بررني هاري اين BRUNEL TODA SEPTEMBER 200

VOLUME 11, Number 3 Publication of Information Department







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Published By English News & Media IT Division Information Department Prime Minister's Office Brunei Darussalam BB 3510

Tel: 673 2 383400

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Printed By Asia Printers



Borneo Island is the third largest island in the world where its total area of 287,000 square miles are divided into four parts: Malaysian states of Sabah and Sarawak; Kalimantan, one of the provinces of Indonesia; and Brunei Darussalam.

Situated along the equator, the island receives abundance of rainfall, and has one of the most diverse floras in the world. Borneo has nearly 11,000 species of plants where about a third of which are indigenous. Brunei Darussalam is not exempted from sharing this speciality.

For this edition, Brunei Today will introduce some of local fruits that are indigenous to Borneo Island. Some of these fruits can also be found at our neighbouring ASEAN countries with either similar or different name. Most of these fruits are seasonal; and fruit season in Brunei Darussalam usually falls around August to December depending on the types of fruits.

Even though some of these fruits fall to same family/species but it have different appearance (example: shape and colour) and taste. Some of the fruits can also be make into end products.

BELUNU AND BINJAI: These two fruits are similar in shape but different in taste.

Belunu (Botanic name: Mangifera caesia Jack. Family: Anacardiaceae): There are two types of belunu with different sweet tastes. The tree can grow up to 40 metres high and its branches are usually long; and those make fruit-plucking difficult as the tree is hard to climb. The flowers are thick and light red in colour and the fruit is oval in shape where some are slightly round while its skin is soft and greenish in colour. The flesh once it is ripe is white in colour, soft and sweet, and also fragrant. It can also be eaten raw.

Binjai (Botanic name: Mangifera caesia Jack. Family: Anacardiaceae): It looks like belunu but its skin when it is ripe is rough and dark brown in colour. The flesh is sour and can be made into pickle. Binjai is also popular as *cacah* (dip sauce) for ambuyat (one of local famous dishes made from ambulong).

Membangan/Bembangan (Botanic name: Mangifera foetida Lour. Family: Anacardiaceae): The tree is tall and can reach to more than 15 metres high. The leaves are big and thick while its flowers are small and red. Its fruit is brown in colour and has a round shape with rough skin. The flesh is yellow and it varies from soft to rough. The fruit tastes sweet, sweet sour or sour with strong aroma. The seed is big and oval. The unripe (young) fruit can be eaten raw and made into pickle or sambal.



Other local fruits that fall under *Membangan* the family of Anacardiaceae are Mempelam (botanic name: Mangifera indica L.); Mangga Wani (botanic name: Mangifera odorata Griff.); Kedondong (botanic name: Spondias cytherea Sonn.) and Jagus/Gajus (botanic name: Anacardium occidentale L.)

DURIAN (Family: Bombacaceae): Durian is often called as the King of Fruits. The famous one is Durian Putih as it can be found outside its native countries. Some types of the durian features below can only be found in Borneo Island. Although some belong to the same family/species but the size, spine, smell, colour of the flesh and taste are different.

Durian Kuning (Durio graveolens Becc.): This durian family has the most species. Taken from Malay word 'duri' which means spine; Durian Kuning botanical's term is Durio Graveolens which comes from the family Bombacaceae that is originally found in Borneo. The fruit is round in shape with different colours ranging from light green to yellowish-red. Its spine is sharp and close to each other. The flesh also has different colours from yellow to red.

Durian Kura-kura (Durio testudinarium Becc.): According to stories of the olden days, the name of this durian derived as tortoise liked to eat it. This type of durian usually grows widely in the forest and on dry surface. The fruit grows at the main stem, rarely found at the branches. The fruit is light green colour and will turn yellowish brown once riped. Its spine is short, hard and



also sharp. Its flesh is dry, not too sweet, can be made as vegetable and has a strong smell like onion.

Durian Merangang (Durio dulcis Becc.): Another wild species of durian that can be found in Borneo. The tree grows up to 45 metres high and

the fruit is mildly round shape. The spine is long, close to each other with dark red colour and has black marks at the tip. Once it is ripe, the fruit can be easily opened. The flesh is thick, yellow

coloured, not too sweet and has shiny black seeds. The ripe fruit gives out heavy turpentine smell where its seeds can be eaten by boiling or roasting.

