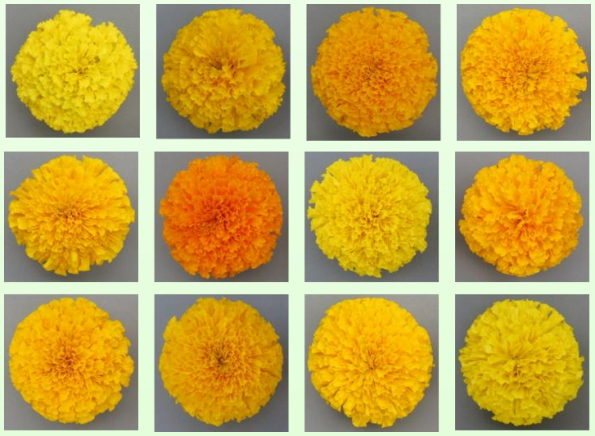
Example Variety



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Contents

Evaluation of characteristics

Can you evaluate this characteristics without Example Varieties ?

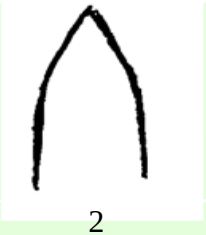
4	40 VG	Leaf: anthocyanin coloration	Example variety	Notes
QL	(a)	absent		1
		present		9

32	60. VS	Panicle: awns	Example variety	Notes
QL		absent		1
		present		9

Evaluation of characteristics

2	40 VS	Basal leaf: sheath color	Example variety	Notes
PQ		green		1
		green with purple lines		2
		light purple		3
		purple		4

11 (+)	40 VS	Leaf: shape of ligule	Example variety	Notes
PQ	(a)	truncate		1
		acute		2
		cleft		3



	1	2	3
	truncate	acute	cleft

Evaluation of characteristics

26 (*)	70 VS	**Non-prostrate varieties only: Stem length (excluding panicle)**	**Example variety**	**Notes**
QN		very short	Lampo, Leda	1
		short	Loto, Thaibonnet	3
		medium	Ariete, Bahia	5
		long	Baldo	7
		very long	Carnaroli	9

Evaluation of characteristics

3	40 VG	Leaf: intensity of green color	Example variety	Notes
QN	(a)	light		3
		medium		5
		dark		7

1 2 3 4 5 6 7 8 9

CPVO's TG

1	40 VG	Leaf: intensity of green color	Example variety	Notes
QN		light	Lemont	3
		medium	Bahia	5
		dark	Puntal	7

Purpose of Example Variety

What is Example Variety?

Clarify the states of expression of a characteristics

(a) to illustrate "state of expression" of a characteristics and/or

(b) to provide appropriate "states of expression" to each variety
(Bio-ruler for a state of expression in QN)

