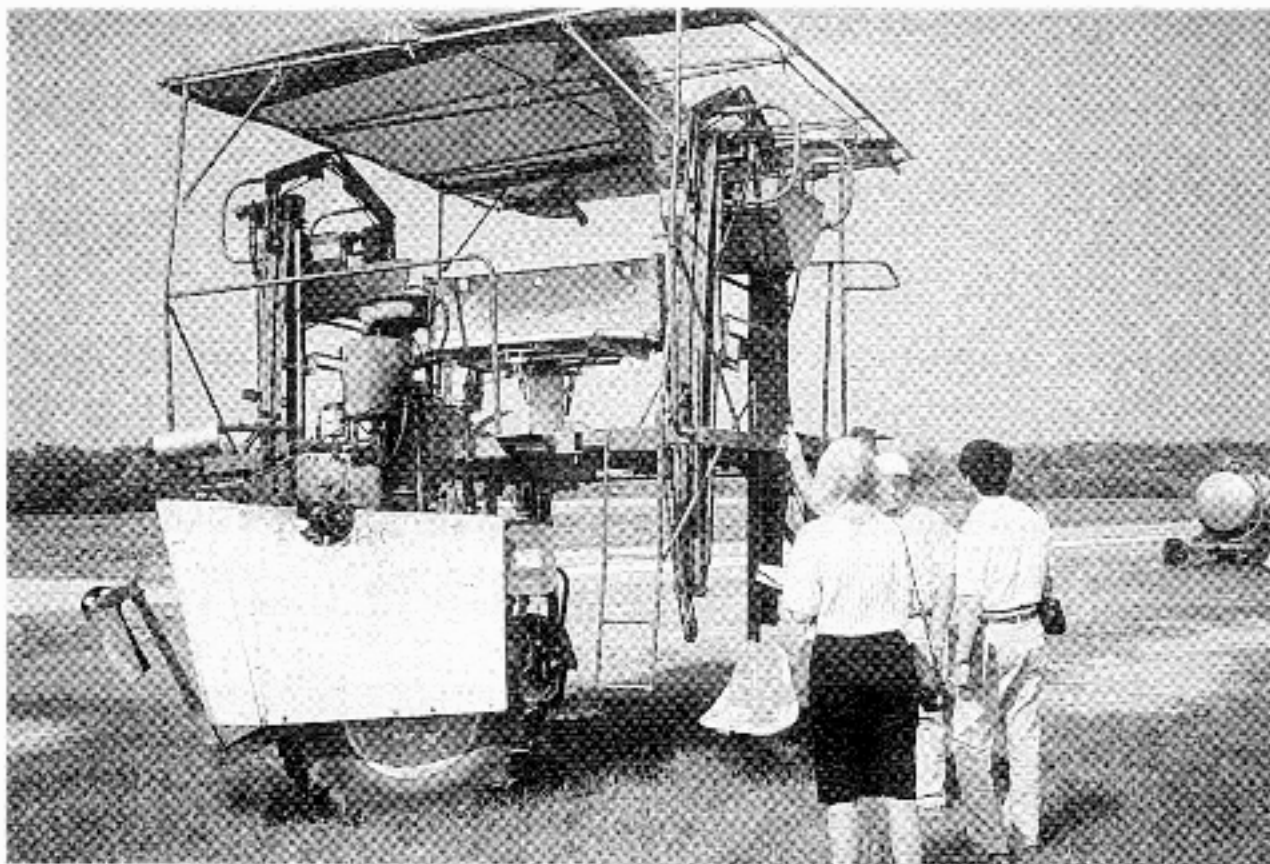
In this farm, tobacco is grown in a field in the first year and small grain such as wheat is cultivated from November to June the next year in the same field. The next crop is soybeans from June to December and the last crop is corn

These cultivations are repeated in this order. It is called a crop rotation system.

Tucker Farm has many newest machinery. Eleven big tractors are used for all types of field cultivation. The equipments of these machinery are harrows, planters, drills, cutters and big sprayers.

There are three combines, which are used for cropping grain, soybeans and corn and two peanuts combines.

There are also ten two-ton trucks for hauling farm products and fifteen half-ton trucks for transportation of others.



Tobacco Picking Machine

These machinery are placed in a row at the back yard of the big repair garage. This farm has 40 tobacco barns. Heavy oil is used as fuel. It takes 7

days to cure one barn of tobacco leaves. During the time the temperature is kept 90 or 100 ° F inside barn. There are some big storehouses for grain.

A set of center pivot irrigation system is used in this farm. It is rare in this region.

It's 600 feet long arm that irrigate 30 acres.

Tucker Farm employs 23 fulltime workers. The employed are composed of one general manager, one assistant manager, 4 field managers, 2 secretaries and 15 fulltime equipment operators and mechanics.

About 60 Mexican part time workers are employed during tobacco growing term.

The job ranges from seeding to picking.

They are paid from \$ 4.5 to 5 per hour. Till recently black people are engaged in this labor. Because of improvement of social charge they have quit this hard work and Mexican have gotten this work for them.

Total annual income of this farm was not disclosed. Bill mentions that this farm gets a reasonable income to maintain the management.

The general worker of this farm takes a holiday for a week. Bill says to us "As for me, I take three weeks holidays continuously in every November. "

Davenport farm

This incorporated farm is ten miles east from Greenville.

Lawrence Davenport ,aged 41, has an interview with us. He manages this farm with his two younger brothers. His wife is a high school teacher. He has three children. His mother lives in the farm. He is an Irish-American and he doesn't know his root in Ireland well.

Just after the Civil War his great-grand father came here from the county next to Pitt ,when he was 17 years old and started farming.

The farm has 1200 acres and leases 800 acres of farmland.

The crops of this farm are tobacco, corn, peanuts, cotton, soybean and wheat.

