

How to Write Maize Growing Outlook

Outline of Crop Science
(Relationship Between Weather
and Maize Growing Condition)

*Guidelines for Interpreting
the Agrometeorological data for
Maize Growing Outlook (MGO)*

*Project for Strengthening ASEAN Food Security
Information System Function for Emergency
(SAFER project)*



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PREFACE

This guidebook has been prepared as a working reference document for officials of ASEAN member countries to support the preparation of the Maize Growing Outlook (MGO) Report, under the Project for Strengthening ASEAN Food Security Information System Function for Emergency (SAFER Project), implemented by the ASEAN Food Security Information System (AFSIS) Secretariat.

The document aims to serve as a practical resource, offering guidance, methodologies, and standardized approaches that can be applied during data collection, analysis, and reporting processes for MGO. It is intended not only as a technical manual but also as a capacity-building tool to strengthen collaboration, harmonization, and knowledge-sharing among ASEAN member states in ensuring regional food security.

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AFSIS Secretariat would like to express our sincere gratitude to the individuals and partner organizations who contributed their time, expertise, and resources to the preparation and publication of this guidebook. Special appreciation is also extended to ASEAN member countries for their active participation and commitment in strengthening the regional food security information system. It is our hope that this guidebook will serve as a useful reference and a foundation for future improvements in agricultural monitoring, reporting, and policy decision-making.

Dr. Sumanya Ngandee (PhD)
AFSIS Manager

MAIZE IN MGO ACTIVITY

Typical maize varieties include sweet corn and popcorn for food, dent corn and flint corn mainly for feed and starch, as well as other varieties such as waxy corn and soft corn. Silage corn, however, is classified by use rather than by variety. This means that maize encompasses a wide range of varieties and purposes.

The primary consideration is determining which types of maize should be included in the Maize Growing Outlook (MGO). For the purpose of this guide, maize whose production can be statistically estimated based on dry weight is defined as maize for the MGO.

In Southeast Asia, where maize is not a staple food, sweet corn is classified as a vegetable. Silage corn is primarily used as feed, but since its yield is assessed based on the entire biomass, so the yield condition cannot be evaluated appropriately based on the dry weight of the grain. Therefore, we will define the maize in MGO activity as follows.



Maize subject to MGO refers to dried grains, excluding sweet corn/green corn used for silage and immature corn for food consumption. The use of dried grains is not restricted and they can be used for all purposes, including feed, cornmeal, cornstarch, corn syrup, corn oil, alcohol, and biofuels. For MGO purposes, yield (production) is defined as the dry grain weight, with the drying ratio applied in accordance with the standard of each respective country.

This definition is derived from references to various organizations and literature that have been established in consultation with the Ministry of Agriculture, Forestry, and Fisheries (MAFF) of Japan. The key criterion is whether the weight of the dry grain can be measured. As indicated in the definition, the drying rate, which serves as the basis for determining maize weight, follows the standards set by each country. For reference, a general guideline on the drying rate of maize is provided below.

Maize is typically harvested after reaching maturity, at which point the moisture content generally ranges between 20–30%. For safe storage, however, the optimum moisture content is approximately 14–15%.

MAIZE BASIC CROP SCIENCE

To begin, let's create an image of maize. For those of you who are Rice Growing Outlook (RGO) writers, you are probably aware that preparing an Outlook requires comprehensive knowledge and skills. In the case of maize, this section provides a summary of the basic crop science that MGO writers should be familiar with. However, please note that this is a general explanation to support understanding of maize growth. Cultivation methods and growth rates of maize may vary depending on the variety and growing environment. Although the amount of research literature on maize is not as extensive as that on rice, Outlook writers are encouraged to strengthen their expertise through interviews with research institutions and farmers, as well as on-the-job training.

The standard planting spacing for maize is approximately 30 cm between plants within a row and 90 cm between rows. Under this arrangement, an estimated 55,000 to 88,000 plants can be cultivated per hectare.

Every maize plant has both male and female organs, which are described as follows:



Male Organ

The male organ, known as the tassel, emerges at the top of the plant after all leaves have fully developed. The tassel contains many small flowers, each of which produces pollen.

Female Organ

The female organ, called the ear, develops from the nodes of the stalk, and more than one ear may form on a plant. The immature ear consists of a cylindrical cob with ovules, which develop into kernels after pollination. From each ovule, a fine thread-like structure called a silk grows. Pollination occurs when pollen grains land on the silks, after which fertilized ovules develop into kernels.



