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The following paper has been received from the delegation of Japan in connexion with the discussion on item (ii) of document TN.64/Ce/W/1.

Trends of the Production of Wheat and Barley in Japan

1. Outline

The main characteristics of the production of wheat and barley are as follows.

(i) While the number of wheat producing households is very large, planted area per farm household is very small.

As of 1962, the number of farms producing wheat and barley was 4,198,000, and planted area per household was 0.30 hectare (many Japanese farm households produce both wheat and barley).

(ii) In Japan, a considerable amount of wheat and barley produced is for self-consumption of farmers.

(iii) Yields per hectare of wheat and barley have reached rather high levels, owing to the intensive cultivation efforts with the intensive use of labour and fertilizer.

(iv) Compared with other industries and even with other sectors of agriculture labour productivity and profitability are low for wheat and barley.

(v) In Japan two crops a year are generally harvested on most cultivated lands, and wheat and barley are produced in most cases as winter crops.

2. Changes in planted area

Planted area of wheat and barley expanded after the war with the acute food shortage, and reached 1,800,000 hectares in 1950, the highest level since the war. After 1950, it has been on the decrease keeping pace with the improvement in the food conditions in general. In 1961 a Three-Year Programme was put into effect

for diversion of crops from barley and naked barley to wheat, rapeseed and forage crops and to introduce, and encourage, the labour-saving techniques in wheat and barley production. The Programme aimed at rationalization of wheat and barley production necessitated by decrease in demand for barley and naked barley as food. Nevertheless, because of the outflow of farm labour and the rapid increase in the number of part-time farm households, planted area of wheat and barley, with relatively low profitability, showed a rapidly decreasing trend, mainly in the winter crop in paddy fields, reaching 990,000 hectares, in 1964 or only 55 per cent of the 1950 level.

Most of the fields where farmers had ceased to plant wheat and barley as winter crops have been left unplanted in winter, although in some areas cash crops such as vegetables and fruits, and forage crops such as soiling oats, soiling rye and temporary grass have been planted in their place.

(i) Wheat

Planted area of wheat expanded after 1961, when the diversion of crops from barley and naked barley to wheat, was started as a result of the decline in demand for barley and naked barley for food. After 1963, however, it has been on the sharp decrease, because of the instability of the yield, as well as of the low profitability. This trend was particularly accentuated by the worst crop in the century brought about in 1963 by the abnormally long rain in the ripening season.

(ii) Six-row barley and naked barley

Because of the food shortage, planted area of barley and naked barley showed a sharp increase after the war. After 1960, however, it declined sharply with the outflow of labour and with the diversion of crops brought about by decline of demand for barley and naked barley as food. Bad crop in 1963 had further accelerated this tendency.

(iii) Barley for brewing

Planted area of barley for brewing expanded due to the increased demand and guidance by the Government. However, it decreased slightly in 1964, due partly to the decreased harvest under the abnormally bad weather during 1963.

3. Trends of yields per hectare

Yields per hectare of wheat and barley had either increased slightly or remained constant since 1950. For a few years after 1959, however, they showed a sharp upward trend and, in recent years except in 1963, yields per hectare of wheat, barley and naked barley have been about 2.5 tons, 3 tons and 2.5 tons respectively. The increase in yields per hectare during 1959 and 1961 was attributable to the good weather and the improvement of the varieties and production techniques. Another reason was decrease of planted area in uneconomic regions. After 1962, however, the bad weather resulted in the decrease of yield per hectare. With the

average yield per hectare of 0.46 ton for naked barley, the year 1963 turned out to be the year of worst crop since 1878, when Japan started compiling statistics of production of wheat, barley and naked barley, due to the rain lasting for abnormally long period at the ripening season, and the damage by the scab which took place in the western part of Japan, bringing about a sharp decrease in the crop of naked barley in particular.

Trends of the Demand for Wheat and Barley as Food in Japan

1. Before the war, rice occupied the bulk of demand for cereals in Japan and consumption as food of wheat and polished barley was kept at a low level. Immediately after the war, however, demand for wheat and polished barley increased sharply as supply of rice fell far short of demand due to the suspended import of rice, and to the decreased domestic rice production, and wheat and polished barley became important foods supplementing rice.

