

2. MAIZE PRODUCTION CONDITIONS IN THAILAND AND FUTURE PROBLEMS

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I am grateful to the Organizing Committee of the Symposium for giving me a chance to come to Japan and to have the opportunity to give a talk about maize farming in Thailand. Before we go further on the subject may I be permitted to make a brief introduction. I had experience that, on many occasions when I had to talk about Thailand, one of the first question was: in what part of Africa or South America is located Thailand. In order to save time and to assist those from the audience who eventually may hesitate to ask the same question, let me have the pleasure to help.

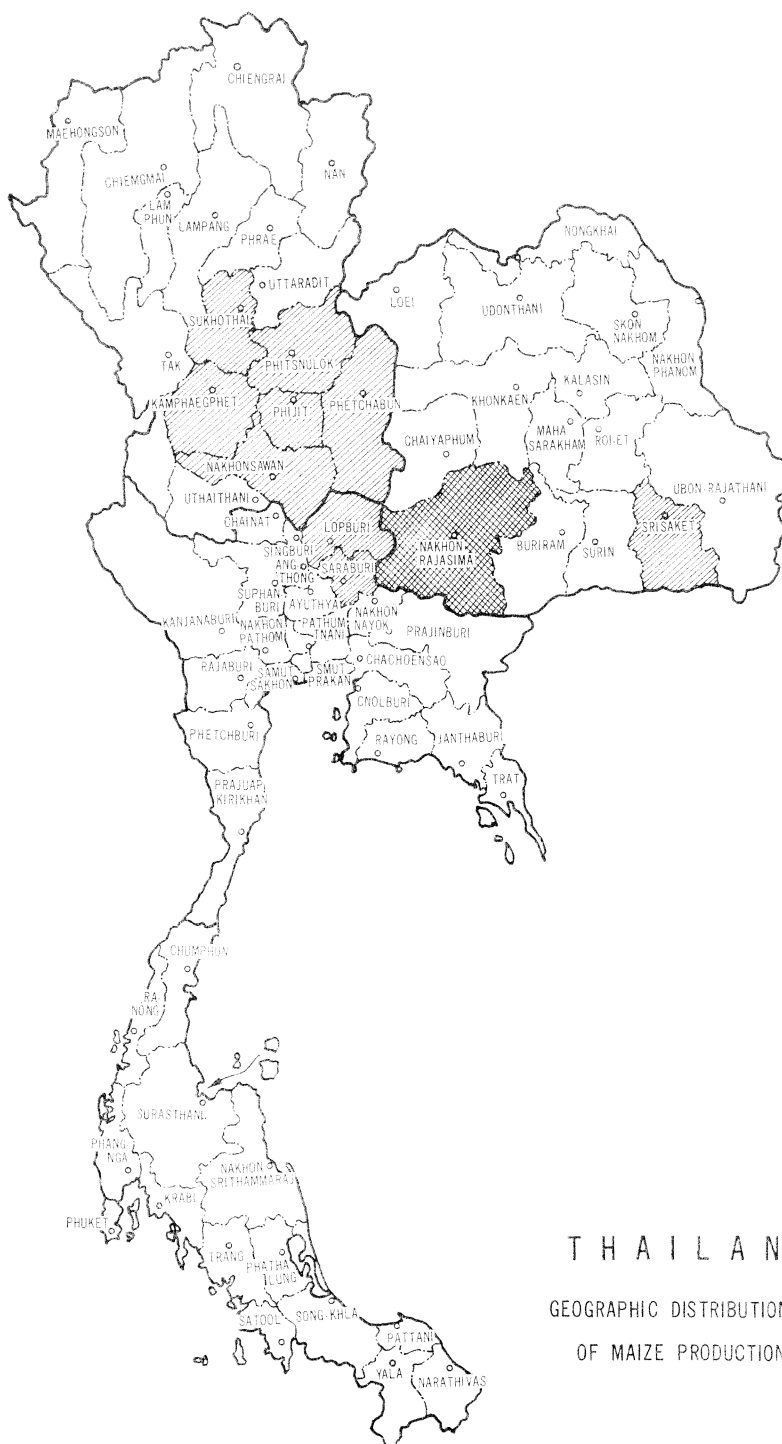
Our neighbor countries on the eastern frontier are Laos and Cambodia; on the north, China Mainland; on the western side Burma, and on the south Federation of Malaysia.

