Rice Growing Outlook activity in AFSIS

- by using satellite meteorological information -

ASEAN Food Security Information System
Technical Advisor
Shoji Kimura
Introduction of AFSIS (ASEAN Food Security Information System)
as a subsidiary body under AMAF +3

AMAF : ASEAN Ministerial Meeting on Agricultural Forestry
13 member countries (10 ASEAN countries + China, Japan, Korea)

Objective

To strengthen food security in the region through the systematic collection, analysis and dissemination of food security related information.
Development of Food Security Information in ASEAN

**VISION**

**MISSION**

**Administrative activity**
- DG –FP Meeting
- Management of training and workshop
- Annual Report
- Accounting
- Others

**Development of Information network**
- AFSIS Data base
- ACO Report
- EWI Report
- Others

**Development of Human capacity**
- Training
- Mutual technical cooperation
- Seminar, Workshop
- Others

**Development of Agricultural statistics research**
- ALIS
- Forecasting Model Information
- **Rice growing outlook**
- Others
“Global Agricultural GEO monitoring initiative”

Satellite weather information website (JASMIN and Warning Information)

Report

Information check

Making monthly rice growing outlook

AFSIS

GEOGLAM

AMIS

JAXA RESTEC

Asia-Rice

Thailand Indonesia Vietnam Philippines Cambodia Lao PDR Myanmar

Report

Report

Report
Rice Growing Outlook Report
August 2018

Overview

In the Northern side of SE-Asia, the wet season rice is in the maturing stage from tillering stage. And the harvesting also starts in some area which planted in early time. The growing condition is concern in many areas which suffered flood damage by heavy rain due to the influence of several typhoons and tropical depressions. On the other hand, the growing and harvesting condition which is not in flooding area is generally good condition due to enough irrigation water and sunshine. Late last month, Laos was hit by dam accident. The damaged planted area by this accident extended into around 2300 ha, 13 villages.

In the Southern side of SE-Asia (Indonesia), the total planting condition of dry season rice still keeps low level due to less precipitation. There are some drought damage in Java, but no caused of significant damage to rice growing by the using of pumping irrigation.

Cambodia

This month is the highest planting month of wet season rice and the planted area has reached to 94% of the national plan. The planting work seems to be faster than last year. There is the report about the flood due to heavy rain from North western to lowland areas of Melong basin which has spread to the field of wet season rice around 9 thousands ha. While the early wet rice is maturing stage for harvesting time. The yield is estimated around 4.12t/ha.

Indonesia

This month is the fifth of planting dry season rice. The total planting condition still keeps low level due to less precipitation. This lack of irrigation water condition seems to be recovered somewhat in Java, Sumatra and Sulawesi islands due to the creation of irrigation system using pump from water well or irrigation channels. There are some drought damage in Java but no caused of significant damage to rice growing.

Meanwhile, the harvesting of dry season rice start, but it is delay than last year. The yield is expected to be higher than last year due to enough sunlight during growing period.

Laos

The planted area of wet season rice came up approximately 722 thousand ha (88% of production plan). The main growing condition is in the transplanting stage. Late half of last month, the serious flood situation was caused by heavy rain and storm outbreak to paddy field from the middle to south area. This flood affected 85 thousand ha, over 8 provinces, 57 districts, and 1,470 villages. The serious damage area amounted to approximately 24 thousand ha, which is 3% of planted area. In addition, the upland rice which is in tillering stage also damaged by heavy rain and storm outbreak.

Beside the dam accident in Attapeu province suffered damage around 2300 ha planted area, 13 villages.