From the viewpoint of supply-demand situation of cereals, the post-war years can be divided into three stages, namely, the years immediately after the war, when every kind of foodstuff was in absolute shortage; the years from 1950 to 1955 when the food conditions showed recovery; and the years after 1955 when stable food conditions have been maintained with the good domestic harvest of rice.

2. As for the wheat consumption, before 1955 when the rice supply fell short of demand, wheat was consumed mainly as a supplementary food, and the consumption of wheat was largely determined by the trends of rice supply. The position of wheat in the dietary life was thus left uncertain. The heavy rice crop in 1955 induced temporary reduction of wheat consumption. However, wheat gradually came to occupy a stable position in the food consumption along with the stabilization of the Japanese dietary life and increase of national income. With the formation of a new pattern of food consumption, wheat ceased to be merely a supplementary food. Thus, the wheat consumption has been on the modest increase since a low level in 1957, despite increases in rice consumption. In Japan wheat flour is used for various foodstuffs like bread, noodle, and cakes, and the wheat consumption in each of these fields has been recently on the increase, as the westernization of the dietary life proceeded. For instance, macaroni consumption has recently been increasing rapidly, though still quite limited at present.

3. As for polished barley, while consumed only in farm households and in some urban households in the pre-war days, it became important as a supplementary food to rice, together with wheat, and as an economical food, in the immediate post-war days. Since polished barley is consumed together with rice, as granular foods, and is more economical than rice, demand for wheat is largely influenced by supply of rice and level of income. For a few years preceding 1955 when the rice supply showed recovery and national income was on the increase, therefore, the consumption of polished barley was decreasing slowly. However, as the level of national income was still low in absolute terms, the consumption of polished barley was at a level

much higher than the pre-war days. After 1955, however, due to the increase in the rice production and in the national income, the polished barley consumption decreased sharply, becoming less than the pre-war level in 1959 and about a third of the pre-war level in 1963. For the last couple of years, on the other hand, the decreasing tendency of the polished barley consumption has been slowed down by demand for it for health reasons, though the absolute amount of consumption is on a low level.

Comments of the Japanese Government on
the Projection of Supply and Demand of Wheat and Barley

1. In accordance with what was agreed in the Joint Study of the Cereals Group, the Japanese Government wishes to outline and comment on, two sets of government estimates of agricultural demand and production. They are (a) "Long-Term Estimates of Demand and Production of Agricultural Products" prepared in 1962 and (b) "Estimates of Agricultural Supply and Demand in the period covered by the Medium-Term Economic Plan" prepared in 1964.

2. "Long-Term Estimates of Agricultural Demand and Production"

The period for which the "Long-Term Estimates" are given is ten years from 1962 to 1971. The year 1959 was taken as the base year, for in that year normal conditions prevailed in the general economy as well as in the agricultural production. "Estimates" of demand and production of wheat and barley are as follows:

(a) Wheat

(i) Estimate of demand

The annual per capita consumption of wheat in 1960 in Japan was about 26 kgs., nearly triple the pre-war figures. In the immediate post-war years, when there was an acute shortage of food, consumption of wheat increased as the supplementary food to rice, which was the main staple food in Japan. It was then estimated that consumption of wheat would either remain constant or increase slightly, due to trends in urban areas for consumption of bread to increase. However, as there was a tendency for the proportion of consumption of starchy food in the total food consumption to decrease with increase of income, it was not thought that consumption of wheat for food would increase to any large extent. However, as wheat and rice were easily substitutable with each other, it was considered inappropriate to estimate future demand for wheat simply from its income elasticity. It followed from the above that, in estimating demand for wheat, the estimate of total consumption of starchy food as well as the substitution between rice and wheat should be taken into account.

Per capita demand for wheat for food in 1971 was estimated at about 25 kgs. if the ratio between wheat and rice consumption was to remain constant, or about 30 kgs. if the ratio of wheat was to increase. Demand for wheat in 1971, based on the above estimates of per capita consumption and taking into account the increase of population, was estimated at about 3,360,000 to 3,960,000 tons, being an increase of about 20 per cent compared with 3,110,000 tons in 1959.