Durian Otak Nanggalah (Durio graveolens Becc): Belongs to graveleons durian from the family Bombacaceae. The name 'otak nanggalah' is given as the colour of its flesh is similar to the colour of otak udang galah (the brain of the fresh water prawn). This durian can grow wildly in the forest but also planted in orchard. Its tree resembles those of Durian Kuning which is buttress and can grow up to 45 metres high. The upper side of the leaves is green and shiny; the lower part is brownish with scaly gold. The fruit is round in shape, the colour range from light green

to orange with sharp spine. The fill is reddish orange and dark red, and it taste sweet and tasty (lemak manis).

Durian Pulu/Kulu

(Durio kutejensis Becc.): This durian is also listed under the family of Bombacaceae. The tree is small to middle size with the height up to 18 metres but has many branches and normally









* from page 3 (Local fruits)

found at highland. The leaves are wide, green and shiny at upper side and light yellow at the bottom. The shape is small, oval with short spines which are not sharp and can easily be opened. The flesh are sometimes yellow or pale yellow and non-sticky. The taste is sweet and different, and less fragrant from other durians. Durian Pulu also has the potential for commercial farming.

Durian Simpur (Durio Graveolens Becc.): This durian usually grows at the edges of the hill. The trees are tall like Durian Kuning. The flesh is bright yellow in colour, fragrant, sweet and tasty like cheese. For those who likes less fragrant durian, Durian Simpur is the best choice.

Durian Sukang (Durio oxleyanus Griffith): Durian Sukang's trees are straight, tall and can reach up to a maximum of 40 metres high. The leaves are green at top and hairy with golden vein. It usually grows at damp areas but can also live at highland. The shape is round, green in colour with long slightly curl sharp spines. The flesh is tasty, pale yellow or white in colour with strong fragrant.

Durian Putih (Durio zibethinus Murr.): Durian Putih is the most famous among durians. It is commercially cultivated on a large scale in some countries due to its popularity. The trees are tall with brownish-grey cascara, and able to grow to more than 40

metres high. Its leaves are oval, shiny at top and greyish - silver or dark bronze colour at bottom. The shape different when is compared to other species of durian. The flesh is white with heavy odour and can be made into cakes, tempoyak (fermented durian) and icecream.



Below are more fruits that can be found in Borneo;



Kembayau (Botanic name: Canarium Odontophyllum. Family: Borneo's Burseraceae): It is indigenous fruit which can grow wildly or cultivated in orchard. The trees are medium to large size and can grow up to 25 metres tall. The trees which are cultivated from the seed usually can produce fruits in six to seven years. The (young) fruit

is white in colour and it will be plucked once it has turned black in colour. The flesh of Kembayau is yellow, taste like cheese and usually dipped with salt or sugar. The fruit is cooked by pouring boiling water and immersed for several minutes but do not boil the Kembayau in water. The seed of Kembayau is hard but it has a flesh which can be eaten.



Tampoi (Botanic name: Baccaurea griffithii Hook f. Family: Euphorbiaceae): Tampoi's tree can reach from six to 20 metres tall. The leaves are medium size, thick and linear-ellipse shaped; the upper side is shiny green and lower part is light green. The fruits are medium size, almost round shape with dint at the top while the skin is yellowish to orange colour. The flesh is creamy white



in colour, medium thick and stick to the seeds. The ripe fruit can be eaten raw.

Rambai (Botanic name: Baccaurea motleyana Muell Agr. Family: Euphorbiaceae): The biggest tree that can reach up to 20 metres tall and leafy. The leaves are big, thick and linearellipse shaped; the upper side is smooth and lower part has tiny hair while its flowers are small and yellow. The fruits are small, oval and bright-yellow. The flesh are colourless, juicy and stick to the seeds.

Limpaung (Botanic name: Baccaurea lanceolate Family: Euphorbiaceae): This fruit is usually found in the jungle. Oval like an egg and slightly bigger than a golf ball. The skin is thick and light orange in colour. The pulps are divided into four space in white colour and taste sour and bitter. The ripe fruit is fragrant and usually used as seasoning in dishes that require sour taste. Limpaung can also be eaten raw.