Thailand has a population of 32 millions, almost 80% earn their living from agriculture, the country covers approximately 625,000 sq. km. and nearly 8 millions hectares are cultivated, mainly with rice; the arable soil belongs generally to the acid types, with a pH ranging from 5-7. I leave this subject to my colleague who will give you further details about its suitability for agricultural purpose. I shall complete my introduction by a few words about the climate. Thailand receives every year two types of monsoon, one from the Pacific Ocean, which is known as east monsoon, and the second one from Indian Ocean, which is called west monsoon. Both of them determine the rainy season which lasts 5-6 months from June to November.

Maize is not a new crop in Thailand, it is admitted that it has been brought to this country 400-500 years ago by Portuguese merchants. I am sure that nobody, including myself, is in the position to say anything against that assumption. The only concern would be that today one has no means whatsoever to identify the original Portuguese type, the reason is that maize is usually allowed to reproduce by open-pollination with natural crossing as a general rule. The original type would degenerate by continuous variation giving rise to a multitude of strains which are more or less interesting.

In the history of Thai maize, one name must be mentioned, Prince Sithiporn, who is one of the eminent Directors General of the Department of Agriculture. In 1932 he introduced two varieties of dent corn, which later on were multiplied and subsequently spread to the North East region where commercial field corn production was first initiated, and since 1952 the crop has become well established in the area.

In 1953, the Department of Agriculture received from Indonesia under the American Aid (AID) new germ-plasm of maize. The new material was put into trials in various experiment stations, and finally one variety of flint corn of Guatemala type was selected and was recommended for commercial growing.



THAILAND
GEOGRAPHIC DISTRIBUTION
OF MAIZE PRODUCTION

Until 1953, the production of maize was negligible. On the farm the yield per unit surface was very low, around 1,000 kg/ha.

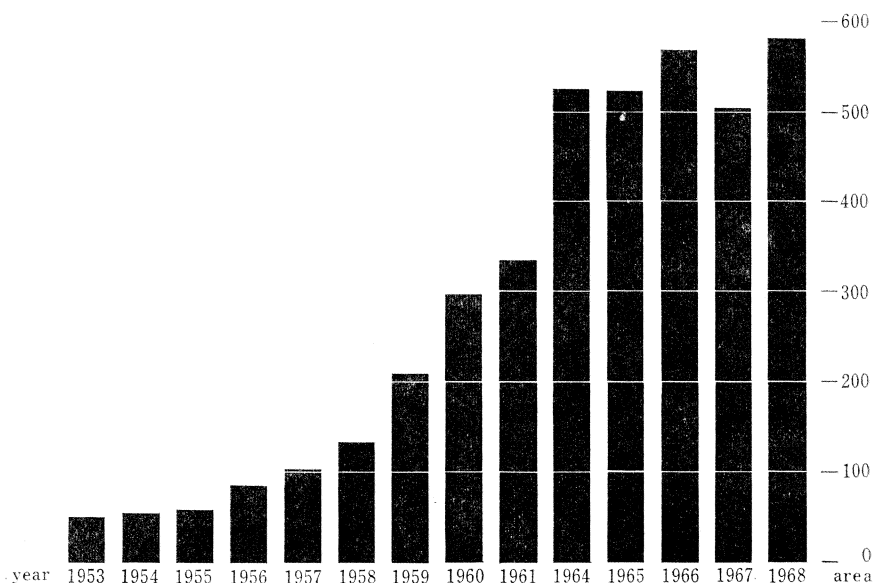
When in 1956, the government opened to the traffic the first parts of the Friendship Highway which run through the virgin lands of Korat plateau, the green light was lit, giving a start to a new era of agricultural boom. Thousands of hectares of land were opened up for farming. Mechanical equipment were widely used and the first important crop was maize; at the same time export facilities were organized, new markets were found, and Japan soon became one of the predominant customers. According to statistics, since 1953, the export of maize from Thailand has gone up steadily; its importance has doubled from 34,000 tons to 68,000 tons in three years between 1953-1955. The expansion was accelerated during the next 10 years beginning in 1955, when the total export figure exceeded 1.1 million tons in 1965. If I may be allowed to speak in term of statistics I would say that the magnitude of the export of maize from Thailand has increased by 1,500% in ten years.