Demand for wheat for feed was also increasing annually and was estimated to reach 1,030,000 tons in 1971 from 310,000 tons in the base year. Total demand for wheat for food, for feed and for other purposes was estimated to add up to about 4,870,000 to 5,490,000 tons compared with 3,810,000 tons in the base year, being an increase of about 30 to 40 per cent.

(ii) Estimate of production

Planted area of wheat in Japan began to decrease in 1955, came to a standstill in 1958, remained on the same level in 1959 and 1960 and increased by 8 per cent in 1961 over the previous year, reaching 650,000 hectares. The reasons for this decrease of the planted area are outflow of labour from agricultural sector and low profitability of growing wheat. The main reason for the increase of planted area since 1955 was the diversion of crops from barley, resulting from decreased demand for barley.

There were two opposing factors at work - one factor for decreasing the area by outflow of labour and low profitability, and the other for increasing the area by diversion of crops from barley to wheat. It was also hoped that the low profitability would be improved by future increase of productivity of wheat cultivations. With due consideration for these different factors, planted area for 1971 was estimated to have increased slightly. Furthermore, yield per hectare was estimated to increase by 21 per cent due to improved technology and concentration of production in areas suitable for growing wheat. It was, therefore, estimated that the production of wheat would increase by about 26 per cent from 1,420,000 tons in the base year to 1,790,000 tons in 1971.

(b) Barley (including Naked Barley)

(i) Estimate of demand

Demand for barley for food decreased sharply, due to decreased consumption of starchy food as a whole and also to the substitution by rice. The income elasticity of demand for barley is negative, and demand for barley is expected to continue to decrease with the future rise of income. Demand for barley for feed, on the other hand, was expected to increase slightly.

Demand for barley for brewing had increased sharply and this tendency was expected to continue. Total demand for barley in 1971 was expected to show a marked decrease from that of the base year.

(ii) Estimate of production

Planted area for barley had decreased since 1954. This tendency was expected to continue until 1971.

Although yield per hectare was expected to increase slightly for the same reasons as those given for wheat, the production was estimated to decrease due to the large decrease of planted area.

3. "The Estimates of Supply and Demand for Agricultural Products" in the period covered by "Medium-Term Economic Plan"

These estimates were made in relation with the "Medium-Term Economic Plan", in preparing which, accounts were taken of the effects of rapid growth of the economy after the publication of the "Long-Term Estimates". The rapid growth of the Japanese economy since 1960 had brought about marked changes in the agricultural sector. The "Medium-Term Estimates", therefore, had strongly reflected the short-term changes in the agricultural sector in the rapidly growing economy. The period covered is from 1964 to 1968. The year 1962 is taken as the base year.

The "Medium-Term Estimates" of demand and production of wheat and barley are as follows:

(a) Wheat

(i) Estimate of demand

Two estimates were given for the annual per capita consumption of wheat for food. The high estimate was based on consumption trend from 1956 to 1962, and the low estimate was based on consumption trend from 1958 to 1962. On these calculations, total demand for wheat for food was estimated to reach 3,641,000 to 3,746,000 tons in 1968 from 3,253,000 tons in 1962. Demand for wheat for feed, on the other hand, was estimated to increase from 646,000 tons in the base year to 1,286,000 tons in 1968. Demand for wheat for other purposes was expected to remain on the 1960-62 level. Total demand for wheat was estimated to increase from 4,364,000 tons in 1960 to 5,368,000 to 5,476,000 tons in 1968. The rate of growth of demand was slightly higher than that given in the "Long-Term Estimates".

(ii) Estimate of production

Planted area of wheat again began to decrease in 1962 and, continuing this tendency, planted area was expected to decrease from 640,000 hectares in 1962 to about 460,000 hectares in 1968.

Yield per hectare was expected to increase by about 7 per cent due to improved techniques and other factors.