This farm has no cultivation land this year. This is not a contract farm.

This year Mr. Davenport has big damages of crop by the drought, especially

corns. The crop of tobacco is not good.

He uses eight tractors, five combine harvesters and seven trucks here.

This farm has business with 40 traders on crop selling. Mr. Davenport always makes contact with a broker and belongs to the crop market in Chicago and orders him to sell. He runs a general store which deals with farming goods and seeds and wholesales of dog food, too.

This farm hires nine fulltime workers. They are 6 field workers, two sales clerks and a clerk. Twelve Mexican part-timers work for growing tobacco. They are seasonal workers and work during from April to October. It has been four years since they began to work here. Till then, most of the workers were blackmen.

They are young men aged from 17 to 20. The wage is \$ 4.25 per hour.

Tobacco picking starts about the middle of July and it lasts for 9 or 10 weeks. Mexicans are paid \$45 a full of barn of tobacco. In this farm there are 20 barns. Their housings are given by this company farm and the rent is free.

The annual net profit of this farm is from \$15,000 to 70,000. Naturally it varies from year to year greatly.



Peanuts field

A management of farming is always unstable and risky. This farm will have bad corn crop this year. From 40 to 50% of whole annual income is by tobacco in this farm. This year's tobacco farming quota to this farm by the government is 140 acres.

A quarter of this year's shipment of tobacco is last year's picking.

This farm is in no debt now. Mr. Davenport has the opinion that, as to policies on agriculture of the United States, it is necessary that more grant-in-aid to farm to rival farm products from low personnel expenses country such as Brazil. His prospect to his farming is no good because a peanuts company is active in lobby activities to hold down a price of peanuts at the Congress.

He thinks one of their ten children will succeed this farm.

Having worked at a fertilizer company for seven years, he succeeded to his family business. As he is always busy with his work, he rarely takes vacations.

He has off days on Saturdays and Sundays for three weeks in every summer.

For him, a day of travel to attend a meeting of farmer is a holiday.

After meeting we go to his house. It needs ten minutes by car. His house is a mansion of southern style. His hobby is to steer a motorboat. His motorboat with seven seats is moored at his garden by a river.

3. Family farm—Barns farm and Boots farm —

Barns farm

The farm is about 55 miles east from Greenville.

The owner is Mr. Thurman Barns, aged 79, lives there with his wife, Sara.

He is an Irish-American. His father started this farm. The acreage is 250 and the size is medium in this region.

His house has three bedrooms and is big enough for them. We meet at the light pleasant living room. A big TV set is impressive. He speaks slowly and seems to have difficulty in hearing a little. When he was 16, he was given one acre of tobacco field from his father. He had inherited his father's farmland

and had run it by share cropping till 1963. Since then he has rent all his farmland. He leases it to a farmer under one year contract. Mr. Barns shares a quarter of tobacco proceeds and gets \$45 per acre of crops from the farmer.

This year tobacco, corn, soybeans and wheat are grown in Barns' farmland. No cotton is cultivated. Since 1963 he had been an owner of a tobacco warehouse and he had been a buyer of tobacco auction. Now, he has retired and receives his pension. In this area even a medium scale farmer has a part time job. A farmer of his neighbourhood rents from nine farmers. This young farmer's wife is a teacher.

Many farmers lease their lands but few of them sell their lands. He likes to go to see his farmland. He used to play golf and go fishing but no longer he can because of his bad health. Just before leaving he showed us his horse caller collections in his barn.

Boots farm

Henry Boots dairy farm is about 160 miles west of Minneapolis, Minnesota.

He looks intellectual with gentle eyes. When we visit his farm, he is harvesting wheat. He doesn't thresh and lay down the head to dry. He has bad crop of wheat due to low temperature and flood of this summer.

He is a German-American. His father started farming here at the age of 20.

The acreage of his farmland is about 500 acres and this is an average size in this area. This area is a single cropping region. Every year he grows wheat, corn, soybeans and alfalfa.

He has a non cultivation land of 20 acres as usual. This year he grows alfalfa in the land following the indication of state government.

This farm keeps 50 dairy cows. The milk gives him nearly 70 % of total annual income of this farm. The milk is not processed at this farm.

Milking times are 6 AM and 5.30 PM everyday. He has milking machines in his milking barn. The milk is stored automatically in the milk tank. It is kept 34° F all the time. A trailer of Associate Milk Producer, which is the biggest dairy farming cooperative in U.S., comes to collect the milk every other day.