In 1968, more than 580,000 ha are planted to maize and the crop was estimated to be 1.3-1.5 million tons with an average yield of 2.4 tons per ha instead of one ton 12 years ago.

The geographic distribution of maize is shown on the map, one may notice that the bulk of the production comes from the central area of the country, the dark colour indicates region where modern farming is widely practiced.

As a member of the Government body which is responsible for agricultural promotion, I recognize that our contribution to the corn development was of very recent date. In 1956, under the Technical Cooperation Programme from U.S.A. the Department of Agriculture welcomed a team of eminent agronomists who came to Thailand to assist our technicians to organize a programme of development. Research projects have been set up on many economic crops, and maize being one of them.

Surface planted to maize (1,000 ha).



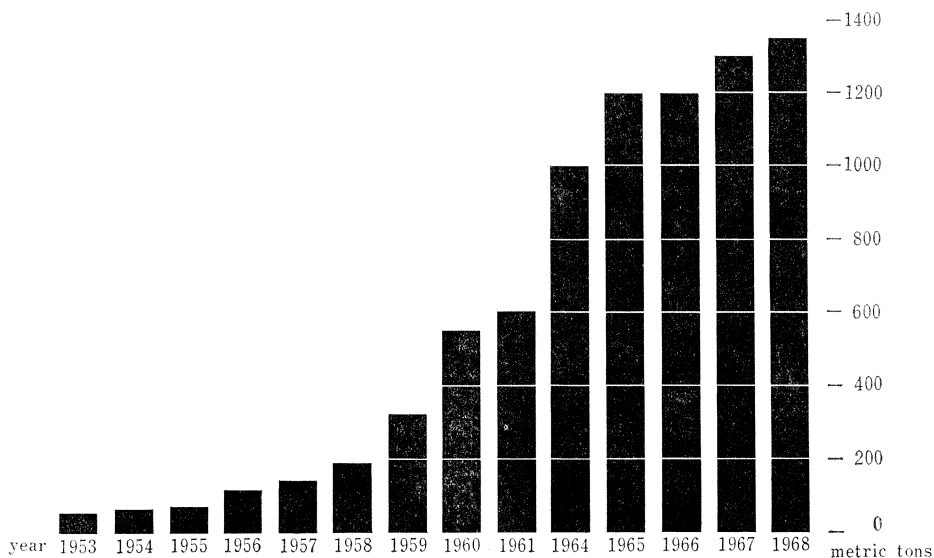
In 1962 Rockefeller's Foundation has taken interest in our work and kindly accepted to support the whole project since 1965, Maize Research Centre has been subsequently decided where University of Kasetsart and Department of Agriculture worked hand in hand with a group of specialists provided by the Foundation. Seminars and training were organized and attended by participants who came from many friendly countries of the South East Asia. I shall not extend much more on the activities of this Centre since Dr. Sprague who is one of the pioneers in this particular field is participating in this symposium. He will probably present to you a better picture of his organization.

All that has been said until now represents a broad view of the subject. Thailand has become one of the world largest exporters of maize. It is an achievement. Now let us move down onto the fields to the farmer's level, I am sure that we may come across certain things and practices which required considerations and probably assistance.