The production in 1968 was estimated at 1,256,000 tons, being a decrease of about 20 per cent over the base year.

(b) Barley

(i) Estimate of demand

Demand for barley for food was expected to continue to decrease. However, as demand for feed was expected to increase, the total demand, unlike the "Long-Term Estimates", was estimated to increase slightly.

(ii) Estimate of production

Planted area was estimated to decrease sharply. Although a slight increase in yield per hectare was expected, the production was estimated to decrease sharply.

4. Comments on the two "Estimates"

The national economy of Japan is again undergoing marked changes. It has recently entered a period of re-adjustment, and environments surrounding agriculture have also changed. These situations necessitated modifications on two sets of estimates described in the preceding paragraphs. In this respect, the Japanese Government wishes to make following comments on the two "Estimates".

(a) Wheat

(i) Demand

In both the "Long-Term" and "Medium-Term" Estimates, demand for wheat was estimated to increase considerably over the respective base years. The recent trend also seems to indicate that demand will continue to increase in the future.

(ii) Production

In the "Long-Term Estimates" the increase of planted area and increase of yield per hectare in 1971 over the base year were estimated at 4 per cent and 21 per cent respectively. The estimate of increased planted area does not seem to conform to the recent trend.

In the "Medium-Term Estimates", on the other hand, the percentages of planted area and yield per hectare in 1968 over the base year were estimated at 72 per cent and 107 per cent respectively. As for this decrease of planted area, it seems necessary to modify some over-estimation in our economic growth and in the outflow of labour from the agricultural sector, which formed the basis of the above estimate.

As far as the long-term trend is concerned, recent data on production seem to indicate that production will follow a slightly downward trend, falling somewhere between the two official estimates earlier described.

Japan, however, cannot leave such a trend as it is, since it would lead to social and other problems. The Government will, therefore, have to pay due and increasing attention to the problem regarding domestic production. Nevertheless, Japanese policies will be directed towards rationalization of wheat production, with more emphasis on production in main producing areas, through spreading of labour-saving production techniques, mechanization and other improved techniques, rather than towards large increase of total production.

As for Japan's access commitment, as was already stated in her Proposals, Japan, with such situations in domestic production in mind, is prepared to maintain a fair and reasonable balance between domestic production and import.

(b) Barley

Total demand for barley was estimated in the "Long-Term Estimates", to decrease, while in the "Medium-Term Estimates", it was estimated to increase.

Decreasing trend of demand for polished barley for food, notable in past years, has recently been slowing down. It is difficult to give any estimate of demand for feed barley, since general use of barley for feeding purposes is a relatively new experience in Japan.

It is indeed difficult to know at the present moment in which direction the future demand for barley will move.

WHEAT BALANCE SHEET IN JAPAN/BILAN DU BLE AU JAPON

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	Pre-War/ 1934/35 1938/39 Avant-guerre 1934/35 1938/39	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
Wheat area (1,000 ha)/Superficie en blé (milliers d'hectares)	658	735	721	686	672	663	658	617	599	601	602	649	641	584	508
Yield (M/T per ha)/Rendement (T.m. par ha)	1.88	2.03	2.13	2.00	2.26	2.21	2.09	2.16	2.14	2.36	2.54	2.74	2.54	1.23	2.45
Production	1,287	1,490	1,537	1,374	1,516	1,468	1,378	1,330	1,281	1,416	1,531	1,781	1,630	716	1,244
Change in stocks/Fluctuations des stocks	- 21	- 44	- 231	- 74	- 11	82	117	79	- 43	127	179	180	- 244	- 235	142
Foreign trade/Commerce extérieur															
Gross exports/Exportations (chiffres bruts)	394	16	175	46	-	6	1	18	18	23	47	71	93	73	68
Gross imports/Importations (chiffres bruts)	266	1,638	1,611	1,900	2,136	2,238	2,216	2,372	2,276	2,525	2,660	2,660	2,490	3,412	3,471
Available supply/Approvisionnement	1,180	3,156	3,204	3,302	2,663	3,618	3,476	3,605	3,582	3,791	3,965	4,190	4,271	4,290	4,505
Distribution															
Food (gross)/Pour alimentation (quantités brutes)	791	2,768	2,815	2,815	3,088	2,954	2,836	2,975	2,959	3,112	3,125	3,207	3,253	3,404	3,602
Extraction rate (%) / Taux d'extraction (%)	75	78	76	76	76	76	76	76	77	77	77	76	76	76	76
Food (net)/Pour alimentation (quantités nettes)	593	2,159	2,139	2,139	2,347	2,245	2,155	2,261	2,278	2,396	2,406	2,437	2,472	2,587	2,738
Other uses/Autres utilisations	389	388	389	487	575	664	640	630	623	679	840	983	1,018	886	903
Per capita consumption/Consommation par tête															
kg per year/kg par an	8.6	25.6	24.9	24.6	26.6	25.1	23.9	24.9	24.8	25.9	25.8	25.8	26.0	26.9	28.2
g per day/g par jour	23.4	69.8	68.3	67.4	72.9	68.7	65.5	68.1	68.0	70.7	70.6	70.8	71.2	73.5	77.2

