UPOV TG for Marigold (*Tagetes erecta* L.)

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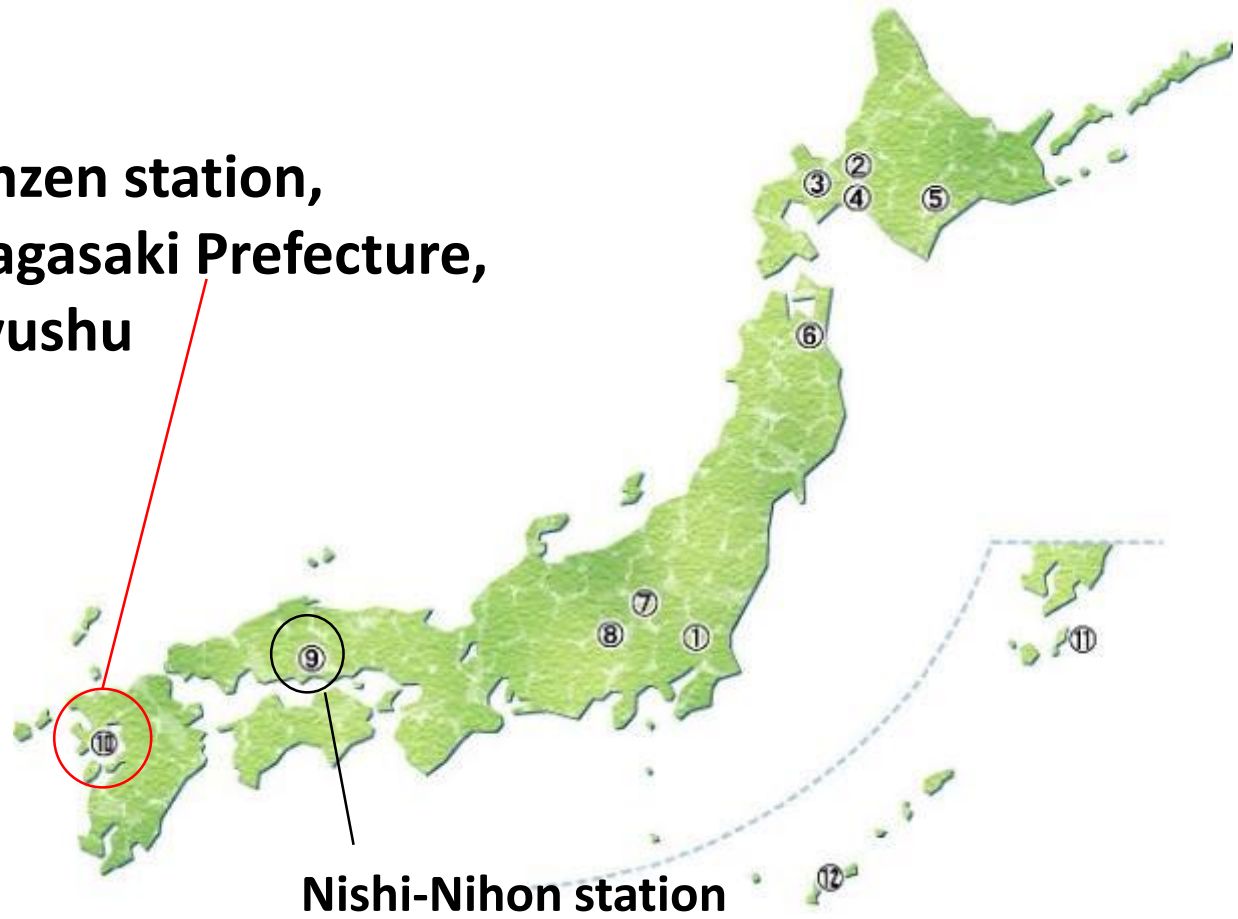
Introduction