Precipitation map by JASMIn: Heavy rain hit the middle of Laos in late July.
Myanmar

Up to August 2018, it has been planted for about 4.22 million ha of wet season rice, accounting for 68% of the national plan (6.21 million hectares). The progress of planting is similar to the last year. 4

During this month, the rice fields from delta and river basin areas were suffered by flood again due to heavy rain. Over 78 thousand ha of wet season rice were affected and about 48 thousand ha were damaged from flood. Among of them, wet season rice were replanted for more than 30 thousand ha. In addition, golden apple snails (GAS) caused the damage with seedlings in flooded area. 4

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Thailand

The wet season rice is in the tillering stage. The tropical depression over the South China Sea brought down the continuous rains with isolated heavy rain in the Northeast and the North region. This situation caused flash flooding in many places and affected to some of rice fields in the Northeast region. 4

The growing condition of wet season rice which is not in flooding area is in good condition with proper amount of precipitation and good weather. The planted area is slightly decrease than last planted area (9.43 million ha) with enough rainfall. However, some farmers changed to another crops such as sugarcane, cassava vegetable, sweet corn maize due to farmers’ dissatisfaction on paddy farm gate price last year. 4

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Philippines

Wet season rice planted during the period of April – May is currently in the maturing up to the harvesting stage. During the past month, the weather condition which affected the country were the Southwest monsoon, low pressure areas, and four (4) tropical cyclones. These caused more damages to wet season rice plantings particularly in Luzon and some parts of Visayas. 4

The harvesting of wet season rice is expected to be poor due to the occurrence of consecutive unfavorable weather conditions. Also, delayed plantings were recently reported in Luzon, Western Visayas, and some parts of Mindanao due to late releasing of irrigation water. 4

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Vietnam

In the North, the sown area of the wet season rice is 1.09 million ha, and it accounts for 97.7% of the last year because the growth of last dry season rice prolonged due to low temperature during the early growing stage. 4

In the South, the sown area of the wet season rice is 2.26 million ha, and it accounts for 93.6% of the last year. The growing condition is generally good. Some provinces in the South already have harvested 0.5 million ha. The harvest of the wet season rice is delayed due to rain storm. 4
This is the **JASMIN**

**JASMIN** is a web-system developed by JAXA and distributes satellite meteorological data as country map image and time series graph of all provinces.
**Date characteristics of JASMIN**

JASMIN provides seven types of satellite observation weather data and they are updated twice a month.

### Data Source and Spatial Resolution

<table>
<thead>
<tr>
<th>Product</th>
<th>Units</th>
<th>Spatial Resolution</th>
<th>Satellite Data(Product)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precipitation</td>
<td>mm</td>
<td>10km</td>
<td>GCOM-W, GPM, Himawari etc. (GSMaP Ver.5)</td>
</tr>
<tr>
<td>Drought Index</td>
<td>unitless</td>
<td>10km</td>
<td>MTSAT, GCOM-W, GPM etc. (KBDI by IIS, U. Tokyo)</td>
</tr>
<tr>
<td>Soil Moisture</td>
<td>%vol</td>
<td>30km</td>
<td>AMSR-E, AMSR2</td>
</tr>
<tr>
<td>Land Water Index</td>
<td>unitless</td>
<td>10km</td>
<td>AMSR-E, AMSR2</td>
</tr>
<tr>
<td>Solar Radiation</td>
<td>W/m²</td>
<td>5km</td>
<td>MODIS (JASMES)</td>
</tr>
<tr>
<td>Surface Temperature</td>
<td>degrees Celcius</td>
<td>5km</td>
<td>MODIS (MOD11C1/MYD11C1)</td>
</tr>
<tr>
<td>Vegetation Index</td>
<td>unitless</td>
<td>5km</td>
<td>MODIS (JASMES)</td>
</tr>
</tbody>
</table>
JASMIN Demonstration will be performed on September 17th at 10 o’clock, Morning Session
Rice growing outlook needs the functional weather data

Rice Growing outlook is character information established by “When, Where, Who, What, Why, How, How much”.

(For example)

The rice growing condition in the northern region of
(Who) (What) (Where)
June is good than last year due to enough rain.
(When)(How) (How much) (Why)

※The outlook writer needs to recognize that the outlook value without “Why” description becomes half.
“Why” is not only weather condition, but........

