Section 2: Boosting demand for domestic agricultural products and promoting agricultural production based on demand

(1) Raising the food supply capacity and the food self-sufficiency rate by making the full use of paddy fields

- In order to ensure the stable supply of food on a long-term basis, raising the domestic agriculture’s food supply capacity, which is the foundation of the food supply, are the most important factors.
- Domestic agriculture, however, faces difficult problems such as the decrease in the arable land because abandoned cultivated lands are increasing, and the aging of farmers. The food self-sufficiency rate has witnessed a downward trend on a long-term basis in FY 2007: 40% in calories, and 66% in values.
- In strengthening the food supply capacity, it is necessary to ensure the preservation of agricultural resources such as arable land and irrigation, human resources, and technology, which in turn are capable of contributing to a rise in the food self-sufficiency rate.
- The demand for rice as a staple food is anticipated to decline as a result of the long-term reduction and aging of the population. Therefore, it is essential to align rice production with the demand for it.
- Aiming at the full use of domestic paddy fields, it is important to promote the full-fledged production of rice for flour, feed, and whole crop silage; the production of wheat, soybeans, and feed crops - crops that Japan is compelled to import – must also be encouraged.

Changes in the food self-sufficiency rate in Japan

![Graph showing changes in the food self-sufficiency rate in Japan]

Source: MAFF "Food Balance Sheet"

Structure of Japan’s rice paddy field

- 60% Paddy field
- 40% Diverted paddy fields

- Rice paddy fields for staple food
  - Declining trend due to the decrease and aging of the population

- Otherwise, promote the production of rice for non-staple food use such as rice flour and rice for livestock feed

Source: MAFF
(2) Increasing rice consumption including the promotion of the use of rice flour

The rice (for staple food) production acreage in 2008 was 1,596,000 ha, 43,000 ha less than that in the previous year. Although the overproduction acreage decreased for the first time since the Rice Policy Reform of 2004, it still exceeded the target acreage by 54,000 ha.

The rice policy as part of the agricultural policy reform, needs to be reviewed without prejudice, taking into account the progress farmers have made toward making the full use of the existing paddy fields.

The demand for rice bottomed out after a long-term downward trend. The demand, from July 2007 to June 2008, amounted to 8,550,000t a year, which was 170,000t (2%) more than that of the previous year. The per capita rice consumption also increased by 0.4kg in FY 2007, after a long-term downward trend.

Changes in planted area and production of rice

Per capita rice supply per year by type and year-on-year change (milled rice base)
Rice flour has come to be used for various types of processed food, thanks to the technological improvements of the flouring industry. The demand for rice flour for its use in relatively new products such as bread, noodles, and confectionary, has grown to 9,500t in the fiscal year 2008 (estimated).

Consumers’ demand for processed food made with rice flour has grown. The demand is expected to grow further, given the fact that rice flour can be used as a substitute for wheat flour made from wheat, whose imports amount to 5,000,000t a year.

In order to promote the full use of paddy fields, it is essential to expand and stabilize the demand for rice flour that is made from domestically grown rice. However, the price of rice flour needs to be lowered further in the light of the difference in prices between rice flour and wheat flour as a result of the differences in raw material prices, marketing, and manufacturing costs.

### Microscopic pictures of wheat flour and rice flour

- Conventional rice flour
- Wheat flour
- Rice flour milled by new technology

Photo credit: WeNARC

### Demand for wheat by use type (2006, estimated)

- **For bread**: 1,560,000 t
  - Conventional rice flour: 10,000 t (1%)
  - Wheat flour: 1,540,000 t (99%)

- **For noodles other than udon**: 120,000 t
  - Conventional rice flour: 40,000 t (3%)
  - Wheat flour: 1,160,000 t (97%)

- **For udon**: 610,000 t
  - Conventional rice flour: 390,000 t (64%)
  - Wheat flour: 220,000 t (36%)

- **For sweets**: 750,000 t
  - Conventional rice flour: 170,000 t (23%)
  - Wheat flour: 580,000 t (77%)

- **For domestic use**: 1,080,000 t
  - Conventional rice flour: 8,000 t (7%)
  - Wheat flour: 1,000,000 t (93%)

- **For soybean paste and soy sauce**: 160,000 t
  - Conventional rice flour: 10,000 t (6%)
  - Wheat flour: 150,000 t (94%)

Source: MAFF

### Column: History of research and development on rice flour manufacturing technology

Against the background of the rice market glut during the 1960s, the government requested the relevant industries to introduce rice flour bread. The flouring technology at the time, however, spoiled the taste of the bread, which prevented the industries from introducing it as a product. As a result, the plan broke down. Later, during the 1990s, new flour-making technologies were successfully developed, which finally enabled the versatile use of rice flour. In recent times, various processed food items have contained rice flour as an ingredient for various functional purposes.
In order to ensure the well-established use of rice flour, it is necessary to lower its prices to the level of wheat price, and further examine the production, marketing, and subsidization system. In order to accelerate rice flour use, it is necessary to select high-yielding rice varieties that are appropriate for processing, taking account of users’ evaluations. It is also necessary to develop technology that can evaluate if a rice variety is good for processing or not. The government is promoting such overarching technological development. Various efforts are bearing fruit of developing processed food using rice flour as an ingredient, including rice flour bread and others.