- Notes: 1. Thousand metric tons unless otherwise stated./Sauf indications contraires, données exprimées en milliers de tonnes.
2. Fiscal year beginning April and ending March./Pour l'année fiscale allant d'avril à mars.
3. *Provisional./Données provisoires.

BARLEY BALANCE SHEET IN JAPAN/BILAN DE L'ORGE AU JAPON

	Pre-War 1934/35- 1938/39/ Avant-guerre 1934/35- 1938/39	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
Barley area (1,000 ha)/Superficie en orge (milliers d'hectares)	784	979	930	921	1,014	996	981	930	914	893	838	692	613	565	478
Yield (M/T per ha)/Rendement (T.m. par ha)	1.98	2.22	2.32	2.27	2.55	2.42	2.39	2.32	2.26	2.58	2.75	2.86	2.82	1.34	2.51
Production	1,555	2,169	2,158	2,091	2,583	2,408	2,343	2,159	2,067	2,308	2,301	1,976	1,726	759	1,202
Change in stocks/Fluctuations des stocks	-	147	270	- 141	- 231	- 219	200	- 17	- 16	108	- 189	- 254	- 251	- 317	64
Foreign trade/Commerce extérieur															
Gross exports/Exportations (chiffres bruts)	35	1	10	22	1	1	-	-	1	1	1	0	1	1	-
Gross imports/Importations (chiffres bruts)	14	935	1,181	773	484	681	938	829	684	315	30	0	-	414	580
Available supply/Approvisionnement	1,534	2,956	3,059	2,983	3,297	3,307	3,081	3,005	2,766	2,514	2,141	2,230	1,976	1,489	1,718
Distribution															
Food (gross)/Pour alimentation (quantités brutes)	1,039	2,365	2,437	2,360	2,513	2,503	2,271	2,203	1,983	1,765	1,308	926	790	656	671
Extraction rate (%)/Taux d'extraction (%)	79	77	72	64	62	63	62	62	62	58	58	58	57	57	54
Food (net)/Pour alimentation (quantités nettes)	817	1,812	1,746	1,516	1,563	1,576	1,417	1,371	1,227	1,026	758	536	454	375	364
Other uses/Autres utilisations	495	591	622	623	784	804	810	802	783	749	832	1,304	1,186	833	1,047
Per capita consumption/Consommation par tête															
kg per year/kg par an	11.8	21.5	20.3	17.4	17.7	17.6	15.7	15.1	13.4	11.0	8.1	5.7	4.7	3.9	3.7
g per day/g par jour	32.3	58.5	55.8	47.7	48.6	48.3	43.0	41.3	36.6	30.3	22.2	15.6	13.1	10.7	10.2

- Notes: 1. Thousand metric tons unless otherwise stated./Sauf indications contraires, données exprimées en milliers de tonnes.
2. Fiscal year beginning April and ending March./Pour l'année fiscale allant d'avril à mars.
3. Total of barley and naked barley./Total de l'orge, y compris l'orge mondé.
4. *Provisional./Données provisoires.