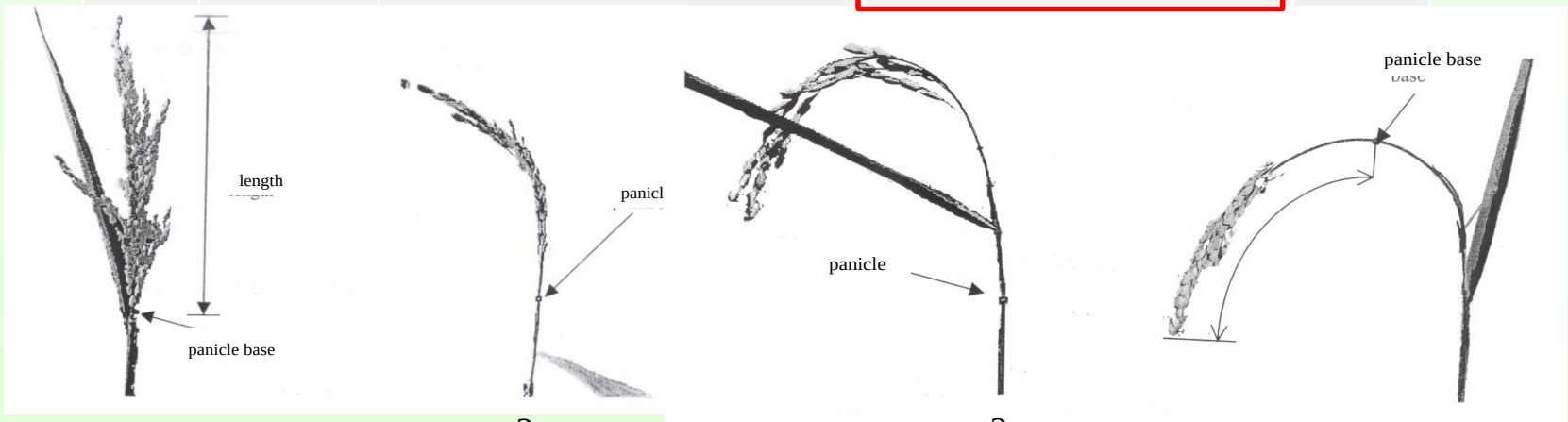
✓ ***harmonized approach for characterization***

reduce the differences in characterization at testing location , testing year.

Purpose of Example Variety

(a) to illustrate "state of expression" of a characteristics **TG/016 Rice**

39 (*) (+)	90 VG	Panicle: attitude in relation to stem	Example variety	Notes
PQ		upright	Elio, Roncolo	1
		semi-upright	Ariete, Lido	2
		slightly drooping	Guadiamar, Thaibonnet	3
		strongly drooping	Galatxo, Vialone Nano	4



1 upright

2 semi-upright

3 slightly drooping

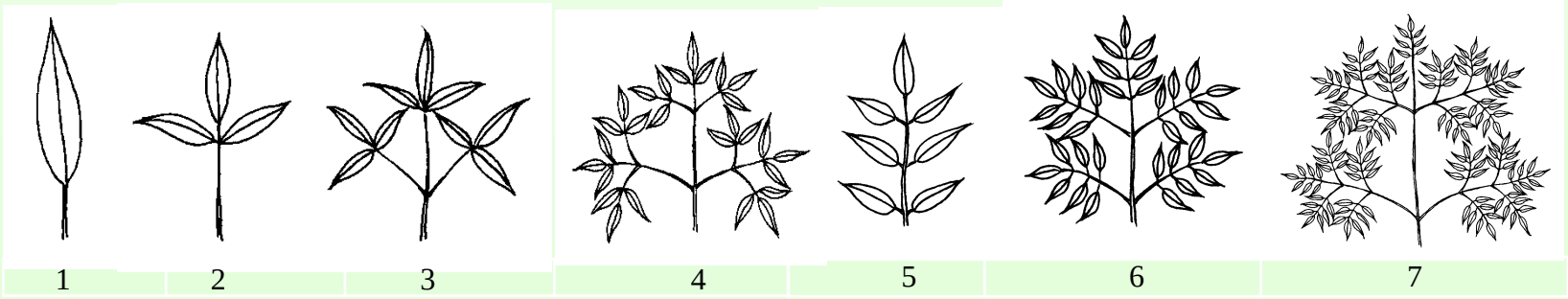
4 strongly drooping

Purpose of Example Variety

(a) to illustrate "state of expression" of a characteristics

TG/215 Clematis

6. (*) (+)	Leaf: type	Example variety	Notes
QL	simple		1
	ternate		2
	biternate		3
	triternate		4
	pinnate		5
	bipinnate		6
	tripinnate		7



Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

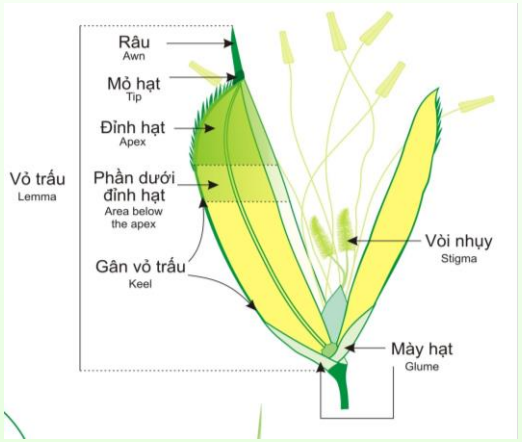
19 (*)	55 VG	Time of heading (50% of plants with heads)	Example variety	Notes
QN		very early	Loto	1
		early	Albada, Cripto	3
		medium	Ariete, Bahia	5
		late	Bomba, Puntal	7

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

23 (*) (+)	65. VS	Lemma: anthocyanin coloration of apex (early observation)	Example variety	Notes
QN		absent or very weak	Ariete, Bomba	1
		weak	Thaibonnet	3
		medium	Cripto	5
		strong	Elio, Puntal	7
		very strong	Arborio	9



Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

26 (*)	70 VS	**Non-prostrate varieties only: Stem length (excluding panicle)**	Example variety	Notes
QN		very short	Lampo, Leda	1
		short	Loto, Thaibonnet	3
		medium	Ariete, Bahia	5
		long	Baldo	7
		very long	Carnaroli	9

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Absolute scale and Relative scale**

- **Absolute scale**

	length	note
Leaf blade: length		
short	30 ~ 34.9	3
Short to medium	35 ~ 39.9	
medium	40 ~ 44.9	5
Medium to long	45 ~ 49.9	
long	50 ~ 54.9	7

- **Relative scale**

	Example varieties	note
Leaf blade: length		
short	**A**	**3**
medium	**B**	**5**
long	**C**	**7**

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Absolute scale**

	length	note
QN Leaf: length		
short	30 ~ 34.9	3
Short to medium	35 ~ 39.9	
medium	40 ~ 44.9	5
Medium to long	45 ~ 49.9	
long	50 ~ 54.9	7

Time	Candidate X	note
Last year	42 cm	5
This year	47 cm	6

Candidate X :
Different Notes in Last year and This year

it could be misleading to compare Notes from different year based on the absolute scale.

Evaluation of characteristics

(b) to provide appropriate "states of expression" to each variety

variety A

- ✔ Sunshine
- ✔ temperature
- ✔ watering
- ✔ fertilizer
- ✔ cultivation technic

variety A

Or

variety A

Purpose of Example Variety

(b) assigning state of expression to each variety

- ✓ **Actual measurement of QN can be influenced by the environment.**
- ✓ **The measurements are different depending on the year and location.**
- ✓ **Using the measured values, and trying to evaluate a characteristic, state of expression (or Note) might be changed by year or location.**
- ✓ **Therefore, in order to be able to evaluate the characteristics stably at any time, it needs to use a relative scale provided by the Example Varieties.**

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

MS	Leaf blade: length	Example varieties	Note
QN	short	**A**	**3**
	medium		**5**
	long	**C**	**7**