DUS test of Marigold in Japan

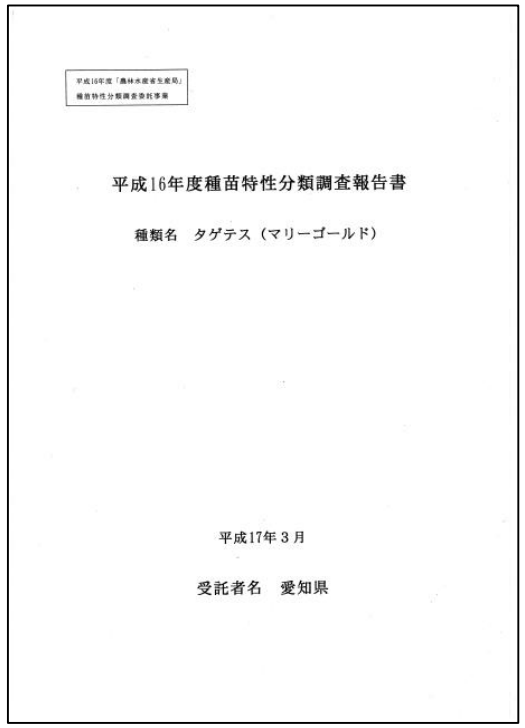
Unzen station,
Nagasaki Prefecture,
Kyushu



Nishi-Nihon station

- In Japan, the DUS test of marigold is conducted in Unzen station.
- Average Temperature : 15.1℃.
- Average Annual Rainfall : 2,120mm .
- Usually, tests of Marigold are conducted from April to July.

Test Guideline of Japan

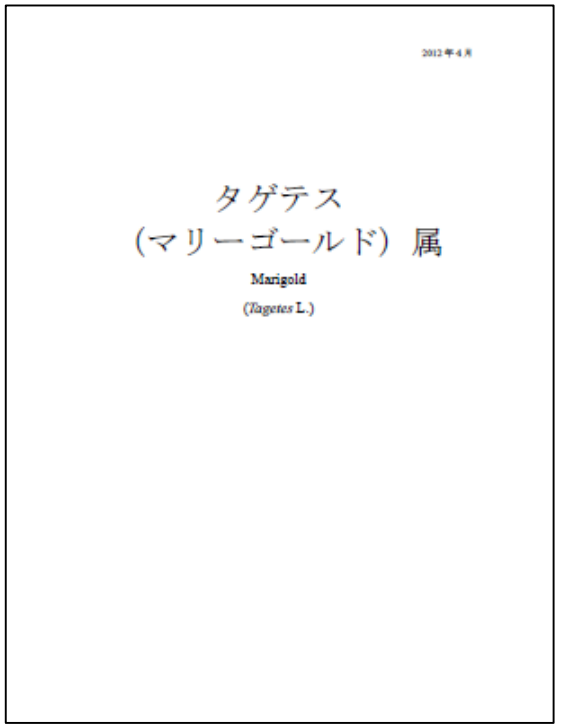


平成16年度種苗特性分類調査報告書

種類名　タゲテス（マリーゴールド）

平成17年３月

受託者名　愛知県



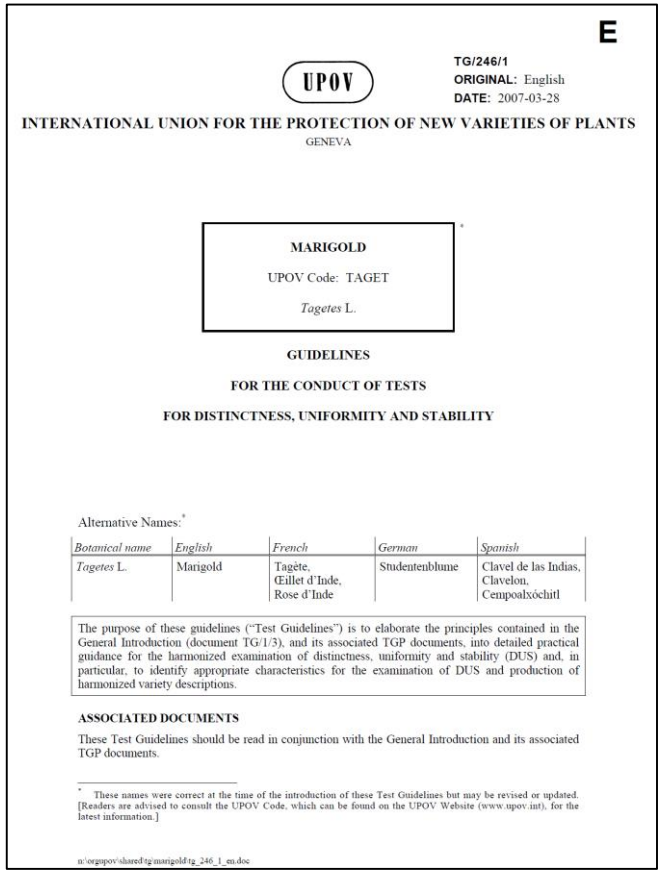
2012年4月

タゲテス
（マリーゴールド）属

Marigold
(*Tagetes* L.)