Yield Requisites of RICE

<table>
<thead>
<tr>
<th>Requisite</th>
<th>Main Phenomenon or Event</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Good (High)</td>
</tr>
<tr>
<td>Agricultural Technology</td>
<td>• Irrigation</td>
<td>Increase in yield</td>
</tr>
<tr>
<td></td>
<td>• Breed improvement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fertilizer, Agricultural chemical</td>
<td>Poor (Low)</td>
</tr>
<tr>
<td></td>
<td>• Agricultural machine</td>
<td>Non-increase in yield</td>
</tr>
<tr>
<td>Motivation of Farmer</td>
<td>• Market price</td>
<td>High fertilization management</td>
</tr>
<tr>
<td></td>
<td>• Agriculture policy (Subsidies)</td>
<td>Low fertilization management</td>
</tr>
<tr>
<td>Weather Condition</td>
<td>• Precipitation</td>
<td>Good harvest</td>
</tr>
<tr>
<td></td>
<td>• Solar Radiation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Temperature</td>
<td>Poor harvest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Weather disaster</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Growth injury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Other damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(disease and insect)</td>
</tr>
<tr>
<td>Others</td>
<td>• Field capacity</td>
<td>High yield</td>
</tr>
<tr>
<td></td>
<td>• Field environment</td>
<td>Low yield</td>
</tr>
</tbody>
</table>

It is not an external factor

should be considered as a long-term directly represented by the increase in planted area
What kind of weather condition is good for rice growing?
Rice yield is decided by “Number of panicle”, “Number of grain” and “Weight of grain”. The multiplications of these three components become the final rice yield.

The assessment of rice growing and yield is to assess the attributes of these three components which are affected by the weather condition.
Growing assessment by using weather information

- **Seeding Stage**
  - Many Number of panicle
  - Enough Solar radiation

- **Tillering Stage**
  - Many Number of grain
  - Enough Precipitation

- **Young Panicle Forming Stage**
  - Heavy Weight of grain
  - Enough Precipitation

- **Grain Filling Stage**
  - = Good yield
  - Enough Solar radiation

- **Harvesting**
<table>
<thead>
<tr>
<th>Country</th>
<th>Season</th>
<th>Seeding</th>
<th>Harvesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Philippines</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>North</td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>South</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Myanmar</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td></td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Wet</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
<tr>
<td>Java</td>
<td>Dry</td>
<td>Seeding</td>
<td>Harvesting</td>
</tr>
</tbody>
</table>
Study, Hear, Look, Check
for the Rice Growing Assessment

Assess the growing!

Check weather condition

Hear opinion

Local Office

Farmer

Look field condition

Study crop science
How to decipher JASMIN Map

2011 July Second half precipitation Current Map
How to decipher JASMIN Map

2011 July Second half soil moisture Current Map

2011/07/16 – 2011/07/31
How to decipher JASMIN Map

2010 September First half precipitation Current Map

2011/09/01 – 2011/09/15
How to decipher JASMIN Map

2011, 2017 September First half Soil Moisture Current Map
How to decipher JASMIN Map

2011 September Second half Soil Moisture Current Map
How to decipher
JASMIN Time Series Graph
How to decipher
JASMIN Time Series Graph

Vietnam: Ha Noi

Surface Temperature (deg.C)

Jan 2018  Mar 2018  May 2018  Jul 2018  Sep 2018  Nov 2018

2018
2017
Climate
AFSIS would like to thank every institutions
Yield feature of rice

Yield and Coefficient Variation by Production countries

Rice yield /10a

Wheat yield /10a

Average Coefficient Variation by Countries: 4.8%

Average Coefficient Variation by Countries: 10.5%

1. Rice yield is hardly influenced by yield requisites like agricultural technology and farmer’s motivation.
2. And the year’s variation of rice yield is small.