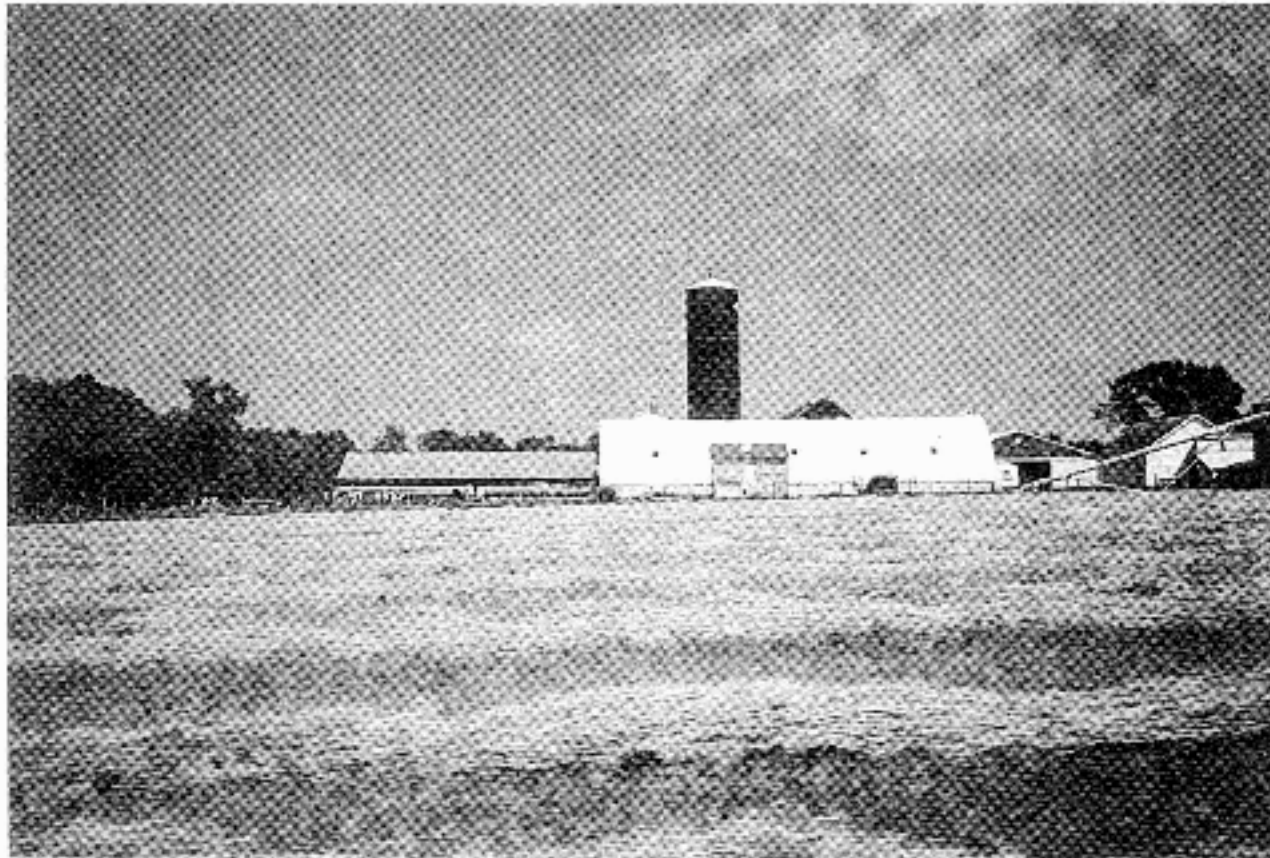
He depends on milk mainly.

He fears a sudden fall in milk price by overproduction. The last time of it is two years ago. For only self-consumption, this farm feeds some beef cattles and grows vegetables.

A hay and straw are need as winter feeds in this region. This farm prepares 1200 or 2000 bunches of straw in one winter.

There are silos for grains and hay in this farm.

Most farmers in this region rent their land by cash at from \$75 to 100 per acre.



Boots farm

The land price is \$1500 to 2000 per acre. There are very few who sell their farmland. Because most farmers want continuous income and take measure of succession.

Because of this summer's cool weather in the Mid-West the harvesting is delayed. In late September the Mid West has frost. It is possible that this year's crops will be two thirds of year. The big flood came one after another this summer. Thirty acres of this farm was flooded.

The President of U.S. has appointed this region special disaster area.

The Federal government will aid the farmers of this area financially.

To the government Mr. Boots wants the liberalization of milk price and more subsidy to compete imported dairy products.

His son who works at a seed company helps him on weekend. The house of Mr. Boots is two stories high. It has two bedrooms upstairs and the basement each.

His wife is an adviser of life plannings of the aged. Her hobby is to make aminiature of house. There is a miniature house half-finished on the table in the living room.

Large Scale Agriculture in USA:
A Comparison with Japanese Agriculture

Hideaki YAMAMOTO

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A P P E N D I X

1 . a contribution on Asahi Newspaper

I . INTRODUCTION

At Japanese junior high schools we can choose the parts of the world when we teach world geography under the guideline of the revised course of study started in 1993. That is, we only have to teach some regions --not all regions-- among U.S.A., Russia, EC., Western Africa, Southeast Asia, China and so on. The choice is left to teachers in each school, so teachers choose the parts by taking students' interests or current situations into account. Nevertheless almost all teachers take U.S.A. The huge country and its agriculture on large scale, "A food warehouse for the world", seems to be the heart of studying U.S.A. Students at junior high schools are supposed to learn agriculture in U.S.A. over 2 periods. Two points of this study are as follows: ①Large scale agriculture with big machines ②Agriculture based on its nature.

This summer we team-E investigated two different types of farmers in North Carolina for three days. One was big scale agriculture which is likely to be the company management, and another is small scale agriculture which is run by one family. The principle of studying social studies at junior high schools is "Broad and Shallow"; on the other hand, that is "In detail" at high schools. I wish this research data has junior high school students grasp large scale agriculture in U.S.A. generally compared to agriculture and farmers in Japan. At the same time I am pleased if showing the current situation of Japanese agriculture and opinions for smoking in Japan is useful for junior high school students in the States to understand Japan or Japanese much more.

Besides I dare to deal with tobacco, which is hardly studied in junior high schools. I will introduce the current situation and the future of tobacco industry with various episode. If we introduce tobacco industry at the first class of agriculture in U.S.A., we will be able to get a different effect.

II. LARGE SCALE AGRICULTURE IN U.S.A. ~field investigations~

A. Davenport Family Farm in Greenville

As we hoped to collect data at a large scale farm like an enterprise, we visited Mr. Davenport (picture ①), who runs the farm (office, picture ②) with his two brothers in Greenville city, North Carolina. His wife is a teacher at senior high school and they have three children. According to the interview with Mr. Davenport, the total size of his farm is about 2000 acres while the average Japanese farm is 1 ha. As 1 acre is about 0.4 ha, we can imagine how big it is. However, he rents 40% of his farm. The rate of planting is as follows: 140 acres for tobacco, 700 for corn, 150 for peanuts, 300 for raw cotton, 900 for soybeans and 150 for flour. The sum is over 2000 acres because some parts of his field are cultivated twice a year in order to make two kinds of crops. He has so many machines such as eight tractors, five combine-harvesters, seven tracks. He trades with more than 40 dealers. Compared to this, Japanese farmers usually have one tractor, one small track and one combine. Furthermore the size is completely different. Computers are set up in his office, which show the market condition in real time. The information is very useful to judge the dealing.