Manggis (Botanic name: Garcinia mangostana L. Family: Guttiferae): Mangosteen tree can grow up to 10-25 metres tall. The flower is white with broad leaves. The fruit is round, smaller than mandarin orange and weight around 75-100 gram. The skin

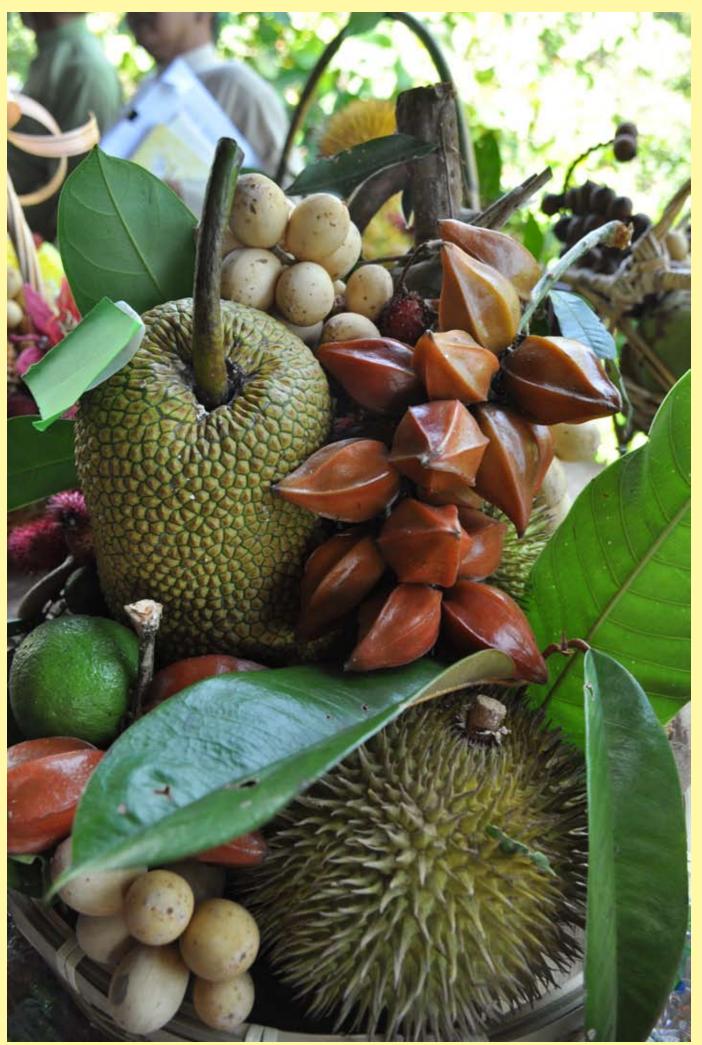


is thick and shiny green (unripe) and change to red when it is starting to ripe and finally purple once ripe. The calyx remains green and joint by the short peduncle. The hard skin can be easily opened when pressed with both hands. The flesh are white like watery orange pulp, sweet and tasty.

Another fruit that belongs to Guttiferae family is Asam Aur-aur (Garcinia parvifolia).

Pengalaban (Botanic name: Litsea garciae Vidal Family: Lauraceae): The tree is usually medium with a height of 10-15 metres. The leaves' shape are ellipse or lanceolate, green at the surface and light green at the bottom. The fruits are round greenish cream and shiny when young and turn shiny pink when ripe and taste like avocado. The ripe fruit can be eaten raw.

Jering (botanic name: Pithecellobium jeringa Prain) and Petai (botanic name: Parkia speciosa Hassk.) belong to the family of Leguminosae where Jering trees can reach up to 10 metres. The fruits are dark purple and taste bitter. Meanwhile Petai tree can grow up to 30 metres high. The fruits are green with long bean shapes with a length of about 25-30 centimetres. It can be eaten raw, make into (chilli paste) or cooked. Both of these fruits are also known for its strong smell.



A basket full of local fruits for a fruit decoration competition.

* from page 4 (Local fruits)

Langsat (botanic name: Lansium domesticum Corr.) and Duku (Lansium domesticum Corr.) belong to family of Meliaceae where Langsat trees are usually medium in size with the height of less than 10 metres. The leaves are pinnate and ellipse shaped. The fruits are oval with yellowish thin skin.

The flesh are white and taste sweet or sweet sour and can be eaten fresh. Duku trees can reach the height of five to eight metres. The fruits are round shaped, thick skin and non-sticky and the size is bigger than langsat. The



Langsat

than langsat. The *Duku* flesh are white, taste sweet and can be eaten fresh.



Tarap (Botanic name: Artocarpus odoratissimus Blanco. Family: Moraceae): The tree can reach up to 25 metres. The leaves are ellipse shape with tiny hairs and flowers divided into male and female. The fruits are round to oval s h a p e,

greenish yellow colours. The ripe fruit has strong fragrance and can easily be opened. The flesh are sweet and tasty with small seeds. The ripe

fruit can be eaten raw or make into cucur

(fritters) while the raw fruit can be cooked as vegetables and the seeds can be fried like nuts.