**Changes in the government selling price of imported wheat (weighted average of 5 major brands) and the rice price by use**

<table>
<thead>
<tr>
<th>Year</th>
<th>April</th>
<th>October</th>
<th>April</th>
<th>October</th>
<th>April</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>47,820</td>
<td>48,430</td>
<td>53,270</td>
<td>69,120</td>
<td>76,030</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64,750</td>
</tr>
</tbody>
</table>

Source: MAFF

**Various efforts to develop processed food using rice flour**

- **(Ono city, Hyogo prefecture)**
  School lunch using local rice flour (steamed rice 3 times a week, rice flour bread twice a week)

- **(Yamaga city, Kumamoto prefecture)**
  Students of a local high school, in tandem with local entrepreneurs, developed rice flour food (rice flour pizza, rice flour bread with melon flavor) and received favorable reviews.

- **(Nationwide)**
  - A convenience store sold bread made entirely of rice flour.
  - A coffee store sold roll cakes using rice flour, in tandem with a grain flour company in Hokkaido.

- **(Asahikawa city, Hokkaido)**
  Local farmers organized a company that manufactures staple food rice into rice flour. The development of new products using rice flour is underway.

- **(Sano city, Tochigi prefecture)**
  A milling company developed rice flour that could replace conventional wheat flour, and sold the flour to consumers.
(3) Improvement of the feed supply capacity and the feed self-sufficiency rate

- The feed self-sufficiency rate, which was 25% in FY2007, is projected to reach 35% in FY2015. The domestic livestock farming is facing difficulty in coping with the rising costs due to the steep rise in feed prices.
- It is vital to ensure that livestock farming is based on domestically produced feed, given the heavy dependence on feed imports. Raising the feed supply capacity, and thereby raising the self-sufficiency rate, through the promotion of feed production - whole crop silage, feed rice, and feed that originates from scrap as well as grazing - is essential.

The status quo and the targets of feed self-sufficiency rate

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Livestock farming based on domestic feed production

- Utilization of paddy field (collaboration between rice farming and livestock farming)
  - Whole crop silage
  - Paddy field gazing
  - Rice straw

- Intensive grazing
  - Reduction of feed cost
  - Reduction of labor hours

- Contractor
  - Less laborious harvesting
  - Reduction of production cost
  - Income generation

- TMR center
  - Reduction of feeding time
  - Increase of milk production
  - Expansion of operation size

- Expansion of immature cropping of maize
  - Rise in yield
  - Reduction in production cost

- Effective utilization of unused resources such as feed that originates from scrap
  - Securing various sources of feed material
  - Effective use of unused resources

Livestock farming based on domestic feed production

- Utilization of abandoned cultivated land
  - Grazing of breeding cattle
  - Reduction of feed cost
  - Preservation of farming land
  - Prevention of wildlife damage

- Expand the immature cropping of maize
  - Introduce the highly productive grazing
  - Rise in yield
  - Reduction in production cost

- Source: MAFF
- Note: TDN is Total Digestible Nutrients
- 1) TMR is “Total Mixed Ration”
- 2) DDGS is “Distiller’s Dried Grains with Solubles”
Utilizing rice as feed, which leads to the full usage of paddy fields, is becoming popular. Rice seeds, straw, and leaves can be used as whole crop silage and for other feed purposes. The aggregate planted area of whole crop silage and feed rice increased rapidly - by 2 and 36.6 times, respectively during the last four years.

The yield of whole crop silage ranges from 2,500 to 3,500kg per 10a, in the case of the feed rice varieties. Some feed rice varieties are high yielding, being projected to yield up to 700 to 800 kg per 10a, which is equivalent to 1.5 times the productivity of the rice varieties that are used as staple food.

In order to further facilitate the production of whole crop silage and feed rice, it is important to develop high-yielding varieties, decrease production costs by introducing cost-saving production technology and machinery, build up producer-user relations on a long-term basis, and ensure a stable supply of seed rice.