example varieties are provided

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

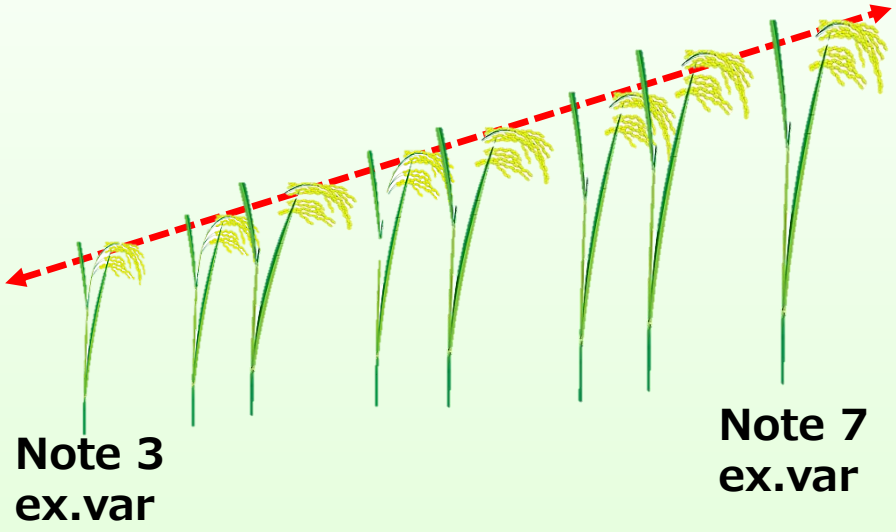
MS	Leaf blade: length	Example varieties	Note	Last year cm	This year cm
QN	short	A	3	32	36
	medium		5		
	long	C	7	52	56
		Candidate X		42	47

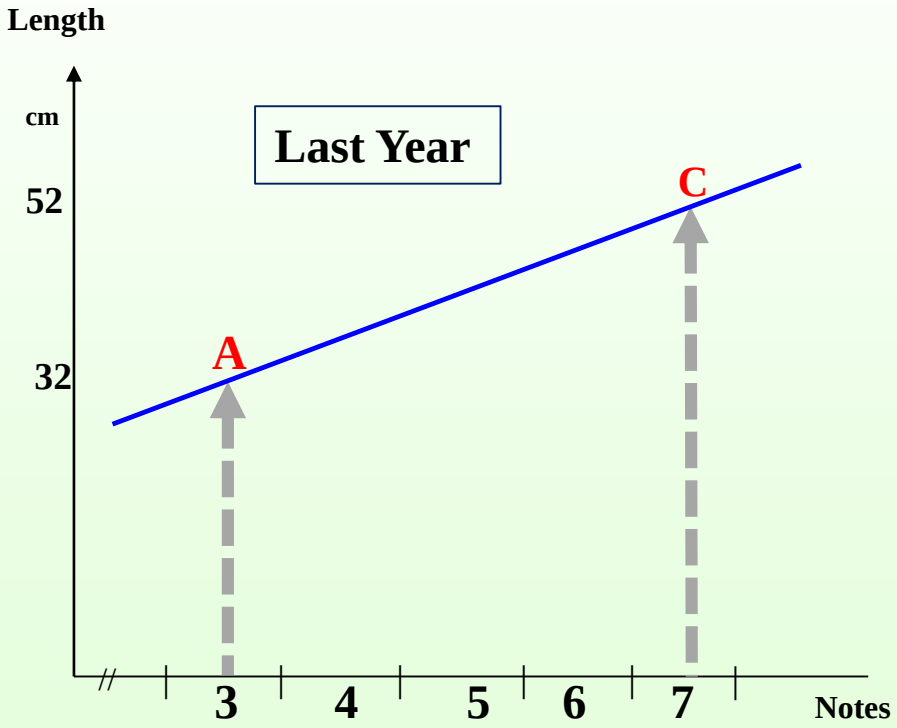
Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**





this line shows the relation between height and Notes.