There are nine regular workers and twelve seasonal laborers in his farm. The management is completely different from that of Japanese farms which are run by one family. Twelve seasonal laborers are all Mexicans and they work from April to October. The gross profit of his farm is approximately between \$15,000 and \$70,000. It depends on the year as agriculture is a very risky business.

We came across the unexpected fact through this investigation, that is, government assigns the field for tobacco every state (farmer). Compared to Japanese Government which puts importance to agriculture, U.S.A. government seemed not to interfere agricultural products. So I was surprised to hear that 140 acres of land is assigned for tobacco by government this year. It is

difficult to guess its point; however I presume its purpose is to prevent the price from falling. Tobacco is a good source of revenue for them and about half of their revenue is from tobacco.

He wants government to pay more subsidy for agriculture. Mr.Davenport and his brothers have 10 children in all, so he said some of them will succeed his job.

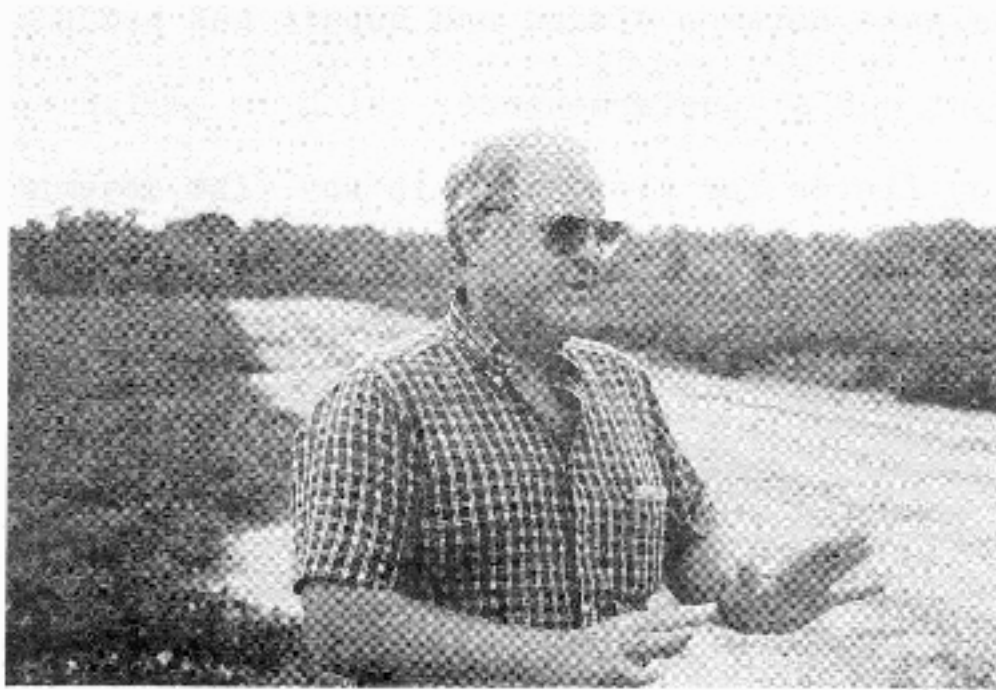
B. After Investigations

Mr.Davenport graduated from university. It is felt that he is a business man rather than a farmer.

Moreover, although the image of agriculture tends to be dark in Japan, it's rather open and cheerful in the States. However, U.S.A. has the least rate of farmers in the world.

☆EXAMPLES of questions to students and methods of teaching

- ①To have students sum up the features of agriculture in U.S.A.
- ②To have students guess the reason why farmers use computers
- ③To have students make out that agriculture is considered as business in U.S.A.
- ④To have students compare the size of plowed land between in U.S.A. and in Japan with charts on transparent sheets



①Mr.Davenport is explaining to us on his farm.



②Mr.Davenport's store
His office is in the corner of this store.

III.AGRICULTURE IN JAPAN (growing rice today and in the future)

A. A Reduce-Rice-Fields Policy

Japan has few plains, so farmers has made big efforts to find some ways to get as much harvest on a small fields as possible. They manure many times, and try plant breeding. They spare no efforts to spend much time or money on their small fields. These are the features of Japanese agriculture---especially planting rice--- and it is completely different from those in U.S.A. Such big efforts produced a big harvest of rice. Then they faced another big problem. After World War II, Japanese food life has been westernized and consumption of

rice has reduced. That is why the balance between demand and supply has begun to break. Then Japanese government put out a countermeasure, which is called Gentan-policy. Gentan means reducing fields for rice. In this way, the government begins to control the amount of rice products. For example, they pay some money when fields are converted to gardens. Government goes on with Gentan actively. We may say this is one of the features of Japanese agriculture.

B. The Japanese Institution of Food Management

Government buys rice in fall through agricultural cooperative association(what is called JA), then we consumers can get rice through makers. Every year government's buying price is examined at the conference and determined by government. When the price is decided, many groups or organization get entangled and we can guess the process in many ways. Policy for agriculture is one of the most important tasks for Japanese Government. The system that the government is concerned in rice circulation is called the institution of food management. In this case the problem of yami-mai has broken out. Yami-mai is the rice escaped the meshes of the rice prices system. It is often said, however, that this system itself is out of date, however. It may be better that rice prices are free from government's control and under free competition.