- In Japan, we use Japanese National Test Guideline of *Tagetes* L. (Marigold).
- It was revised in 2012 to harmonize with UPOV TG.
- It includes all characteristics in UPOV TG and some extra characteristics are added.

Contents of TG of Marigold



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UPOV

TG/246/1
ORIGINAL: English
DATE: 2007-03-28

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

MARIGOLD

UPOV Code: TAGET

Tagetes L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Tagetes L.	Marigold	Tagète, Œillet d'Inde, Rose d'Inde	Studentenblume	Clavel de las Indias, Clavelon, Cempoalxóchitl

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

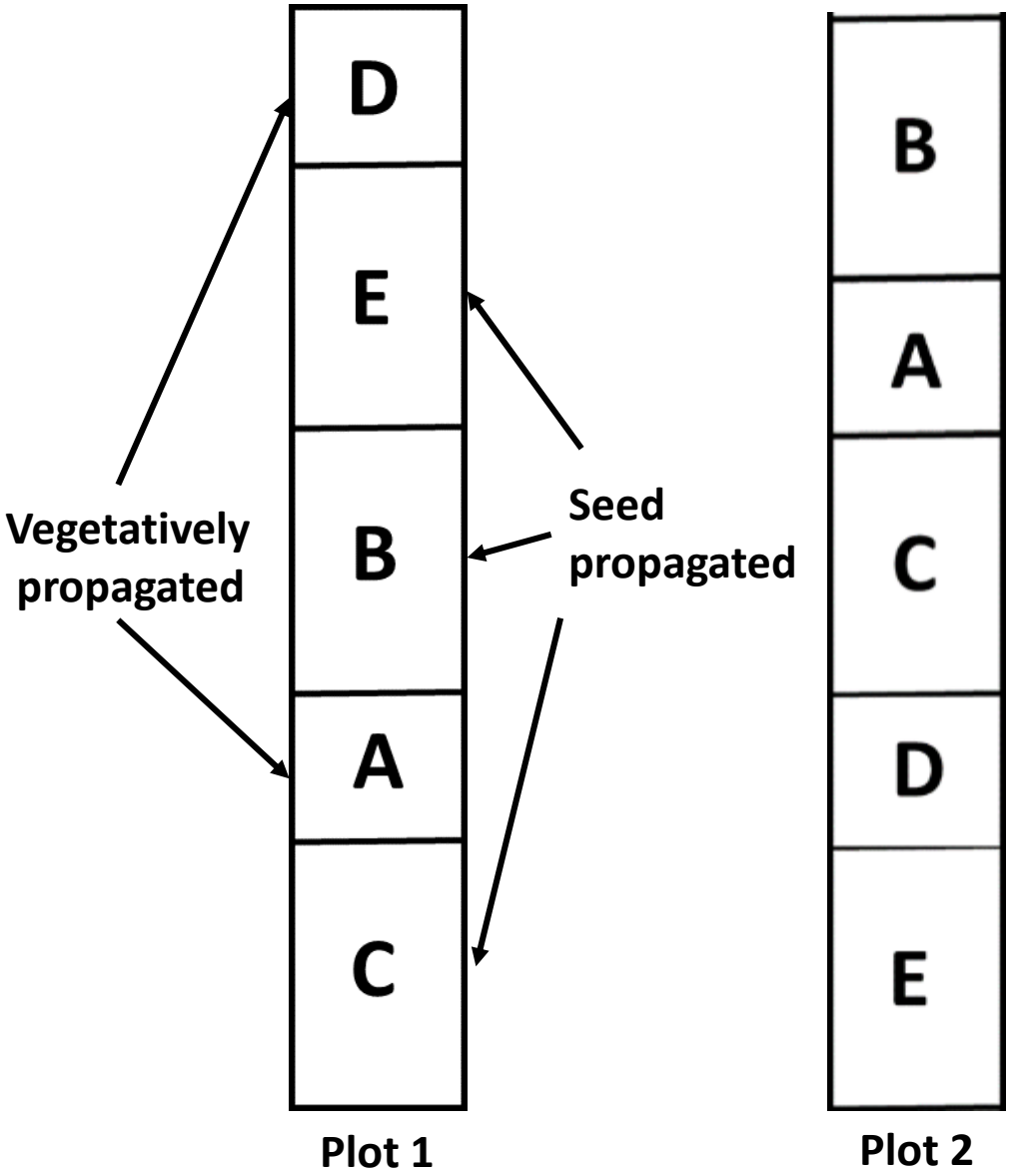
* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