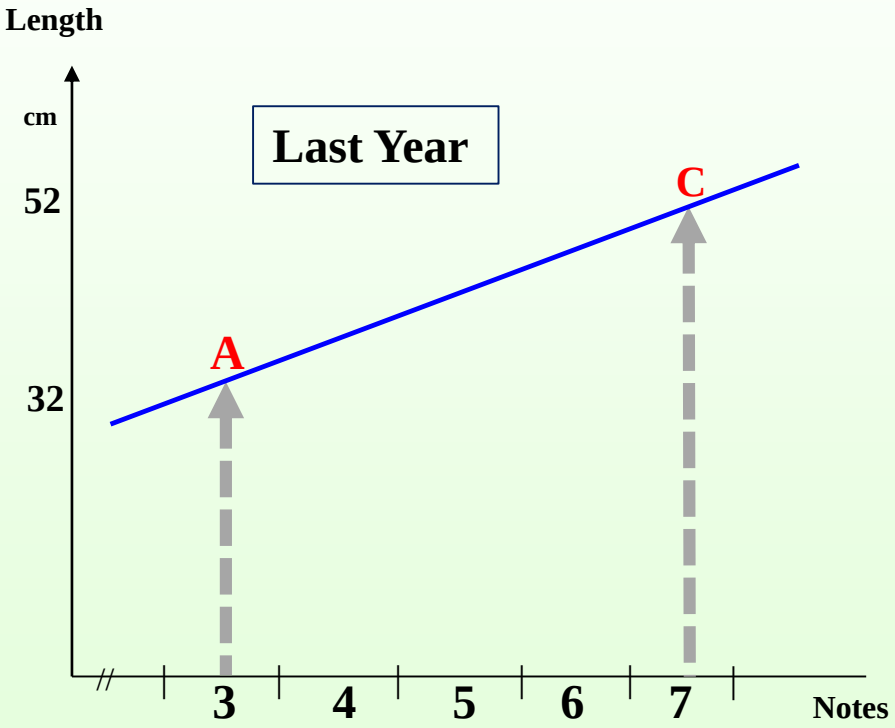
Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

MS	Leaf blade: length	Example varieties	Note	Last year
QN	short	A	3	32 cm
	medium		5	
	long	C	7	52 cm



Purpose of Example Variety

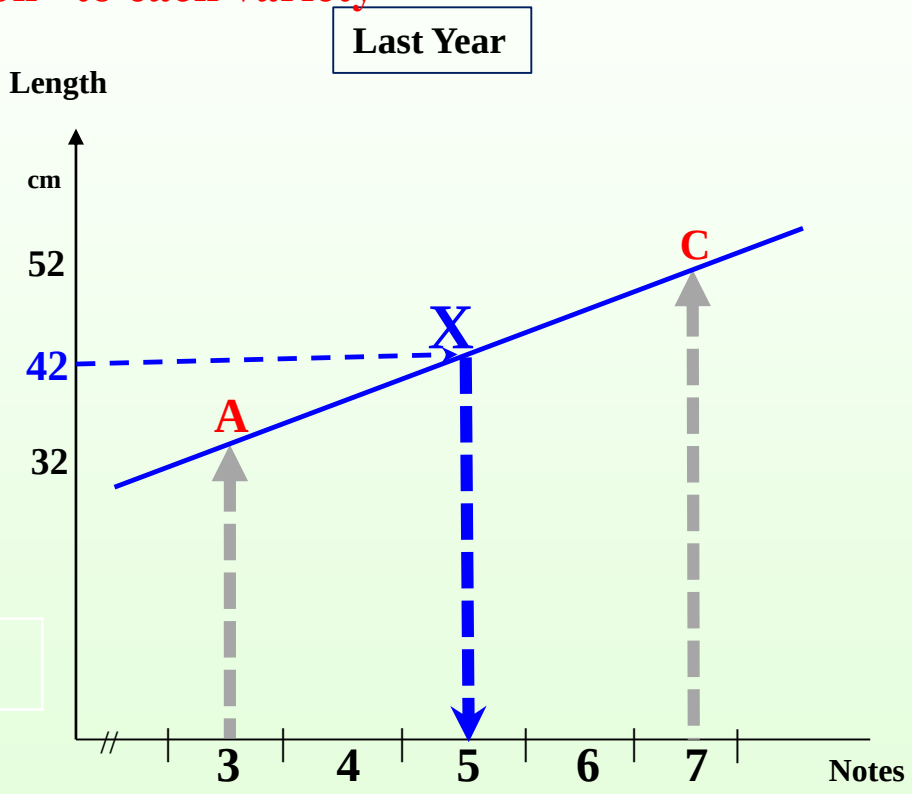
What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