Maize farming can be split into three large sectors according to the ability of the farm.

Into the first sector will be placed those farmers who merely occupy pieces of land which were reclaimed from the forest or government reservation. This type of farming which is illegal in certain respect is more widely known as shifting cultivation. The principle of this particular technique can be summerized as follows: at the beginning, the farmers cleared a piece of land they have selected in the jungle, they pull down trees and shrubs, set fire to it, turning into ash all they can and when comes the rainy season, they plough and prepare the land for cropping; since they are equipped only with axes, knives, hoes and other prehistoric tools such as wooden plough and harrows, one should not expect much about the quality of land preparation, in fact, stumps of various calibers remained on the ground and the crop is usually poor. Statistics shows that shifting cultivation never pays sufficient return to enable the farmer to settle down, usually they cultivate the same land for 2-3 years and when the amount of crops fell

Production of maize (1,000 tons).



below certain level they move away looking for a new site. They may return to the first place after 5–6 years when the jungle has more or less regenerated, but the original forest has disappeared for ever. One can foresee the ultimate result of these practices and I fully agree with my colleagues from the Forestry Department who qualify them as an act of vandalism.

This particular type of farming is very popular in the northern region of the corn belt (Petchaboon, Lomsak). On a new land, the production of 1.2 ton/ha is not unusual, but after 3–4 years, the yield per unit surface is seriously reduced by 50% or more, hence necessity for the farmers to abandon the land. From economic angle, a farmer who practices shifting cultivation may be able to grow 1–2 ha of corn, assuming that the crop will be sold at the rate of 80 st.* per kg the annual revenue of the family would be between \$48–96 in the first year and \$29–48 in the third and fourth year.

I have to mention here that the farmers always received assistance from the dealers at the village, it may be given to them under various form, such as rice, clothes, seeds, medicines and other primary goods which are needed, all the advances will be properly accounted, and the farmers are bound to pay back in kind, namely corn in this circumstance, with a handsome rate of interest never less than 100%. One can easily visualise the social consequence of the situation, in my opinion, those farmers are merely cheap labours in the hand of blood thirsty merchants who rule over the region to build up their economic empire.

In the second category of corn growers should be put all those farmers who do not practice shifting cultivation; they are scattered along the roads and highways; their farms are definitely well established and more or less accessible by lorries or oxcarts. Almost 80% of them own their lands, they are assisted by contractors who service them with mechanical ploughing and harrowing. Hired labours are frequently used for weeding and harvesting. In a normal year, with no climatic disturbance, the yield of grain corn per unit surface would be approximately 2 tons per ha. The size of holding being 3–4 ha, the average annual income of the family would be \$240–320 less \$36–48 to pay the services of the contractors. If one compares the revenue of \$40 a year estimated for the farmer of the first group, those who are in the second group have really made a substantial progress. But there is one additional point to mention here, most of the farmers still depend on the dealers of the villages for the selling of their crops. Mechanization is generally appreciated but no indication could be obtained regarding the use of fertilizers or the application of sophisticated farming technique.

The third group of corn growers is composed of those who may be properly qualified as progressive farmers. They do not form an army in number, but they do play a very important role in the dissemination of farming know-how. This type of farms is found mainly along the Friendship Highway, between Saraburi and Rajasima. The majority is financed by urban capital. Mechanical equipment is used as widely as it may be permitted by availability and skill of the operators and mechanics. Improved seeds are in great demand. Chemical fertilizers are gaining more and more popularity. Weed control for the first times has been accepted as a necessity in the farming system, and besides the traditional mechanical means, chemical control technique was applied quite successfully. At this moment three types of weeds are listed as the most noxious in the maize field. Two of them belong to grass family, the famous lalang or Imperata, the Burma grass or Pennisetum which is a good raw material for making paper pulp. The third one is a euphorbia, a herb with white latex. They have a common character that of being able to reproduce extremely fast.