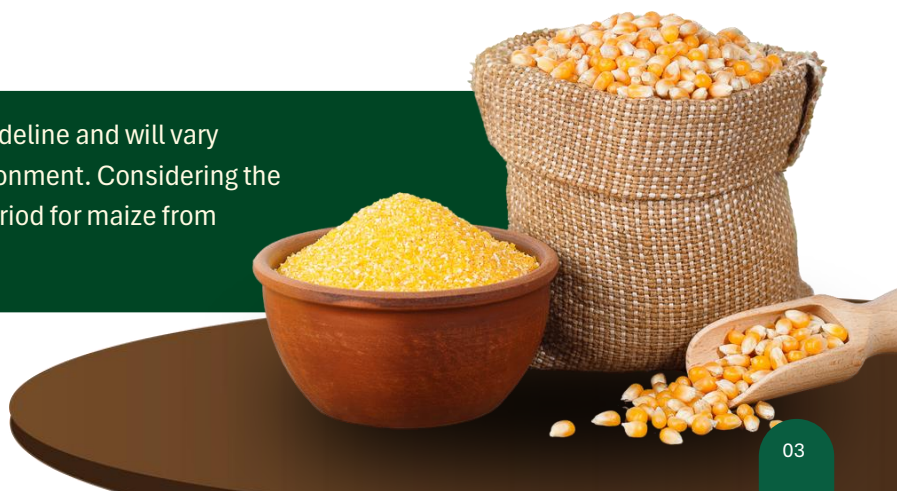
The number of kernel rows per ear typically ranges from 8 to 24 depending on the variety. For example, in an ear with 16 rows, the number of kernels per ear will be approximately 800. Each kernel weighs approximately 0.35 g. at a 15% of the moisture content (drying ratio).

MAIZE GROWING STAGE



- **Seeding and Germination (7 – 10 days)**
- **Germination Stage (15 - 25 days)**
The period from germination to 2-3 leaves
- **4-6 Leaf Stage (25 – 40 days)**
Roots begin to develop after the emergence of 3 to 4 leaves, enabling the plant to absorb nutrients from the soil. At the stage of 5 to 6 leaves, the growing point rises above the ground, and typically reaches a height of 40 to 50 cm.
- **7-8 Leaf Stage**
The internodes grow, and the forming of the male (σ) tassel and female (φ) ear begins
- **9-12 Leaf Stage - Stem elongation stage (15 – 20 days)**
During this stage, rapid growth occurs, and φ ears become visible on the stem. The number and size of φ ears, as well as the number of grain rows, and kernels are determined.
- **Heading Stage (35 – 45 days)**
At the stage of 12-19 leaves (the number of leaves varies depending on the maize variety), the σ tassel emerges first and flowers 3-5 days later. Then 1-3 days after male flowering, silk threads appear from the female ear (φ), allowing for pollination (cross-pollination).
- **Ripening Stage (10 – 15 days)**
The fertilized grain progresses in order through the water ripening stage, milk stage, pasty stage, and yellow stage until full maturity.
- **Full Ripening Stage**
Starch accumulates at the ends of the grain, while the stems and leaves gradually wither. This stage indicates that the crop is ready for harvesting as dried maize.
- **Harvesting Stage**

The number of days for each stage is just a guideline and will vary depending on the variety and cultivation environment. Considering the number of days for each stage, the growing period for maize from sowing to harvest is approximately 4 months.



The stages of maize growth and their characteristics are summarized as follows:



Seeding and Germination Stage

Maize usually germinates within 2 weeks after seeding and is highly sensitive to water stress at this stage. The first thing to remember is that maize is very vulnerable during the sowing and germination stage (vulnerable = weak vitality). Germination rate and growth conditions during this period have a significant impact on the final yield. This is the growth characteristic of maize that is definitely different from rice. As you know, rice has almost no effect on growth even if it is submerged in water for several days

during the early stages of growth. In the case of maize, the effects of flooding and drought during germination are particularly severe:

- **Flooding**

Most maize seeds will die if subjected to flooding for more than 1–2 days during the germination stage.

- **Drought**

Successful germination requires the seed to absorb water equivalent to approximately 30% of its weight. Germination will be delayed due to lack of soil moisture.



Vegetative Stage

The vegetative stage can be divided into the leaf-growing stage (25-40 days) with 4-8 leaves and the stem elongation stage (15-20 days) with 9-12 leaves. Maize gradually becomes resistant to water stress by growing.

In the case of maize, the effects of flooding and drought during germination are particularly severe:

- **Flooding**

In the early stage, the growing point is under the soil, so if the plant is flooded with water, it may die and lead to significant loss.

- **Drought**

Maize closes its stomata and curls its leaves as an adaptation to drought. This feature helps survive temporary drought. Productivity declines when drought stress continues for more than 4 days.



Reproductive Stage (Flowering Stage)

This stage corresponds to the flowering stage, pollination time, and grain-filling stage. After the heading, the tassels and ear silks appear during the flowering period. The tassels produce pollen and pollinate the silks of the ear. Maize is cross-pollination. Grain number is determined by the pollination condition. Water shortage during this stage has a significant impact on the yield. In addition, high temperature during this period may lead to reduced yield.

It is generally recognized that there will be an impact when the temperature exceeds 35 degrees, but since it depends on the region and varieties; the threshold needs to be decided individually.



Reproductive Stage (Grain Filling Stage)

The latter half of the reproductive stage is the grain-filling stage. This stage is the period when starch accumulates in the endosperm. The silks of the ear turn brown in color and dry out. The grain-filling stage does not require much water supply and is less affected by weather conditions.



Harvesting Stage

Maize should be harvested when the grain moisture content reaches 23% to 25%. Maize is one of the crops that is less affected even if the harvest is slightly delays compared to other crops.