MS	Leaf blade: length	Example varieties	Note	Last year
QN	short	A	3	32 cm
	medium		5	
	long	C	7	52 cm

Candidate X	5	42 cm

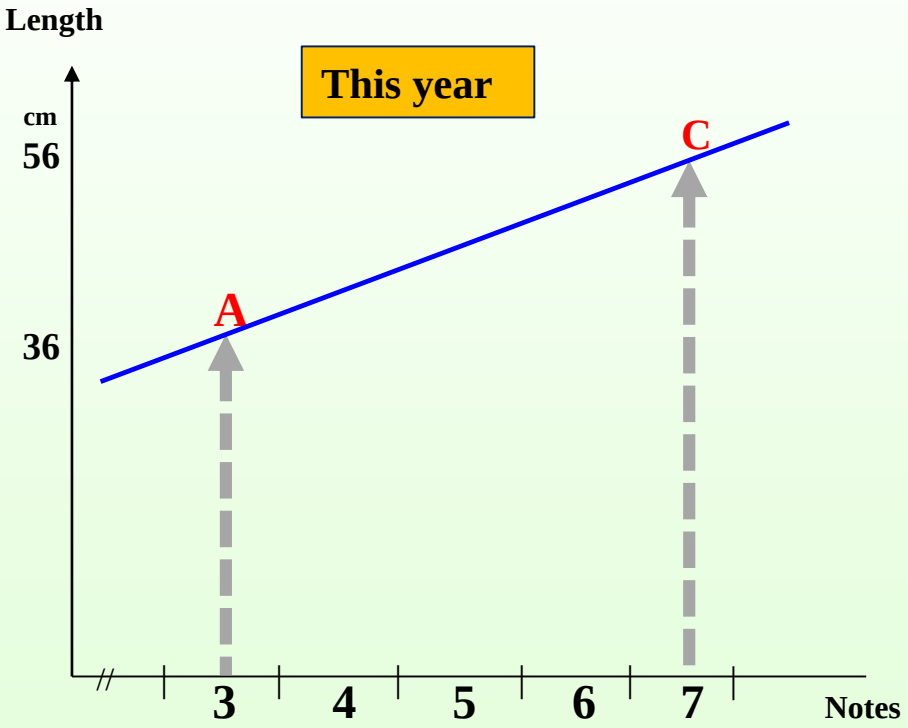


Purpose of Example Variety

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

MS	Leaf blade: length	Example varieties	Note	This year
QN	short	A	3	36 cm
	medium		5	
	long	C	7	56 cm



Purpose of Example Variety

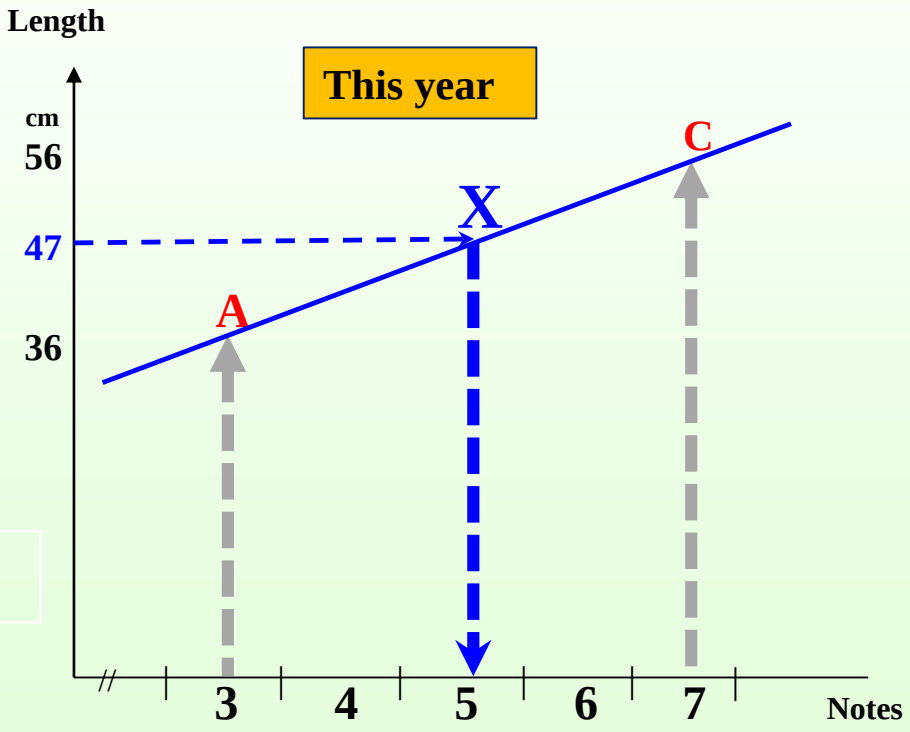
What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