Kemangsi (Botanic name: Artocarpus altilis (Park.), Fosb. Family: Moraceae): It can grow in housing compound. The unripe fruit is green, rough and commonly cooked with coconut milk. The seeds of unripe fruit are tasty, soft and taste like nut. When ripe, the seeds are fully-packed. The seeds which contain starch can be eaten by boiling and roasting where they taste like chestnut. In the olden days, Bruneian made the seed as starch and flour for making local delicacies.

Also come under the family of Moraceae are Cempedak or locally known as Tibadak (botanic name: Artocarpus integer

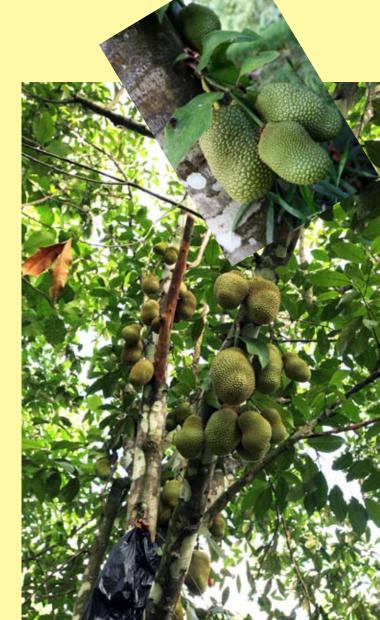


(thumb.) Merr.); Sukun (botanic name: Artocarpus communis Fost.); and Nangka (botanic name: Artocarpus heterophyllus Lam.) Matakucing or Mahau (Botanic name: Euphoria malaiense (Griff) Steud. Family: Sapindaceae): The tree which is cultivated from the seed can give fruits within five to seven years. The tree can reach up to 20 metres. The fruits look like longan but slightly smaller. The flesh is colourless, medium thick and taste sweet.

Rambutan (botanic name: Nephelium lapacceum L) and Pulasan (botanic name:Nephelium mutabile Bl.) also belong to the same family of Sapindaceae.



Pulasan



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Tamu Kianggeh in Bandar Seri Begawan is one of the best places to find local fruits.

Local fruits are normally sold at an affordable price during the fruit season.

A NINY DOGIT

Note: Some of the contents are extracted from 'Buku Panduan Buah-buahan Brunei Darussalam' published by Department of Agriculture, Ministry of Industry and Primary Resources (Year 2008)

Towards Self-Sufficiency

Kando

Lot Sengkuang - 100

Labi Baru - 260ha

in Rice Production



B runei Darussalam marked a historic moment in its agricultural sector on April 27, 2009 with the planting of its very own Beras Laila.

Beras Laila which was formerly known as BDR1 was launched by His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, The Sultan and Yang Di-Pertuan of Brunei Darussalam who consented to plant the paddy and on August 4, His Majesty attended the inaugural harvesting of Beras Laila.

The introduction of Beras Laila to the nation is one of the measures of the Government of His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam through the Department of Agriculture, Ministry of Industry and Primary Resources (MIPR) to support the call made by His Majesty for food security and mainly on 'towards self-sufficiency in rice production'.

"...If a rice producing country that already has capability to achieve 70 per cent of its domestic rice requirements is still striving to formulate policies to achieve 100 per cent self-sufficiency, why is it that we, only achieving at 3.12 per cent not exerting enough effort to increase our national rice production? If I may recall, I have been emphasising on this matter for the past years. It is most appropriate now that we should have our own strategic plan and national agriculture policy, amongst other things, that will guarantee national food security as one of it strategies..."

Excerpt from His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam's titah (royal speech) in conjunction with His Majesty's 62nd birthday on July 15, 2008.

As several factors that contribute to the low level of rice production had been identified, the production of rice domestically is showing positive trend and the numbers of paddy field has been increasing.

In 2003, local rice production was 547 metric tonnes which equaled to 1.8 per cent of self-sufficiency and this figure grew to 2.0 per cent in 2004, 2.7 per cent in 2005, 2.9 per cent in 2006 and to 3.2 per cent in 2007.

Year 2007 showed that Brunei Darussalam produced 982.90 metric tonnes and the paddy fields' acreage were 1,355 hectares with 1,233 farmers.