For convenience, the definition of growing stages used in MGO activities is summarized into 4 stages:

- 1. Seeding Stage** – includes the germination stage.
- 2. Vegetative Stage** – divided into the leaf-growing stage and the stem-elongation stage.
- 3. Reproductive Stage** – corresponds to the flowering and grain-filling stages.
- 4. Harvesting Stage** – includes the ripening stage.

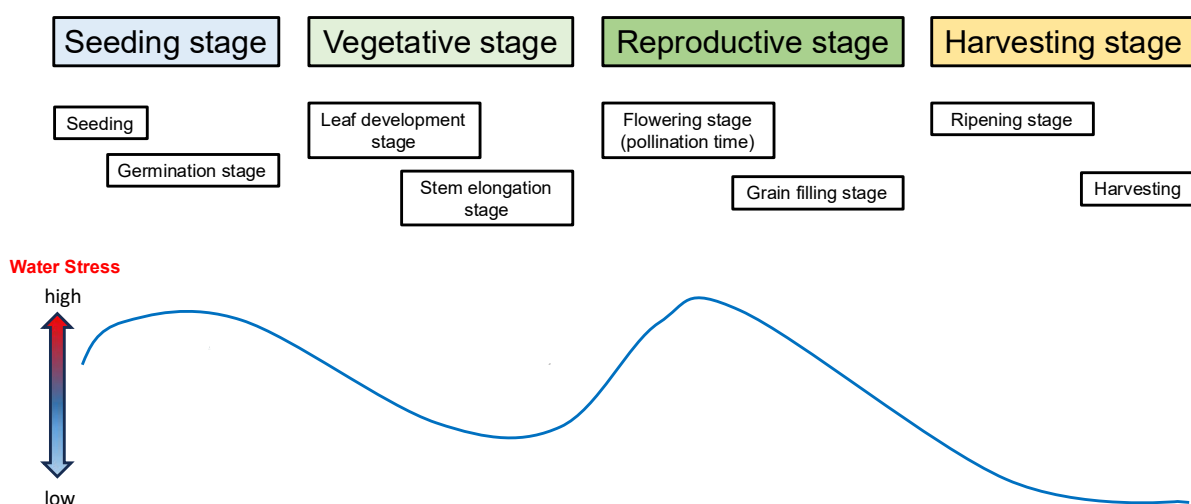
However, the detailed description of maize growth stages is generally left to the writers of each country. The RGO also defines the growth stages as sowing stage, tillering stage, panicle formation stage, grain filling stage, and harvesting stage, but other descriptive schemes are also acceptable. Essentially, as long as MGO readers can clearly understand the current growth stage, the description is considered appropriate

RELATIONSHIP BETWEEN MAIZE GROWTH AND WEATHER CONDITIONS

Maize growth and productivity are highly influenced by weather conditions throughout its developmental stages. Understanding how each factor interacts with maize at different growth stages provides insights into crop performance and helps guide management practices. The main factors affecting maize growth are described below.

Water stress

Changes in **water stress** at Maize growing stage



The term “water stress” refers to both flooding and drought as weather-related hazards. Its influence on maize growth can be illustrated across the growing stages as in the picture above. Maize growth requires proper water management during the seeding stage and the flowering period, which is the first half of the reproductive stage. If weather disasters causing water stress, such as flooding or drought, occur at these stages, it can lead to substantial yield reduction. Although water stress is never entirely absent, its impact is comparatively lower during the vegetative stage and the harvesting stage, when the crop is less vulnerable than during seeding and flowering.

On the other hand, just like rice, maize growth is also influenced by temperature, solar radiation, and other environmental factors.

Temperature

Maize is cultivated from tropical to cold regions and has wide temperature adaptability. Low-temperature stress is generally not a concern in Southeast Asia. However, high-temperature heat stress during pollination time can suppress pollen production and reduce yield. The threshold temperature is generally considered to be 35 degrees, but it varies by region and variety; therefore, it is advisable to consult with a researcher when setting a threshold for the observation.

Solar Radiation

Maize growing requires at least 6-8 hours of sunlight each day.



Pests and Diseases

Pest and disease outbreaks can significantly reduce maize yield. It is considered that the occurrence of pests and diseases in maize depends on weather conditions. For example, root rot diseases are said to be more prevalent in hot and dry weather conditions. However, it is difficult to predict the outbreak of pests and diseases using only weather data. In order to accurately understand the occurrence of pests and diseases, it is necessary to make efforts to collect information from local offices and farmers.

Other Impacts

There are several other factors that affect maize yield besides weather conditions and pests and diseases as outlined below.

- **Irrigation**

During the growing period, maize needs to be ensured that it receives approximately 25 mm of water per week. In addition, proper drainage is also an important factor for optimal growth.