* Satang: unit of Thai currency, 100 satangs make one baht or tical.

The productive ability of the third group is relatively high. Certain farms came out with more than 3 tons per ha. The average farm size is much larger than in the first two categories. A corn field of more than 20 ha is not exceptional in the area.

Special mention must be made about cooperative societies which contribute largely to the progress of corn development in Thailand. During the last few years, this organization has made laudable effort to expand its activities. The crop produced by the Project today represents already more than 10% of the total production.

Weeds have been introduced as being natural enemy of corn field it is appropriate to mention also that, since 1962, Thailand had a great misfortune to discover in her corn belt an outbreak of an unknown locust: *Patanga succinta*. According to official records, this locust has been found last in Bombay more than 50 years ago, which caused terrible loss of crop at that time. Since the actual world has become so small, one can hardly believe that this pest has spent 50 years to cross the boundary from Bombay to Thailand. Anyway, it is now at home, as undesirable guest I agree and we have to seek ways and means to get rid of it the sooner the better. During the first year, the damage estimated in term of surface planted to corn, was more than 50,000 ha. Aerial spraying was applied and is continued every season until now. Our entomologists teams who are responsible for the control operation have located and finally identified the breeding place of the pest. It is along the natural boundary of the jungle and cultivated lands. It appears that the control could become more effective, but unfortunately the indicated areas are not accessible by vehicles. The transportation of equipment and chemicals is rendered impossible by lack of road and tract. The aerial spraying is unefficient to control because, at the early stage, the pest is on the ground protected by leaves and weeds. The problem is open and we wholeheartedly welcome those experts who are prepared to take up the challenge.

Since the three sectors of the corn development have been reviewed, success and problems inherent to the farm itself have been pointed out, a few words should be said about other step of transaction which our grain have to undergo before arriving to the main market.

In the shifting cultivation sector, we know that corn is produced in small farms which are scattered in the jungle. Normally the harvest begins in October which is the end of the wet season and some late rains may occur during that period. The farmers must bring their crop to a market place where the dealers have their shops. The transport of corn to the village and main stores by lorries will not be economic until the soil dries out more or less completely in order to stand the weight of trucks. Very often, the ways of access run across paddy field or swampy lands. In brief the crop from this sector will not appear on the market until January or February. Assuming that farmers receive for their corn grain a rate of 80 st. per kg I am really over optimistic. Those difficulties of transport must be taken into consideration and subsequent price reduction would be the normal expected result. When it was said that a family which earns 40 \$ a year is living a miserable live, what should be said now, since the transport cost will be charged to the farmers also. I am not quoting again the opinion I already expressed on this matter.

In other developed sectors, the farmers are more concerned with price speculation, with stock holding, credit facilities which are surely fascinating problems, but some time they may end up by creating serious disturbance to the general transaction similar to the one that happened last year.

I feel that I am taking too much advantage of your patience. I apologize, and hope that you have now a better idea and better knowledge about Thailand, that you may

probably add Thai corn to the list of your good old friends alongside with Siamese twin and Siamese cats, thank you.

Discussion

K. Murakami, Japan: Which sector of farmers did increase prominently in this decade?

Answer: The whole sector 3 has been developed during the last 10 years. Sectors 1 and 2 have been expanded also on small scale.

H. Ishikura, Japan: What are the major causes that the expansion of area planted to corn came to remain stagnant since around 1965?

Answer: Many reasons such as 1. Occurrence of locust in the possible expanded area. 2. Other crop: cotton has become serious competitor in the main growing area.

H. Ishikura, Japan: Don't you have any diseases on corn?

Answer: Diseases exist, but not serious economically.

V. R. Carangal, Philippines: 1. What proportion of corn is used locally? 2. Is the government moved in the exportation of corn?

Answer: 1. Domestic consumption is estimated to be less than 100,000 tons. 2. Government interferes only on advisory basis.