The largest paddy fields' acreage were in Belait District (469.10 hectares), followed by Temburong District with 382.40 hectares, Brunei-Muara District with 310.50 hectares and Tutong with 192.57 hectares.

These numbers also reflected the amount of production as Belait District emerged as the top producer with 344.73 metric tonnes, Temburong District with 264.52 metric tonnes, 224.02 metric tonnes by Brunei-Muara District and Tutong District with 149.71 metric tonnes.

With the call made by His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam for self-sufficiency in rice production, the government through Department of Agriculture had prepared directions and targets to achieve.

The directions are:

- To increase the production of rice from 3.12 per cent in 2007 to 20 per cent and 60 per cent in 2010 and 2015 respectively;
- To produce the local rice production in order to reduce the dependence on imported rice;
- To produce rice that is acceptable to people's taste in this country;
- To increase the farmers' income through increase in rice production;
- To increase local production per hectare of rice fields through the use of high-yielding varieties suitable to be planted in the country;
- To carry out campaign to reduce the rice content in the people's diet in this country and to encourage a healthy lifestyle by reducing the intake of carbohydrates; and
- To encourage the private sector to participate in rice farming.

Brunei Darussalam will achieve the self-sufficiency targets through the following factors:

- Suitability of land for rice planting and taking into consideration of the Heart of Borneo's initiatives and the development projects undertaken by the National Master Plan;
- Utilising high yield rice varieties and annual double cropping (six metric tonnes per hectare per annum); and
- Construction of farm infrastructure such as drainage and irrigation.

Planning are also been made in order to achieve the target. The planning is divided into Short and Mid-Term.

The short term planning has been conducted beginning end of year 2008 and carried out until 2010 that is target of 20 per cent self-sufficiency (5,800 metric tonnes). This plan of action consists of four aspects:

- 1. Switching from the traditional varieties to high-yield varieties (HYV);
- Opening of new areas of 4,904 hectares at Buau, Kandol, Labi Baru and Lot Sengkuang in Belait District and Limau Manis in Brunei-Muara District.

* continue on page 12

One of the paddy fields in Temburong District.





Paddy Laila on display at the Agriculture and Agrifood Exposition (top right and left pictures).

Pictures A, B, C show His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam planting the paddy using the conventional and modern method. His Majesty consented to harvest Beras Laila on August 4, 2009.

A



Some of the tractors used for paddy plantation.

The usage of machinery for harvesting saves time and provides solution for limited human resources.



* from page 10

(Towards Self-Sufficiency in Rice Production)

- iii. Upgrading of existing infrastructure; and
- 1V. Conducting related courses to Agriculture Department staff and participating farmers.

Meanwhile, the mid-term planning shall be conducted from 2011 – 2015. The target for the mid-term plan is to increase local rice production to 60 per cent self-sufficiency (18,000 metric tonnes). The mid-term plan of action includes three aspects, namely:

- Upgrading the farm infrastructure in the newly opened 1. areas as stated in the short-term plan.
- ii. Planting of annual double cropping HYV rice in all farms.
- iii. Continuing effort in upgrading the technology and human resource capacity.

The department also introduces development strategies and attributes

The Development Strategies among others includes the

formation of a Management Committee to develop national commercial rice plantation projects; to establish a joint program with private sector and stakeholders including small industrial and commercial enterprise; and to enhance and upgrade rice farms infrastructure in this country in line with modern technological applications.

Also given focus are research and development (R&D) and human development.

Among the matters included in the Development Attributes is the utilisation of high-yielding varieties of rice per hectare. However the use of local varieties is still allowed in supplementary production for niche market.

Another attribute is the implementation of large scale commercial production of rice. At the same time, existing farmers shall continue to be encouraged to increase their productivity and also to upgrade the capacity in R&D.

The department also outlines seven action plans which * Continue on page 14

Did You Know that... Beras Laila, according to Department of Agriculture; contains micronutrients, carbohydrates, low fibre and higher levels of protein. It has similar quality to other locally-produced rice such as Beras Pulut and Beras Adan in terms of energy, fat and carbohydrates and fibre content. Meanwhile the protein content in Beras Laila is higher

compared to other locally-produced rice. The production of this new rice/

variety has been carried out by Department of Agriculture and several paddy farmers since year 2006. It is discovered that the performance and yield of this variety is satisfactory with around three metric tonnes per hectares compared to the current variety which produce about only one metric tonne per hectare.

The Beras Laila is from low types, sturdy and can be planted twice a year. Beras Laila was formerly known as Brunei Darussalam Rice One (BDR1) that originated from International Rice Research Institute of Republic of Philippines.