- **Soil**

Maize, like other crops, prefer slightly acidic to neutral soils with a pH (potential hydrogen) of 5.5 to 6.5

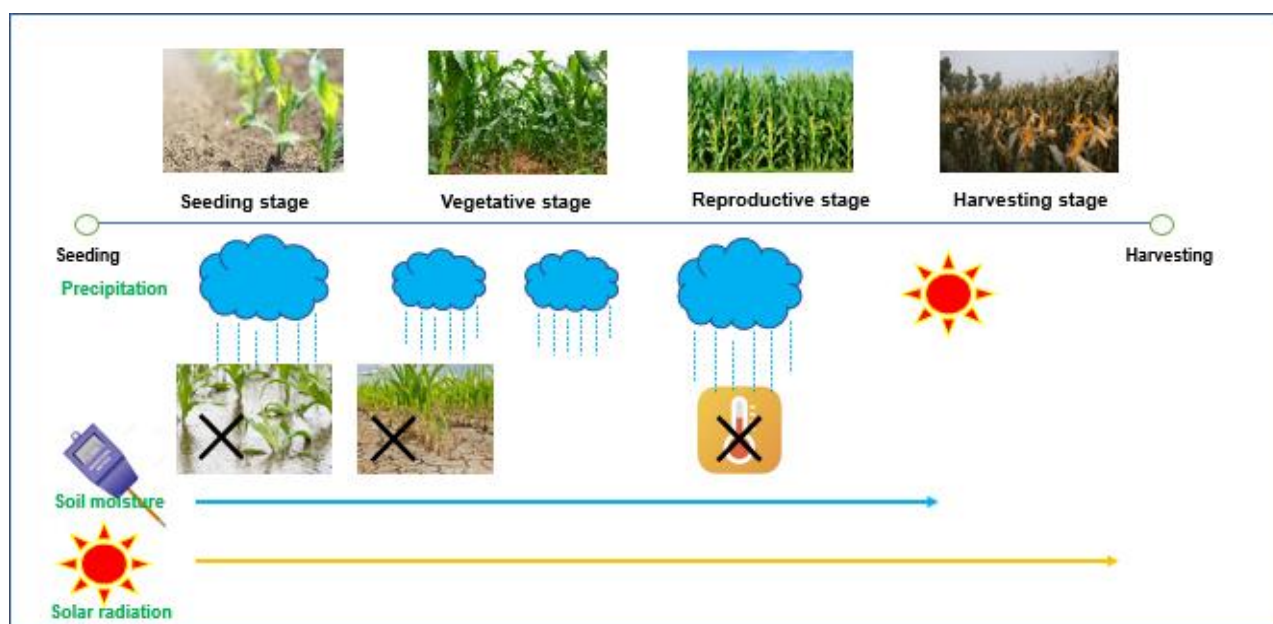
- **Fertilization**

Maize requires large amounts of nitrogen (N) and potassium (K) throughout the growing season.

- **Weed**

It is necessary to remove all weeds, especially during the first month after germination.

Maize Growth Mechanism by Weather Condition (Summary)



This diagram summarizes “the maize growing mechanism under different weather conditions.” This provides only a rough overview.

Sufficient rainfall is essential during the seeding stage and the first half of the reproductive stage, the so-called flowering stage. However, even slight flooding, as well as drought, during the seeding stage can result in yield reduction. Based on this, water stress during the seeding stage is considered high. On the other hand, moderate rainfall is generally sufficient during the vegetative stage, while rainfall is not required during the harvesting stage.

In Southeast Asia, temperature is not a major concern; however, attention should be given to the high-temperature threshold during the flowering stage, as it can adversely affect yield. Needless to say, maize also requires adequate soil moisture and solar radiation throughout the growing season for good yield.

MAIN YIELD FACTORS OF MAIZE

MGO writers consider the following elements when analyzing maize growth conditions. It is important to keep two major elements in mind while considering maize output.



Germination Rate

Germination rate is an important factor in the assessment of growing conditions for maize. This is because germination is very sensitive to water stress, and in drought conditions, germination will not occur, and many missing plant points will appear. As a result, maize yields will decrease significantly. However, it is necessary to note that poor germination may lead farmers to resow the seeds.



Pollination Rate

The number of grains is determined by the good and bad of pollination. Water stress, such as drought, during the flowering stage can lead to poor pollination, resulting in a significant decrease in yield due to a lower number of grains.

It is no exaggeration to say that maize yield largely depends on the germination rate and the pollination rate. When evaluating maize yield components, these two factors serve as the fundamental basis.



YIELD COMPONENTS OF MAIZE

As in rice, grain yields are generally expressed as the product of three components: 1) the number of panicles, 2) the number of grains, and 3) the grain weight. Yields of crops such as wheat, maize, and rice can all be evaluated using these yield components. However, in the case of maize, a simpler approach is possible due to its crop characteristics.

In fact, the number of ears and rows of maize are unrelated to weather conditions. In the case of poor yield, the number of ears and rows remains the same, while the number of grains decreases. Additionally, grain size also remains stable unlike rice, and grain weight also remains the same (although further verification may be required).

Therefore, the primary yield components of maize can be defined as:

- Germination rate (number of plants established); and
- Pollination rate (number of grains formed)

In practical field assessment, maize growing conditions can be evaluated by focusing on three main points:

1. Germination Condition

This observation confirms the number of plants established for the season. It is necessary to check the appropriate rainfall condition at the seeding stage whether it is adequate and then verify germination performance. Under drought conditions, germination rates vary greatly depending on the availability of irrigation facilities.