C. The Current Situation and the Future

I will show the current situation of planting rice with figures. The number of farm houses reduced by half (5402 to 2971) for 20 years from 1970 to 1990. The rate of farmers who occupied only agriculture and who have other jobs was 2:3 in 1942 but that is 16% : 84% in 1989. Farmers have become older and older. It has also become a subject of discussion. Few people want to succeed to agriculture. It is natural that self-support rate is the lowest in developed countries. Therefore the number of farmers who leave the manage of

their own fields to JA (Japanese Agriculture cooperative association) and get JA to grow crops is increasing.

Today U.S.A. demands Japan of free trade of rice. In this condition, farmers try to cope with the current situation in many ways. For example, some borrow the fields which was not cultivated by anyone and they run agricultural business as farmers in U.S.A do, or some try plant breeding again and again then they make up a new brand of rice, or some give up planting rice and begin to grow flowers or fruits. However, financial power of individual enterprise is limited, so the Japanese Government should grapple with the problems that the Japanese agriculture faces and help to develop it.

☆EXAMPLES of questions to students and methods of teaching

- ①To have students guess the reason why the farm working population is decreasing in Japan
- ②To have students guess the reason why Japanese Government supports agriculture, especially growing rice so strongly
- ③To introduce the emergency import of rice because of a poor harvest in 1993 and then to have students think that the liberalization of rice trade is proper or not



- ③Farmers are transplanting rice.
This machine costs about
600,000 yen.

IV. TOBACCO INDUSTRY

A. Investigations

North Carolina is famous for tobacco. On the way to Greenville city from Raleigh-Durham airport in North Carolina, we could find huge tobacco fields on the both sides along the road. In this city farmers grow tobacco and get more money than any other crop. While Japanese Government keeps tobacco monopoly law, the price of tobacco is not determined by government in U.S.A. Tobacco is sold at the reduced price in supermarkets. It is beyond our sense in Japan. The Great Plains or the Prairie is often taught in the course of agriculture in U.S.A., but tobacco industry is seldom taught. Through these investigations, tobacco warehouse is one of the most interesting things to me. In tobacco warehouse dried tobacco leaves are gathered and sold at auction. I will show the two tobacco warehouses in this paper.

B. Farmer's Warehouse (picture④)

One afternoon on the third of August, we visited the first tobacco warehouse. It was a big and old building. However, it was so humid inside. In the building about twenty black laborers were packing tobacco leaves. Each package seemed to contain 275 kg leaves. We interviewed Mr. David Eastwood, who was one of the owners. He said since today's auction was over, each package of leaves had a tag showing grade, price and company's name. A signboard, "DO NOT LITTER!" was hanging on the ceiling.

C. New Greenville Warehouse (picture⑤)

At the second tobacco warehouse the auction was about to start. About fifteen dealers were walking among packages of tobacco leaves and selling under the hammer. Dealers spoke too fast for me to understand what they were saying.

It is said that they speak at the speed of about 500 words a minute. I was amazed to see how they fixed prices at the auction. They say thicker tobacco leaves are of better quality.

D. Seasonal Laborers and the Social Structure

We saw some Mexicans working as seasonal laborers at the second tobacco warehouse.(picture⑥) Since they could hardly understand English, they were working in silence. As they don't have rights as U.S. citizens, they get small wages. As a whole it was blacks and Mexicans who worked hard under such bad condition but not the white.

North Carolina was in the south part during the Civil War.Raw cotton has been grown for a long time and the blacks have engaged in harshwork.

When I came in Greenvllies, I noticed that majority of laborers who engaged in manual work(i.e. packing leaves in Tobacco warehouses, cleaning hotels, construction work) were blacks. It seems that the whites' dwellings and occupations are different from those of the blacks. However, this is not due to racial discrimination but simple division in the States.

E. Tobacco Museum

In the morning on August fourth we visited a tobacco museum in Wilson city, which is famous for tobacco industry in North Carolina. People in this city are proud of their tobacco industry. An example can be seen in a picture of the licence plate of Mr.Thuman Barn's car, which says, "Pride in Tobacco" (picure⑦). In addition this museum was founded by local people without government's or state's help. They showed us the slidefilms of process of producing tobacco.

F. Tobacco Industry in the Future

Every time we entered restaurants in the States, we were asked by waitress, 'Smoking or No smoking?' It impressed me so much because I didn't have a chance to hear such words in Japanese restaurants. Also in the bus we took we noticed the words 'No smoking'. No smoking is natural in public institutions in the States. The phrase 'SURGEON GENERAL'S WARNING: Cigarette Smoke Contains Carbon monoxide.' is indicated on tobacco packages. Of course in Japan the phrase 'Be careful not to smoke too much for your health' is printed on packages. But this phrase is only for smokers, not for non-smokers. In Japan the idea of non-smoking rights has just begun to fix recently. I read an interesting contribution about this problem on Asahi Newspaper on August eighteenth.

The number of smokers is getting smaller. Although farmers in North Carolina are trying to increase tobacco exports, the campaign of anti-smoking is getting popular, then what is going to happen to tobacco industry? We had a chance to discuss with some local social studies teachers at public schools in Greenville city and I asked one of them directly, 'Do you think the future of tobacco industry will be promising or not? What do you think?' After a while, 'Not so good.' she said. 'I presume products of tobacco will be decreased and products of raw cotton will be revived like in old-days.'

☆EXAMPLES of questions to students and methods of teaching

- ① To have students guess the reason why Mexicans work in the States as seasonal laborers
- ② To show the picture⑦ and have students guess what it means (pride on tobacco industry)
- ③ 'What will happen to tobacco industry if the campaign of anti-smoking is getting popular more and more in the States?' (introduce some social studies teachers' ideas

V. OTHERS

Pictures used in this essay can be seen in slides. Moreover, procedure of planting, harvesting and manufacturing tobacco can be seen in a video. Please refer to these slides, video tapes and so on.