n:\orgupov\shared\tg\marigold\tg_246_1_en.doc

- 1. Subject
- 2. Material Required
- 3. Method of Examination
- 4. Assessment of DUS
- 5. Grouping of varieties and …
- 6. Introduction to table o characteristics
- 7. Table of Characteristics
- 8. Explanations on the table of characteristics
- 9. Literature
- 10.Tecnical Questionnaire

Method of Examination

Test design



- The Number of plants to be planted is at least 60: seed propagated varieties and at least 20: vegetatively propagated varieties
- Usually, we split plants into 2 plots to reduce influence of environmental condition.

Number of plant and time to be observed

- The Number of plants to be observed is 20 for seed propagated varieties and 10 for vegetatively propagated (take typcal plants).
- According to TG, all observation should be made at the time of full flowering (3.3.1, p3).
- We start observation when plants get more than 5 flower heads.

Parts of the plants

- **Leaf: The leaf of the middle zone of the main stem**
- **Flower head: The flower head (usually taken from a branch, not the main stem)**
- **Floret: The most-outer floret in the flower head**

Explanation on each characteristic

No.1 Hypocotyl: anthocyanin coloration

9. present

- **Observe the Hypocotyl when the cotyledons are fully expanded.**
- **No need to use a color chart.**

No.2 Plant: fragrance
No.3 Plant: height
No.4 Plant: growth habit

height

1. upright

3. semi upright

5. spreading

No.5 Plant: branching

- <u>There is no definition in UPOV TG.</u>

2. medium

3. strong

- You can determine notes by visual observation.

No.6 Stem: anthocyanin coloration
No.7 Stem: intensity of anthocyanin coloration

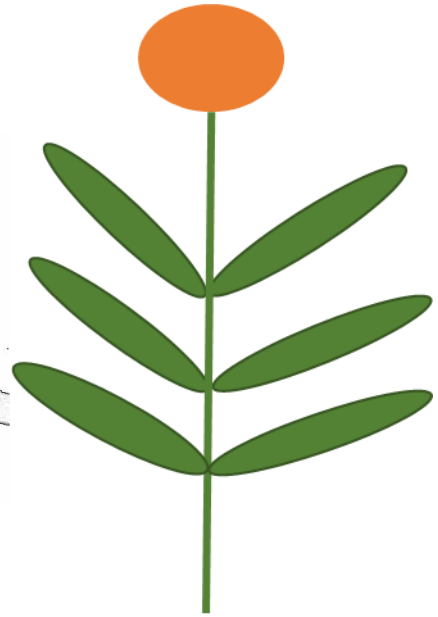
No.6: 1. absent

No.6: 9. present

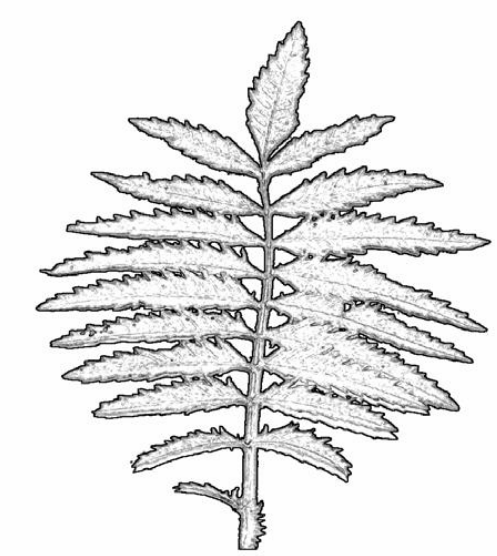
No.7: 2. very weak to weak

- Observe the middle zone of the main stem.
- No.7 is determined by intensity and area of coloration, comparing with Example Varieties.