2. Pollination Condition

This observation is used to assess the number of grains formed for the season. Unlike germination rate, pollination cannot be confirmed visually. Therefore, it is necessary to examine weather data, particularly whether water stress occurred during the flowering stage and whether temperatures exceeded critical thresholds.

3. Weather Disasters and Other Damages

This observation covers damage occurring throughout the maize growing season. The main weather disasters are flooding and drought, while strong winds can cause lodging. Other types of damage include pest damage, disease damage, and animal damage. Although, it is difficult to establish a precise manual linking specific levels of weather disaster or other damage to yield reduction, the most practical approach is to gain experience in assessing yield decrease through MGO activities. Such practice will help enhance the professionalism of Outlook writers.

Dry Season Maize



The maize targeted by the MGO is divided into two types: wet-season maize and dry-season maize. Maize cultivation demands a significant amount of water. For this reason, it is generally assumed that maize cultivation during the dry season with little rainfall is supported by irrigation facilities in all fields. In other words, maize cultivated during the dry season under stable weather conditions is unlikely to suffer weather-related damage, and as long as there is no damage from pests or diseases, the growing condition and yield can always be assessed as "good."



CROP SITUATION INDEX OF MAIZE

The crop situation index is an essential indicator for making MGO. In the crop-growing outlook, the crop-growing condition is described as "good" or "poor," and the basis for this is the crop situation index. This is a common-sense theory for all Outlook writers, but it will be explained again because the range of assessments for rice and maize is thought to be different.

This index calculation is very simple. For example, the crop situation index of rice in Cambodia in 2022 can be calculated as 107 using the following calculation.

$3.52\text{t/ha} \div 3.29\text{t/ha} = 1.0699$ (2022 yield) (average yield)	$1.0699 \times 100 \approx 107$ (2022 crop situation index)
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This section explains the difference between average yield and normal yield. Average yield and normal yield, have different meanings, as described below:

Average Yield

Average yield based on previous yield results

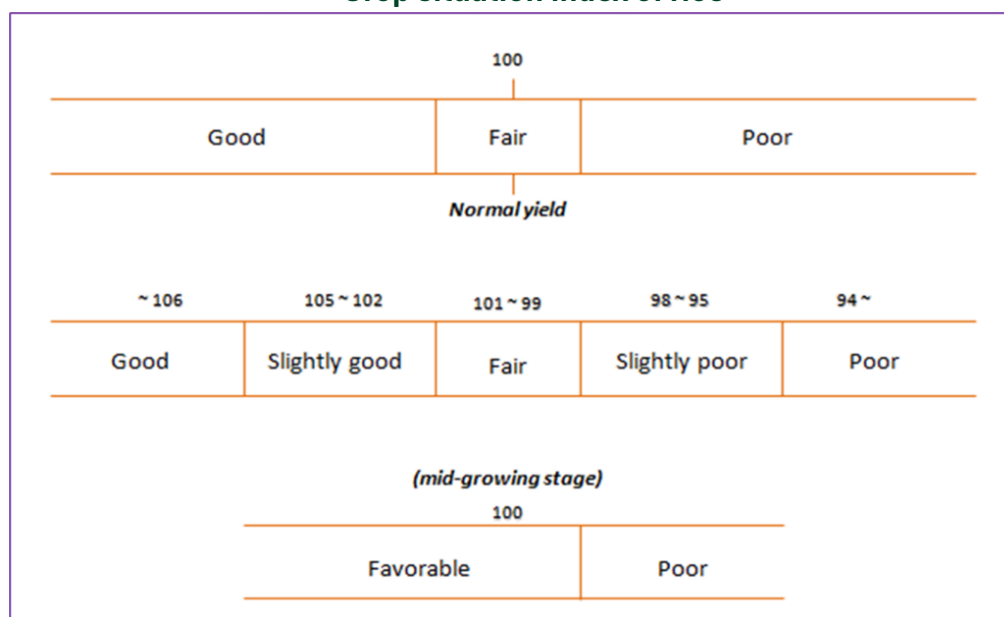
Normal Yield

The forecast yield for that year is calculated based on the actual yield trend, assuming that the weather trends and damage occurrence status for that year are normal, and taking into account the degree of progress in cultivation techniques in recent years, including adjustments in planting, and etc.

However, in actual numbers, there is not much difference between the two. This is because the past data itself already contains trends that are the primary factor in normal yields.

Crop situation index of maize

Crop situation index of rice



This table presents the crop situation index used as a standard in RGO activities. Since the Outlook provides text-based information, the numerical index must be expressed in descriptive form. For example, if Cambodia's crop situation index in 2022 is recorded as 107, the corresponding text would state that the rice yield condition in that year was "good."