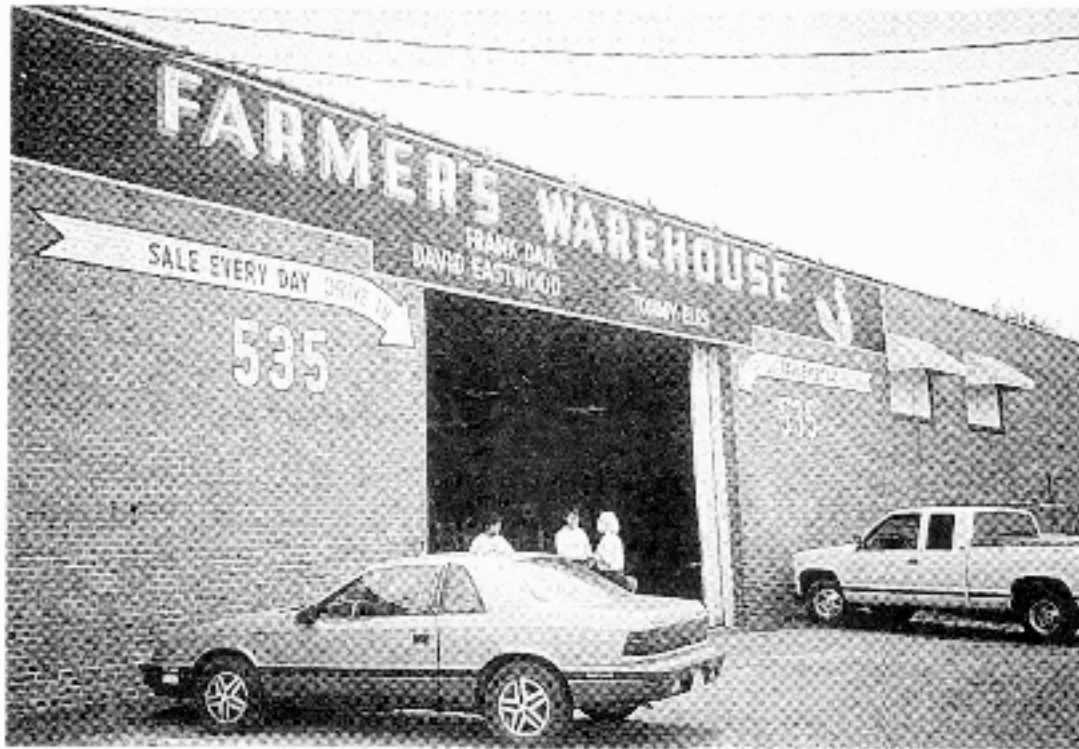
a p p e n d i x

* a contribution to correspondence column on Asahi Newspaper on August 18th, 1993

First I was always asked 'Non somking or smoking?' when I entered restaurants in the States where I lived last year. There, smoking is banned on all international airline flights and in the hospital or the research institute where I attended every day. Of course there are no commercial programs about cigarettes on TV. On the other hand, I came across the fact that Japan is still lenient toward smoking when I was back here in Japan. For example, I was asked to take a smoking seat because non-somking seats were all reserved or I had to walk to the end of the platform to take a non-smoking car when I tried to get on Shinkansen or waitresses looked displeased if I asked for a non-smoking seat at restaurants.

However, even here in Japan, it is often said cigarette, especially, 'secondary' smoke which curls up from the cigarette and is released into the atmosphere is bad for health and the idea of non-smoking rights has just begun to fix. Moreover, more attentions are paid to non-smokers. For instance, floors at hotels, smoking is banned all day long in Yamanote-line grounds, a limited smoking area in hospitals and so on. Nevertheless, men's smoking rate in Japan is still over 60%. This is twice as high as that of U.S. or U.K. Indeed, some might want to smoke after meal, so at least what is called family-restaurants, which people with their children often go to, should prepare non-smoking seats. Also I want JR (Japan Railroad) to think better of the position of Sinkansen's non-smoking car.

(aged 30, woman)