No.8 Leaf: type

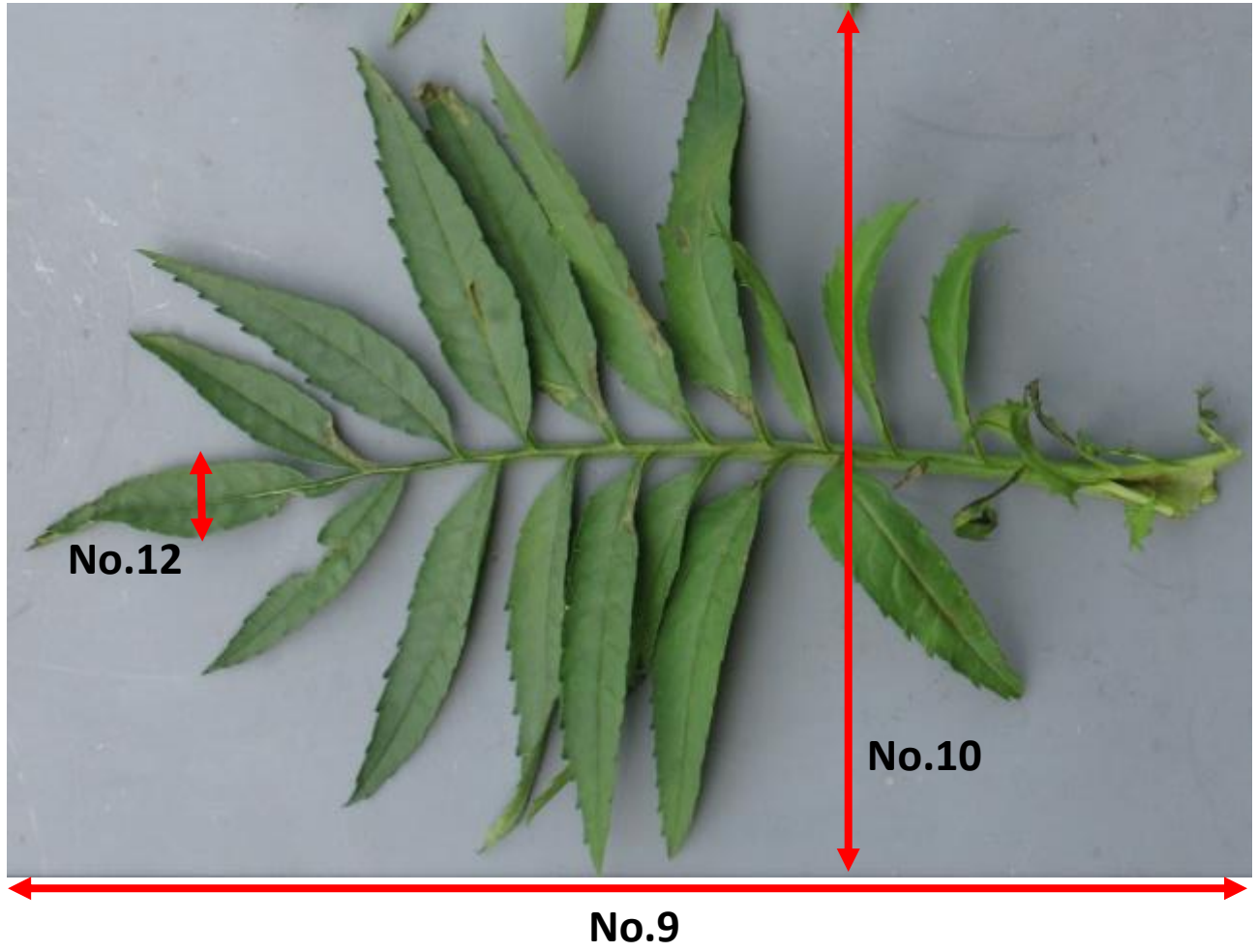


1.simple



2. pinnate

No.9 Leaf: length
No.10 Leaf: width
No.12 terminal leaflet: width



- Maximum length and width.
- Extend the leaf to measure.