Rice yield condition by country

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Normal yield (8 out of 10)
Cambodia	3.16	3.08	3.08	3.21	3.3	3.35	3.34	3.35	3.49	3.52	
Crop situation index	96	94	94	98	100	102	102	102	106	107	3.29
Yield outlook	slightly poor	poor	poor	slightly poor	fair	slightly good	slightly good	slightly good	good	good	
Indonesia	5.17	5.15	5.36	5.1	5.07	5.2	5.11	5.13	5.23	5.24	
Crop situation index	100	100	104	99	98	101	99	99	101	101	5.17
Yield outlook	fair	fair	slightly good	fair	slightly poor	fair	fair	fair	fair	fair	
Lao PDR	3.83	4.18	4.25	4.26	4.23	4.23	4.15	3.82	4.07	4.39	
Crop situation index	92	101	102	103	102	102	100	92	98	106	4.15
Yield outlook	poor	fair	slightly good	slightly good	slightly good	slightly good	fair	poor	slightly poor	good	
Malaysia	3.88	4.63	4.02	3.98	3.75	3.77	3.5	3.65	3.77	3.7	
Crop situation index	102	121	105	104	98	99	92	96	99	97	3.82
Yield outlook	slightly good	good	slightly good	slightly good	slightly poor	fair	poor	slightly poor	fair	slightly poor	
Myanmar	3.85	3.91	3.93	3.88	3.86	3.92	3.86	3.87	3.9	3.58	
Crop situation index	99	101	101	100	99	101	99	100	101	92	3.88
Yield outlook	fair	fair	fair	fair	fair	fair	fair	fair	fair	poor	
Philippines	3.89	4	3.9	3.87	4.01	3.97	4.04	4.09	4.15	4.11	
Crop situation index	97	100	98	97	100	99	101	102	104	103	4
Yield outlook	slightly poor	fair	slightly poor	slightly poor	fair	fair	fair	slightly good	slightly good	slightly good	
Thailand	3.15	3.06	2.85	2.97	3.07	3.04	2.92	2.9	2.95	2.99	
Crop situation index	105	102	95	99	103	102	98	97	99	100	2.99
Yield outlook	slightly good	slightly good	slightly poor	fair	slightly good	fair	slightly poor	slightly poor	fair	fair	
Viet Nam	5.57	5.75	5.76	5.57	5.55	5.82	5.84	5.92	6.07	6.02	
Crop situation index	96	99	100	96	96	101	101	102	105	104	5.78
Yield outlook	slightly poor	fair	fair	slightly poor	slightly poor	fair	fair	slightly good	slightly good	slightly good	
Data source: FAOSTAT											
Good=25(31%) Fair (normal)=34(38%) Poor=21(26%)											

This table presents the crop situation index of rice for eight countries in the Southeast Asia region over the past 10 years. The key point to note is the frequency of occurrence of the assessments "good," "fair," and "poor," which are 31%, 43%, and 26%, respectively. These figures represent the rice yield assessment results reported by the RGO.

Maize Yield Condition by Country

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Normal yield (8 out of 10)
Country											
Cambodia	3.91	3.49	3.2	4.81	5.43	5.92	4.82	4.86	5.75	5.92	4.87
Crop situation index	80	72	66	99	111	121	99	100	118	122	
Yield outlook	poor	poor	poor	fair	good	good	fair	fair	good	good	
Indonesia	4.84	4.95	5.18	5.31	5.23	5.33	5.44	5.68	5.7	5.79	5.35
Crop situation index	91	93	97	99	98	100	102	106	106	108	
Yield outlook	poor	poor	slightly poor	fair	slightly poor	fair	slightly good	good	good	good	
Lao PDR	5.73	5.8	5.97	6	5.76	5.93	5.23	5.23	4.83	4.99	5.58
Crop situation index	103	104	107	107	103	106	94	94	87	89	
Yield outlook	slightly good	slightly good	good	good	slightly good	good	poor	poor	poor	poor	
Malaysia	8.9	6.1	6.23	6.46	6.93	7.22	8.28	7.36	7.44	7.01	7.12
Crop situation index	125	86	88	91	97	101	116	104	104	99	
Yield outlook	good	poor	poor	poor	slightly poor	fair	good	slightly good	slightly good	fair	
Myanmar	3.64	3.7	3.72	3.75	3.81	3.82	3.85	3.85	3.75	3.75	3.77
Crop situation index	97	98	99	99	101	101	102	102	100	99	
Yield outlook	slightly poor	slightly poor	fair	fair	fair	fair	slightly good	slightly good	fair	fair	
Philippines	2.88	2.98	2.93	2.91	3.1	3.09	3.17	3.18	3.24	3.27	3.08
Crop situation index	93	97	95	94	101	101	103	103	105	106	
Yield outlook	poor	slightly poor	slightly poor	poor	fair	fair	slightly good	slightly good	slightly good	slightly good	
Thailand	4.22	4.25	4.18	4.38	4.6	4.6	4.35	4.45	4.55	4.57	4.42
Crop situation index	96	96	95	99	104	104	98	101	103	103	
Yield outlook	slightly poor	slightly poor	slightly poor	fair	slightly good	slightly good	slightly poor	fair	slightly good	slightly good	
Viet Nam	4.44	4.41	4.54	4.55	4.65	4.72	4.8	4.85	4.94	5	4.69
Crop situation index	95	94	97	97	99	101	103	104	105	107	
Yield outlook	slightly poor	poor	slightly poor	slightly poor	fair	fair	slightly good	slightly good	slightly good	good	
		Good=32(40%)		Fair (normal)=19(24%)		Poor=29(36%)					

This table calculates the crop situation index of maize and assesses it as good, fair, or poor, like rice. Please note that these indices are assessed based on the crop situation index of rice. Good is 40%, fair is 24%, and poor is 36%.