* from page 13

(Towards Self-Sufficiency in Rice Production)

among others touched on upgrading of farm infrastructure and management.

To achieve the target, the Department of Agriculture also has the granting of incentives like the supply of free seeds for the first round of planting and basic farm infrastructure.

Also outlined are the issues and challenges such as R&D, labour issues, human resource development, development of adequate infrastructure, development of paddy disease control system and health issues and others.

What is food security?

Food security can be divided into three categories:

- 1. Availability of Food: The availability of sufficient quantities of appropriate quality of food, supplied through domestic production or imports (including food aids).
- 2. Accessibility of Food: Access by an individual to adequate resources to acquire food for a nutritious diet.
- Edibility of Food: Utilisation of food through adequate diet, clean water, sanitation and health care to reach state of nutritional well-being where all physiological needs are met.

In Brunei Darussalam, food security focuses more on rice since it is the staple food of its people. There are various government agencies responsible for food security issues and each plays different roles:

- Production of local rice and other commodities: Department of Agriculture; and Department of Fisheries, MIPR – Coordination of Local Rice Production.
- Importation of Rice: Department of Information Technology and State Store, Ministry of Finance – Import, storage and supply of rice.

- Assistance in Controlling the Cost of Production of Local Rice: Department of Agriculture, MIPR

 Agriculture Incentives Scheme to assist in the cost of production and the impact of market price control of locally produces rice.
- Price control: Department of Economic Planning and Development, Prime Minister's Office – to enforce the Brunei Darussalam Price Control Act CAP 142.
- Sale and Purchase of Rice Policy: Department of Information Technology and State Store and Royal Customs and Excise Department, Ministry of Finance; and Department of Economic Planning and Development, Prime Minister's Office - Price Control on imported rice, control of rice imports and control sale of imported rice.
- Ensuring Food Safety: Department of Health Services, Ministry of Health – Enforcement of the Public Health (Food) Order.
- Ensuring Intake of Halal Food: Halal Food Control Division, Public Health (Food) Order, Syariah Affairs Department, Ministry of Religious Affairs; State's Mufti Department, Prime Minister's Office – Halal Label and Halal Permit under the Halal Meat Act, CAP183 and Certificate and Permit under the Halal Certificate and Halal Label Order 2005; to issue 'fatwa' on issues relating to Halal products.
- Food Analysis Services: Department of Agriculture, MIPR – to provide food analysis services for updates on foods that are safe to eat.

Currently Brunei Darussalam through Department of Information Technology and State Store, Ministry of Finance imports rice from Thailand under a long term contract with Brusiam Food Alliance Company Limited (BFACL).

Rice Imports Statistic for year 2007 showed that Brunei's

Newly harvested paddies are collected inside a 'takiding' (one of the traditional basket) for easy transportation from the field to collection hut.

One of the traditional methods still practiced today, drying the paddies under direct sunlight. Picture shows a mother and daughter wearing 'siraung' (traditional hat made of leaves) where it provides shade from the sun when planting or harvesting the paddy.

total imports of rice were 29, 252 metric tonnes.

Towards Self-Sufficiency in National Rice Production, the Department of Agriculture has outlined eight particulars as references; that are background, vision, directions and targets, development strategies, development attributes, the granting of incentives and issues and challenges.

For background, there are several factors indentified that contribute to the low level of rice production:

- Insufficient infrastructure with respect to irrigation system, drainage and irrigation;
- The rice varieties grown are of traditional types (Pusu, Adan and Bario), which are low yielding averaging about 1 -2 metric tonnes and can only be planted once a year;
- The strategic direction agriculture which focuses on development and growth of agri-business;
- Land sites which take a long time to be gazetted;
- The lack of interests among the local people to do rice farming as a result of migration from the rural to urban areas in search for more attractive livelihood;
- High production costs which do not guarantee a good profits; and
- Lack of policy that supports the development of agriculture in the rural areas, especially in the area of rice production industry.

To overcome the factors, a vision of the national rice production program is made to increase the level of food security from the following aspects:

- To ensure that the level of local commodity production is adequate, available and sustainable;
- To ensure a reasonable market price so that all levels of society can afford to purchase rice; and
 - To ensure the continuous and accessible supply of food.

The paddies are dried under direct sunlight to avoid the rice (beras) from easily spoilt when stored.

Family members are seen to gather and work together during harvesting season making the atmosphere a lively and cheerful event.



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