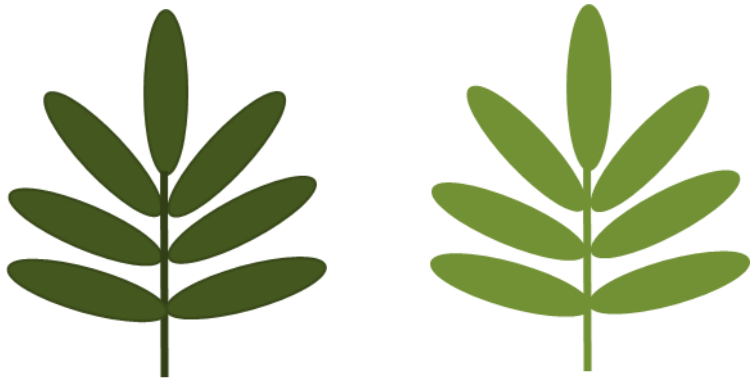
No.11 Leaf: intensity of green color

Light?

Medium?

- Notes of intensity can not be determined by a color only.
- As cha. No. 7(intensity of anthocyanin), you must compare with Example Varieties.

To determine the intensity of color…



2015 2016

The Example Variety
(Example of 5. medium)

Variety A
Tested in 2015

Variety B
Tested in 2016

- Expression of some characteristics may varies according to environmental conditon.
- For such characteristics, you always need to compare with Example Varieties.
- In this case, the note of Variety A would be “5” and Variety B would be “6” or “7”.

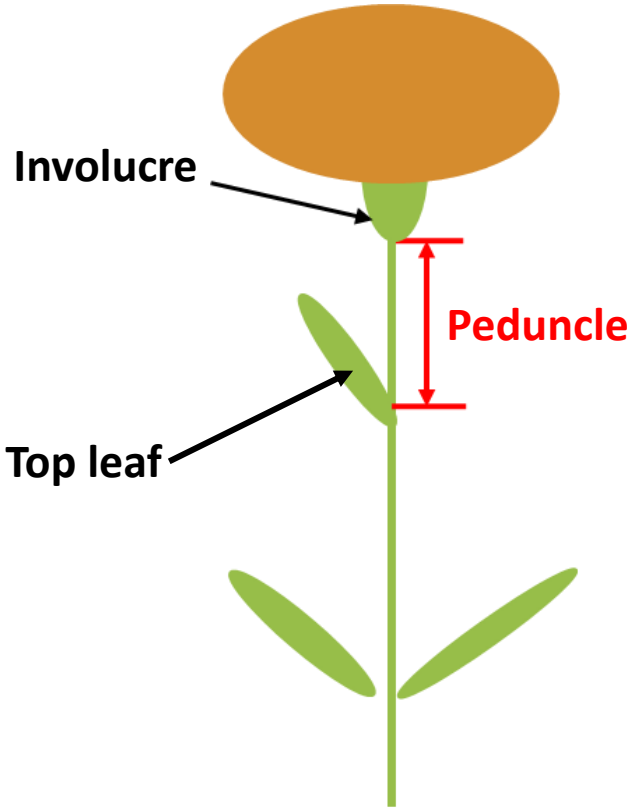
No.13 Leaf margin: depth of indentations

3. shallow

5. medium

- **<u>There is no illustration in UPOV TG.</u>**
- **You can determine notes by visual observation.**

No.14 Flower head: length of peduncle of terminal flower head



- Length from the end of the involucre to the node of the top leaf.
- Extend peduncle to measure.