Yield Outlook Comparison

Rice yield condition index for ten years by 8 countries		
Good	Fair (normal)	Poor
31%	43%	26%
Maize yield condition index for ten years by 8 countries		
Good	Fair (normal)	Poor
40%	24%	36%

This figure compares the index assessments of rice and maize. As you can see, the appearance rate of "fair" is significantly lower in maize. This is due to differences in the dispersion of data between rice and maize.

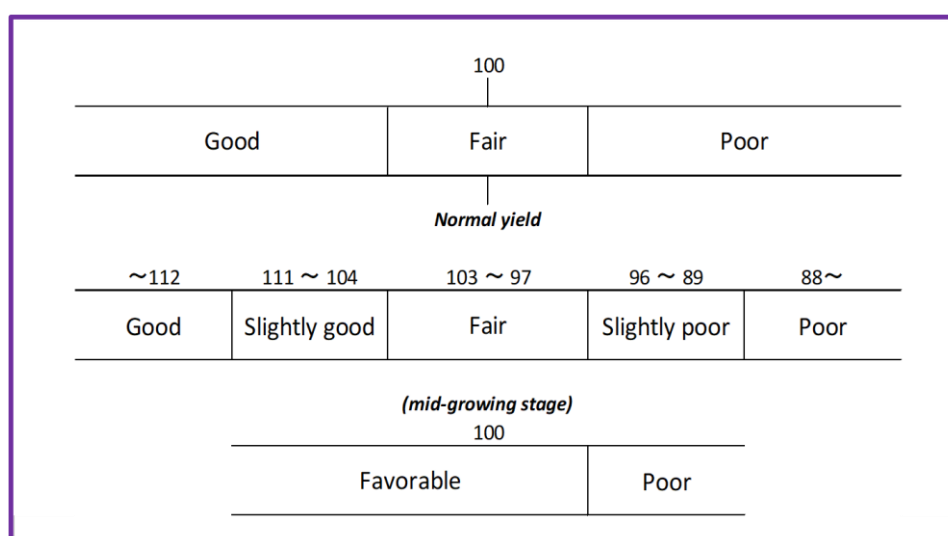
Yield Coefficient of Variation Comparison by Country

Country	Rice CV(σ/μ)	Maize CV(σ/μ)	Maize CV / Rice CV
Cambodia	0.044	0.196	4.45
Indonesia	0.016	0.056	3.50
Lao PDR	0.043	0.074	1.72
Malaysia	0.076	0.116	1.53
Myanmar	0.025	0.017	0.68
Philippines	0.023	0.044	1.91
Thailand	0.028	0.035	1.25
Viet Nam	0.030	0.041	1.37

This table shows the variation in rice and maize yields by country. In Cambodia, the year-to-year variation in maize yield is 4.45 times that of rice yield. Other countries also have larger variation in maize yields than rice, although not as much as Cambodia. The reason for this is that while rice is a flood cultivation, maize is an upland cultivation, which means that maize is a crop that is more easily affected by the weather condition than rice. It must be assumed that it is difficult to assess maize yield using the standard of the rice situation index. In other words, you can understand that maize yield has a lot of validity, so its assessment category should be expanded beyond rice.

The key question is *how to apply this categorization?*. For the time being, it is suggested to expand the range of categories. In the GEOGLAM system, in which AFSIS participates, categories are generally set in 10% increments. However, under this definition the range for “Fair” becomes $\pm 10\%$. Based on maize yield data from each country, this range may not seem to be appropriate for the Southeast Asian region.

Crop Situation Index of Maize (Proposal)



When this crop situation index is used to assess maize yield against past yields, the appearance of assessments is 28% good, 47% fair, and 25% poor, respectively.

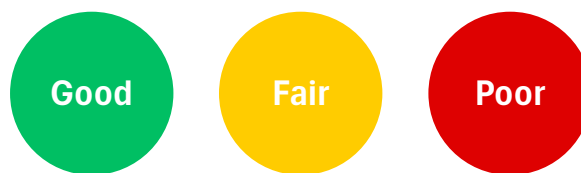
Yield Outlook Comparison

Rice yield condition index for ten years by 8 countries		
Good	Fair (normal)	Poor
31%	43%	26%

Maize yield condition index for ten years by 8 countries		
Good	Fair (normal)	Poor
28%	47%	25%

When compared with the assessment results for rice, the yield assessment for maize shows a close alignment. While it may be premature to formally adopt this crop situation index as the standard definition for MGO activities, please use the index proposed here as a tentative standard for the time being

What “Good” Means ?



We would like to clarify the meaning of the overall growing assessment of “good,” “fair,” and “poor.” In an Outlook report, if you report that “growing condition is good,” it does not mean that “the current crop growth is good.” More precisely, it means that “a good yield is expected if the crop continues to grow under the current conditions.”