④Farmer's warehouse



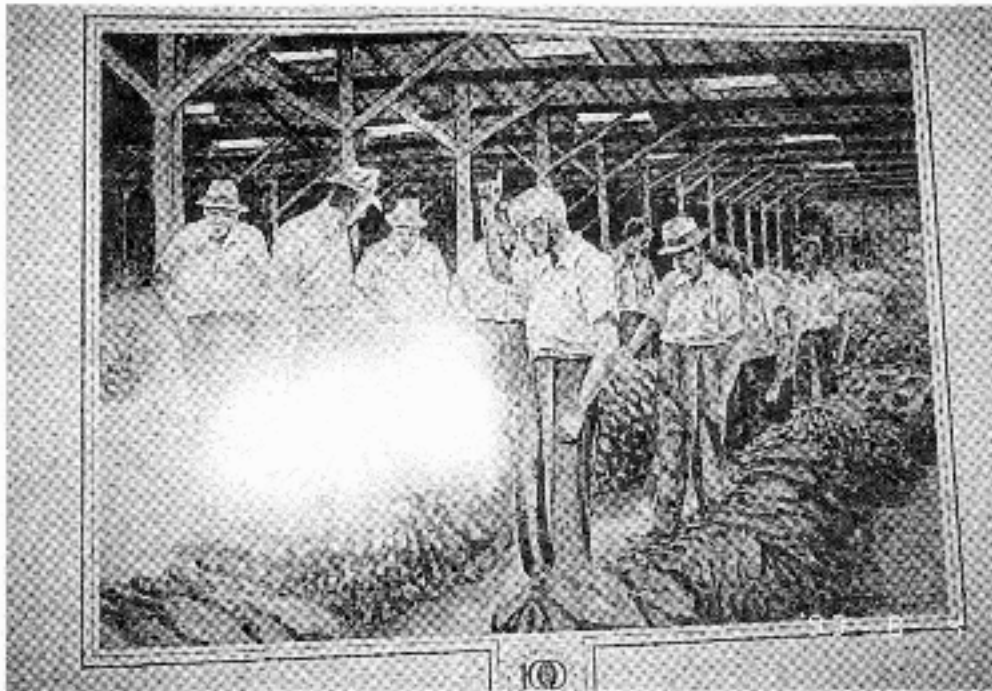
⑤ New greenville warehouse



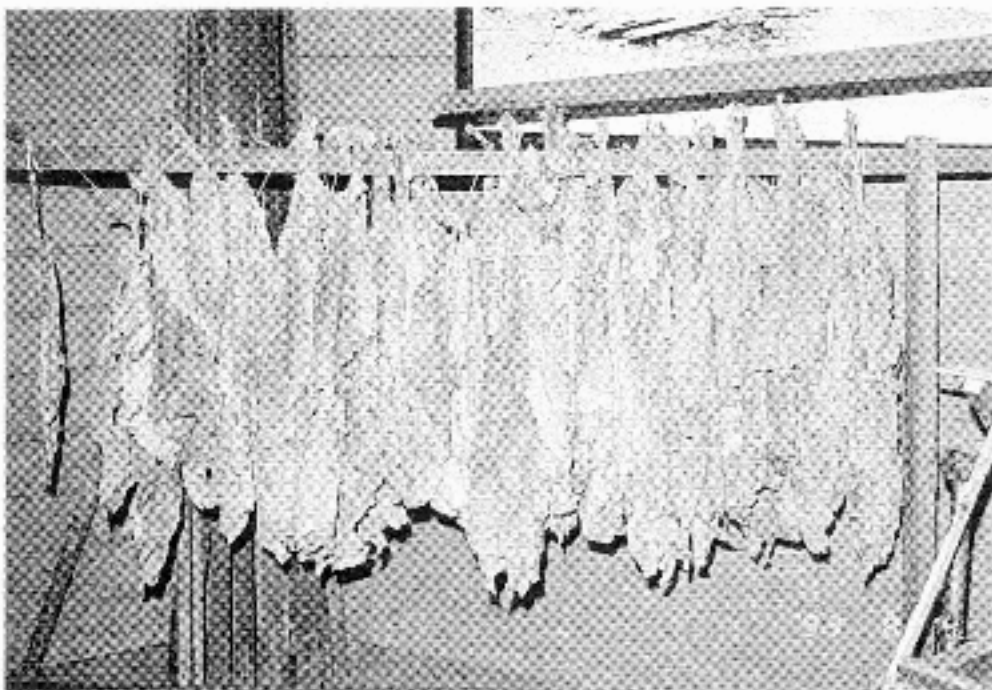
⑥Seasonal Loborers



⑦the license plate which says
'Pride in Tobacco'



⑧tobacco auction
This was on display in the
tobacco museum



⑨dried tobacco leaves
This was also on display in the
tobacco museum

Americans' Diet and New Trend in Agriculture

Seiji FUKAZAWA

Topics of the present material

1. North Carolina as a major agricultural state in the United States.
2. A change of dietary pattern in the United States and Japan.
3. A new trend in agriculture brought about by a changing diet.

Introduction

The United States of America is the world's most advanced country in agriculture, supplying an enormous amount of food to the rest of the world. Agriculture is the biggest exporting industry of America as well as technology such as automobiles, high-tech products, and so on. In this sense, no one would deny the significance of agriculture as a theme for designing curriculum and teaching materials for secondary school children to understand life and culture of America. Especially today, when the opening of Japanese rice market is an important political issue between America and Japan, it will add a step further for an international understanding to have a clearer picture of the current state of agriculture in America and its characteristics.

The team E visited several farms in and around Greenville, the eastern part of the State of North Carolina, for this research project. North Carolina, located in the south has the largest tobacco industry in America, and also is famous for its crop production since early days. This field study let us realize realize that agri-



North Carolina

culture depends not only on geographical and natural conditions but also consumers' needs and interests. Among the topics of new agribusiness in America, 'aquaculture', a new type of agriculture, was chosen as a theme of this material.

1. American People and their Diet

Recently, people in America have become more health-conscious than ever before, and what to eat for the health is their big concern. In fact, they are willing to pay a lot of attention to and also take actions for their health. You will see a number of people jogging in streets and parks, and a flood of TV commercials of so called health foods. Obesity is blamed as a cause of heart-related diseases and is said to affect even a chance of promotion. As a matter of fact, some diseases which have a high mortality rate seem to be related to people's dietary patterns (See Table 1).

Table 1: Contrast of Mortality Rate in America and Japan
according to diseases (per 100,000 persons)

		heart disease	diabetes
USA	1965	338.1	17.1
	1970	351.6	18.7
	1976	332.3	16.1
JAPAN	1965	77.0	5.2
	1970	86.7	7.4
	1976	92.2	8.2
	1981	107.5	7.2

(UN Demographic Yearbook)

As a society gets more and more affluent, interest in food shifts from

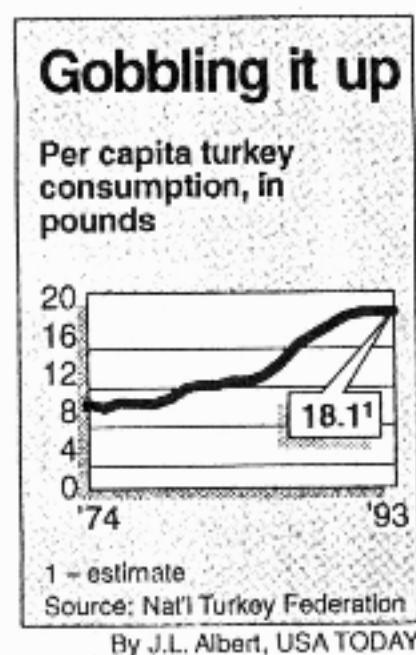
simply filling the stomach and satisfying diverse tastes to looking for the right things to eat for the health. In Japan, the mass media feature a changing national dietary pattern by covering topics such as proliferating chain restaurants all over the country, ethnic foods, imported foods for gourmets, and so on. Furthermore, you can find hundreds of books on nutrition, organic foods, and health foods, which are raising people's awareness on their diet and health by providing all kinds of information.