No.15 Flower head: floret type

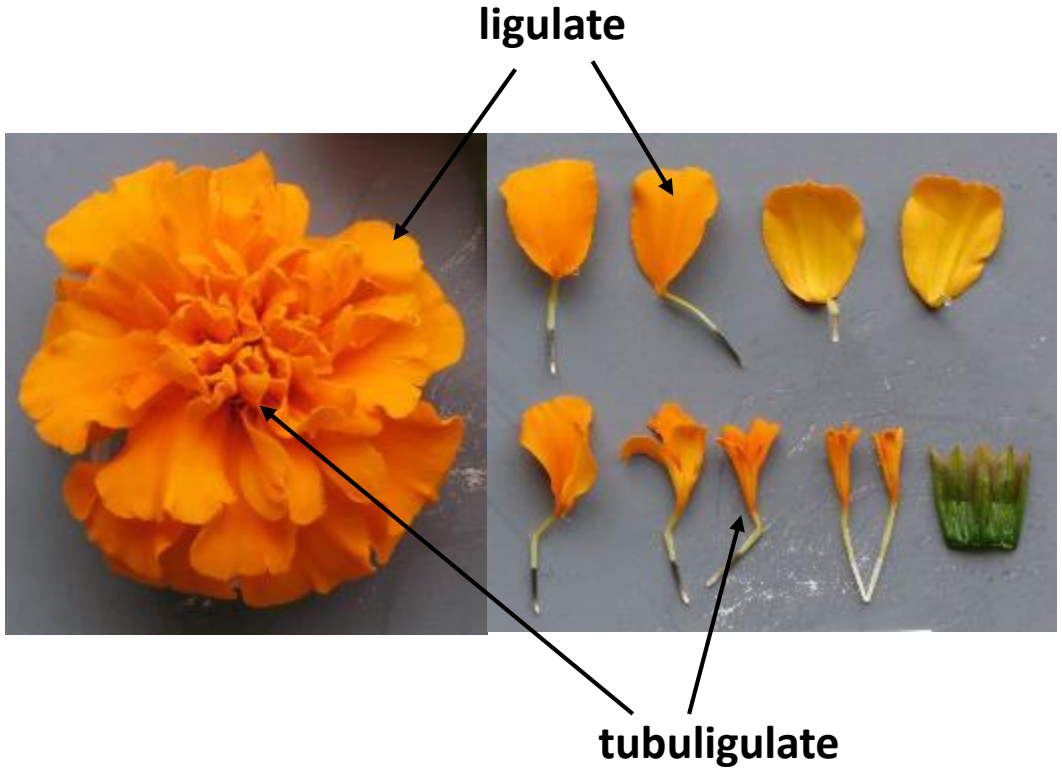
tubulate　　tubuligulate　　ligulate

- There are 3 types of floret.
- The difference between “tubulate” and “tubuligulate” is that the pistil of the tubulate is emarged from the tubulate.

No.15 Flower head: floret type

1. all tubulate

2. Tubulate and ligulate



3. Tubligulate and ligulate

No.15 Flower head: floret type

4. all tubuliglate

5. all ligulate

No.16 Flower head: diameter

- Maximum diameter of the flower head.
- Measure in a natural state(No need to extend).

No.17 Only varieties with ligulate floret type: flower head: number of ligulate floret whorls

1. very few

3. few

5. medium

9. very many

No.18 Ligulate floret: shape

1
flat

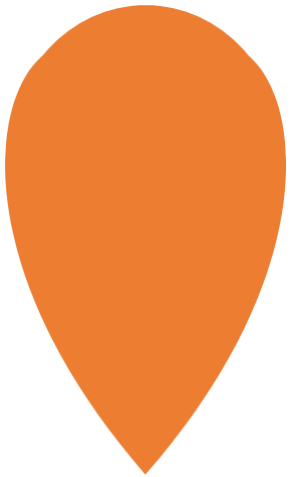
2
intermediate

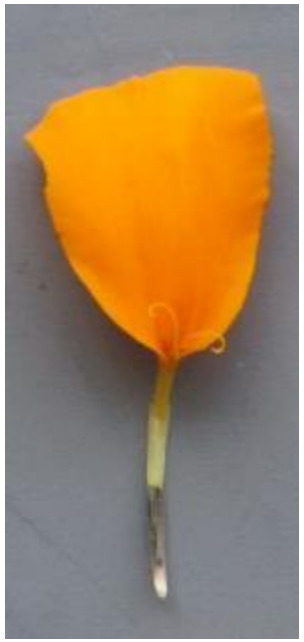
3
trumpet

No.19 Ligulate floret: incision of margin
No.20 Ligulate floret: depth of incision of margin
No.21 Ligulate floret: shape of apex