The assessments of “good” or “poor” are therefore based on predictions of how the final yield will be. The key point is that such descriptions should be supported by numerical criteria. Specifically, if the normal yield in your country is 5 tons, a “good” assessment corresponds to a crop situation index of 104 or higher, meaning the final yield is expected to be 5.2 tons or more.

In fact, many may argue that it is impossible to predict yield during the growing stage. However, no one assesses crop growing conditions based merely on intuition; there must be specific criteria for assessment. Similarly to rice-growing assessments, you will be able to approach it by accumulating experience. This is a sign of professionalism.



MAIZE GROWING OUTLOOK WRITING

The approach to MGO activities is generally left to the discretion of each country. However, maize, which is not a staple food, is considered a crop whose growing condition have not been systematically monitored in comparison to rice. Therefore, as a result, it is necessary to establish a systematic structure for conducting MGO activities within your organization.

Preparation

Outlook writers are required to define the baseline values of cultivated area, yield, and production for both wet-season maize and dry-season maize using past statistical data, and to select two or three major maize-producing provinces (prefectures).

Monthly Web Meeting with Local Office

Conduct monthly web meetings with the local office (hearing from local officials) to review the following items:

- Current growing stage
- Increase or decrease in sown area (at the seeding stage only)
- Growing conditions
- Occurrence of weather-related disasters (it has occurred, what is the damage situation?)
- Occurrence of other types of damage (If it has occurred, what is the damage situation?)

When assessing these points, visualize the field conditions in your head.

Let's Write the MGO Report and Discuss It With Colleagues.

The important notes for MGO writing are:



Keep descriptions
as simple as possible.



Do not hesitate to assess the
growing condition.



Always provide reasons to support
your assessment.

Maize crop calendar

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Thailand	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Philippines	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Vietnam North	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Vietnam South	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Lao PDR	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Cambodia	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Myanmar	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Malaysia	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												
Indonesia	Wet season	Planting												
		Harvesting												
	Dry season	Planting												
		Harvesting												

The maize crop calendar has already been created. Please ensure that your MGO report is based on the growing season indicated in the crop calendar. It is acceptable to adjust the crop calendar according to actual field conditions; however, if any changes are made, please contact the instructor as soon as possible.

Maize Writing Structure (Basic Rules)

- Write the MGO as simply as possible, keeping it shorter than the RGO.
- Be sure to include the current growing stage and the growing assessment (poor, slightly poor, fair, slightly good, or good).
- If the assessment is poor (or slightly poor), clearly indicate the contributing factors (e.g., weather conditions or damage).
- The description of the planted area value is required. If statistical data are unavailable or unpublished, indicate the increase or decrease compared to the normal value (e.g., the previous year's value).
- If there is a significant delay in agricultural operations (such as seeding or harvesting), describe the delay and provide the reason.

MGO Example by Growing Stage

The final session provides an "example of MGO by growing stage." This is not intended as a template that the Outlook writers must follow exactly, but rather as a reference for "would be satisfied if it could write this much." So, as long as you follow the basic rules outlined above, you are free to write your MGO entries in your own style.

Please refer to the following example when you are unsure how to write the report. In the illustrations, the blue frame indicates an example of a good growing condition, while the red frame indicates a poor growing condition.

Seeding stage

The seeding of wet season maize has started. The planted area is expected to be 0.6 million ha, which is almost the same as last year. There has been enough rainfall, and germination is going well.

This month is the second month of wet season maize sowing. The planted area is expected to decrease from normal years due to less precipitation. In addition, there are concerns that the germination rate will decline due to lack of agricultural water.

Vegetative stage

The wet season maize is in the vegetative stage. The growing condition is good due to proper rainfall.

A typhoon made landfall in the middle of last month, and the strong wind caused lodging damage to the wet season maize that was in the vegetative stage in some fields. However, the damaged area is limited, and the wet season maize growing condition is generally good.

The wet season maize is in the vegetative stage. Disease (root rot) is occurring in some field due to continued high temperature and dry weather. The government has called for pesticide spraying, but there is a concern that the disease will spread if this weather condition continues.

Reproductive stage

Wet season maize planted in May is in the flowering stage. During this period, there has been enough rainfall, and the growing condition of wet season maize is good.

The wet season maize is in the reproductive stage. Due to the continuing trend of low rainfall, drought damage is occurring in fields without irrigation facilities. Maize production is expected to decrease this season due to a decrease in the number of grains due to water stress. The growing condition of wet season maize is generally slightly poor.

Harvesting stage

Harvesting of wet season maize has almost been completed this month. The yield is expected to be 6.2t per ha and it increases about 10% compared with a normal year due to stable weather conditions during the growing season.

The wet season maize is in the harvesting stage. This season, the seeding stage suffered from flooding, which lowered the germination rate, and the reproductive stage suffered from drought. This year's wet season maize production is estimated to decrease significantly due to a decrease in planted area and yield.



Guidelines for Interpreting the Agrometeorological data for Maize Growing Outlook

Project for Strengthening ASEAN Food Security Information System Function for Emergency (SAFER project)



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