### Changes in planted areas of whole crop silage and feed rice

![Graph showing changes in planted areas of whole crop silage and feed rice]

Source: MAFF

### Rice varieties for feed rice

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (kg/10a, brown rice base)</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bekoaoba</td>
<td>732</td>
<td>high yielding variety suitable for heavy maturing culture</td>
</tr>
<tr>
<td>Momiroman</td>
<td>823</td>
<td>high yielding variety suitable for direct seeding, and for whole crop silage</td>
</tr>
<tr>
<td>Hokuriku 193</td>
<td>780</td>
<td>lodging-resistance and high yielding variety suitable for bio-ethanol</td>
</tr>
</tbody>
</table>

Source: MAFF

### Merits of whole crop silage and feed rice

#### For rice farmers
- Suitable for paddy field
- Same cropping pattern with ordinary rice
- Being able to prevent injuries by continuous cropping of wheat and soybean
- No need for new investment in agricultural machinery

#### For livestock farmers
- Highly nutritious and fit for feed
- Can be preserved on a long-term basis
- Can be supplied all year round and during winter
- Possible to expand operation sizes without costing labor for feed production increase

Source: MAFF
(4) Promoting agricultural production on the basis of demand

- Domestic wheat and barley production have been on an upward trend in recent years. While domestic wheat production —882,000t in 2008— has exceeded the 2015 target of 860,000t, barley production —217,000t in 2008— has fallen short of the 2015 target of 350,000t.
- Improving crops quality and matching supply to demand are the problems faced by domestic wheat and barley farmers. To this end, it is necessary to replace the current wheat varieties used for bread manufacturing with those of better quality as well as to take the surest quality control measures. Improving productivity of barley by introducing new varieties with high quality and yield as well as employing such basic cultivation technologies as drain measures is required.
- Domestic soybean production was 262,000t in 2008, almost all of which were earmarked for processed food, of which 60% is represented by tofu and boiled soybean and other side dishes account for 10%.
- In light of the decrease in the domestic soybean yield due to injury caused by exposure to excess moisture during the early growth stage and the subsequent dry condition, new technologies have been introduced in order to stabilize crop production. Examples include Soybean 300A technology, which ensures both high yield of 300 kg per 10a and high quality and the production system of preventing excess moisture and drying condition during the growth stage of soybean.

**Production of wheat and barley**

- All-inclusive cost of production per 10a of wheat
- Yield target per 10a of wheat for 2015 (right axis)
- Yield per 10a of wheat (right axis)
- Production of barley
- Production of wheat

**Production of soybeans**

- All-inclusive cost of production per 10a of soybeans
- Yield target per 10a for 2015 (right axis)
- Yield per 10a (right axis)
- Production of soybeans

**The merit of soybean 300A technology**

- Hours/10a (Labor hours)
  - Seeding without: 2.01
  - Tilling with ridging: 0.68
- kg/10a (Yield)
  - Ordinary method: 326
  - New technology: 335

-Farmers in Tokachi region, Hokkaido prefecture, harvest wheat effectively, by utilizing data collected from satellite images. The system visualizes on a map the maturity of wheat growing on each field estimated by satellite sensors, which can help both combine harvester and drying facility operate more efficiently and can contribute to higher quality of wheat grain. This technology can be used for various other purposes such as quality evaluation of rice growing on paddies and forecast of arrival in planthoppers from overseas.

Source: MAFF “Statistics on Crop” “statistical survey on farm management and economy”

Source: NARO
The demand for vegetables in the food industry is on an upward trend. Imports of vegetables peaked in 2005 and fell subsequently. In particular, imports from China decreased by 20% year-on-year in 2008. Although the market share of domestic vegetables for food processing industry is on a downward trend, 80% of industry entrepreneurs plan to increase domestic vegetable use. In order to establish a system for the stable supply of domestic vegetables, various efforts are being made such as fostering business intermediaries that function as go-betweens for farmers and food manufacturers.

The demand for fruit has been around 8,500,000t in recent years. The self-sufficiency rate, however, is on a downward trend due to the decrease in domestic production and an increase in processed fruit imports.

In order to enhance the competitiveness of domestic fruit production as per the consumer’s demand, the government has been taking measures such as support programs for fruit farming and programs to stabilize the demand and supply of fruits.

The volume of imports and self-sufficiency rates for vegetables

The volume of domestic production, the volume of imports, and self-sufficiency rates for fruits

Image of stable supply system for vegetable distribution

1. Ensures stable supply of vegetable in case of crop failure by procuring from various producing areas and by keeping stockpiles
2. Creates new markets and carries out fixed price transactions under contracts in case of bumper crop
3. Supplies vegetables in the semi-processed form such as peeled and cut vegetables in order to meet the demand
4. Offers guidance to producing areas

Image of stable supply system for vegetable distribution

Displant and regenerate fruit trees to good varieties, and abandonment of disadvantaged orchards

Items and varieties to be promoted by the programs

Improvement of small-scale orchards (paths, moderation of slope and so on)

Rate of subsidy for all: ½ and below

Rate of subsidy: fixed amount

Rate of subsidy: ½ and below

Rate of subsidy: ½ and below

Rate of subsidy: fixed amount