No.19

1. absent





No.21

1. rounded **2. truncate**

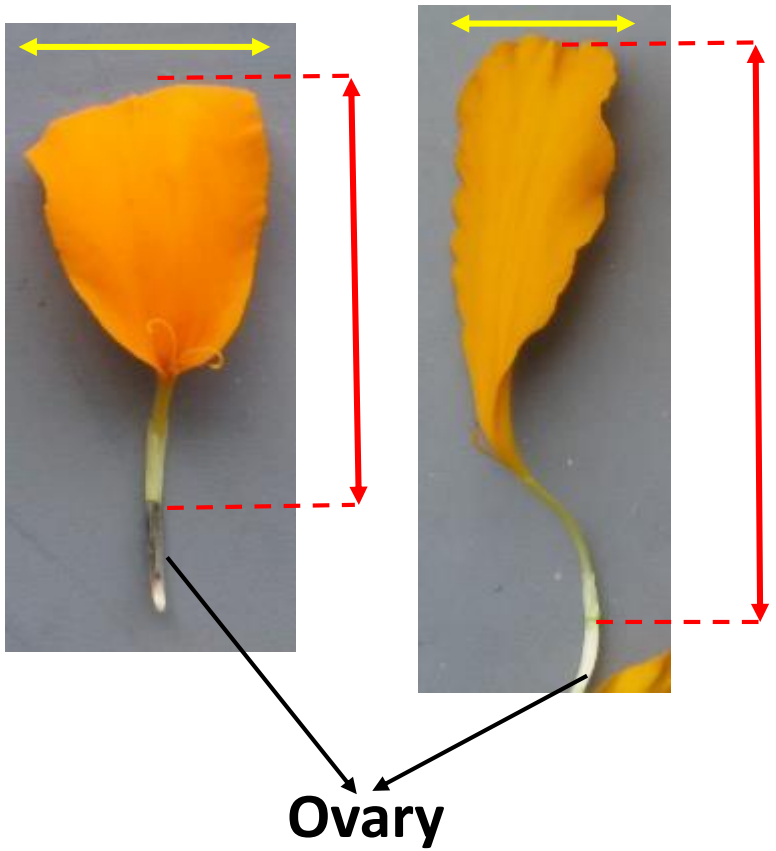
No.19

2. present

No.20

2. very shallow to shallow

No.22 Outer ligulate floret: length
No.23 Outer ligulate floret: width



- <u>There is no illustration in UPOV TG.</u>
- "Length" does not include an ovary.
- Extend the floret to measure.

Characteristics on flower color

No. 24 Flower head: number of colors

One flower head color

Two flower head colors

Flower head

No. 25: color

Tubulate/tubligulate

No. 27: main color

Ligulate

No. 29: number of colors
No. 30: main color
No. 31: secondary color
No. 32: distribution of colors
No. 33: size of central color zone (type 1 only)

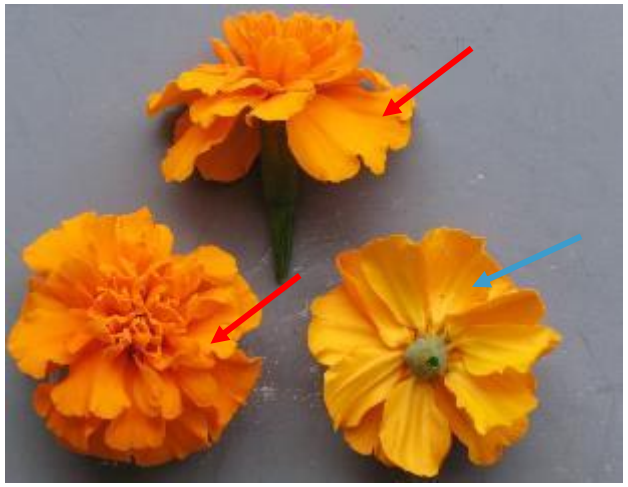
Tubulate/Tubligulate

No. 26: number of colors
No. 27: main color
No. 28: secondary color

For varieties with one flower head color

No.25 flower head: color

NO.27 Tubulate and/or tubuligulate floret: main color



- <u>There is no definition in TG</u>
- We observe the color of the outside of florets (any types of floret).
- In the Japanese National Test Guideline, we observe the color of the inside too.

When you use a color chart

TG says…

- **Because daylight varies, color determinations should be made in the room, under an artificial light or indirect sunlight of middle of the day (3.3.2, p4).**

No.34 Time of beginning of flowering

6/15	6/16
6/12	6/16
6/19	6/15
6/12	6/10
6/14	6/16

- There is no definition in TG
- We define “time of beginning of flowering” as the day that 50% of plants flowered.

In this case…

Time of beginning of flowering is 6/15, and notes would be determined by comparing with Example Varieties.

Finally

- What I explained is the way we are conducting in Japan based on TG.
- So, some adjustment might be needed in some situations (e.g. Expression of Example Varieties are different, some additional characteristics are required, etc.).

- So, let's practice in the group working!

Thank you for your attention!