2. Changing Diet and Agriculture in America

Environmental concerns, consumer demands for safe and healthy foods, and diversifying tastes are rapidly changing agriculture in the United States. Gone are the days when Americans ate only beef, potatoes, and apple pies. People are looking for variety and new agricultural products, and these changes mean new opportunities for farmers as well.

For the purpose of maintaining national health, the United States Department of Agriculture and the Department of Health, Education, and Welfare jointly issued an pamphlet titled Nutrition and Your Health--Dietary Guidelines for Americans in 1980, explaining the ways to improve diet for Americans. In general, we have an image that a majority of Americans live on a meat diet. However, among the sources of protein intake, consumption of poultry and fish has been steadily increasing in contrast to what is called 'red meat'--beef and pork, which contain more fat.

In every supermarket, consumers can buy a variety of low-fat milks, seafoods, and poultry including turkey, which used to be eaten usually in Thanksgiving and Christmas. Furthermore, you will see 99% fat free turkey or chicken. According to National Turkey Federation, U.S. consumers eat an average 18 pounds each in 1993, nearly 10 pounds more than 20 years ago. The



appetite for turkey--low in fat and cholesterol, cheap and high in nutrition--last all year. This surely indicates that Americans are seriously concerned about the problems of obesity and heart-related diseases and are trying to cope with their diet and health.

This change in people's way of thinking about foods seems to have an effect on agriculture in North Carolina. In fact, it is the No. 1 producer of turkeys in the United States, and a largest producer of trout next to Idaho. Growing demands for poultry and seafood, which contain less fat, are likely to change the future of agriculture. Mild climate, flat land, abundant deep water of the state offer a lot of advantages not only to tobacco and crop production, but farming in the water, and efforts have been made for this new type of agriculture.

3. Aquaculture--A New Type of Agriculture

Growing plants and animals in the water is called 'aquaculture.' ('Aqua' means water) Commercial catfish production, a new type of aquaculture, is one of the fast growing industries in North Carolina. Catfish farming was originally started in Arkansas and later spread along the Mississippi River. North Carolina ranks third in the United States behind Arkansas and Missouri in catfish production. Catfish are not very popular fish in Japan except in the superstition that catfish stay in the ground and cause earthquakes. On the other hand, farm-raised catfish have climbed into the top 5 popular fish in America together with tuna, shrimp, cod, and Alaskan polluck. Catfish used to be ethnic 'trash fish', which many people took little notice of, but now they are very popular as low-fat, low calorie health food.



catfish

There is more to aquaculture than throwing fish in the pond. Commercial catfish raising has a way of American agriculture in common with other types of agricultural operations in America. You can notice features of American

agriculture like corporate operation and quality control adopting latest technology. Carolina Classics Catfish Farm, which our team E visited for this research project, has 26 catfish production ponds in the land as large as 270 acres. The company has 18 contract farmers in the Greenville area, and it takes the responsibility of taking eggs, hatching them, growing young fish, and shipping them to the contract farmers. Given technical advice, the contract farmers grow fish in their production ponds. In this contract farming their business is steadily booming.

According to Tom Blevins, 34, a biologist, there are only two people working in that huge area, regularly checking a lot of things such as the water temperature, water quality, diseases, the oxygen rate in the water, and so on. A wide range of dietary concerns of Americans from a meat diet to a more healthy diet seem to be affecting the future direction of American agriculture.



Tom Blevins, 34, biologist
Carolina Classics Catfish Farm

4. A shift in Diet in America and Japan

As international exchanges are getting more and more common, so are the international exchanges of food culture. Japanese foods and cuisine have become popular and consumption is also booming in America. A lot of Japanese restaurants are mushrooming especially in big cities. As for the reasons of this popularity, the image of Japanese foods as health foods plays a very important role as well as their tastes and curiosity. Americans' favorite Japanese foods such as tempura, sushi, sashimi, and teriyaki are highly regarded in the belief that Japanese foods prevent overweight. A lot of

typical Japanese foods have been taken into American diet, especially soy sauce. Kaiso, which used to be translated as 'sea weed', is now called 'sea vegetable.' Shiitake, once believed to be gourmet food, is now called Shiitake mushroom and can be found in supermarkets all over the United States. And also Shiitake mushroom is said to be a very promising agricultural product suitable to the climate of North Carolina. This kind of useful information is provided to local farmers from public information centers like North Carolina Cooperative Extension Service, which supports the local farmers and helps to develop the possibilities of American agriculture in the future.



A Japanese restaurant in Washington, D.C.

Similarly, the diet of the Japanese has been rapidly changing especially after 1950s and 1960s. The biggest change is a drop in rice consumption. In contrast, consumption of dairy products, meat and fat is showing a dramatic increase. In line with the diversity of menus, some health problems have been pointed out such as excessive calorie intake and increase of diseases characteristic to the western society. These changes have been affecting the future of Japanese agriculture as well; for example, decreasing rice consumption is leading to a reduction of rice fields. In the current trend of health food movement and diversifying dietary patterns, what direction will Japanese and American agriculture change into?