MS	Leaf blade: length	Example varieties	Note	This year
QN	short	A	3	36 cm
	medium		5	
	long	C	7	56 cm

Candidate X	5	47 cm



Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

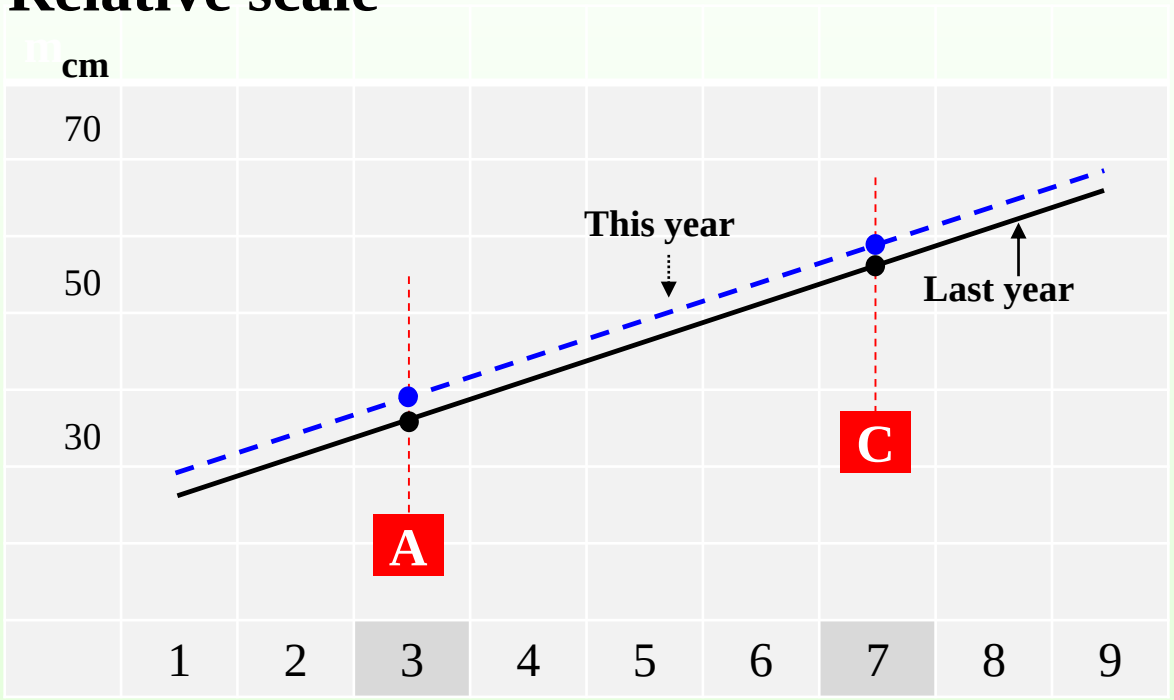
MS	Leaf blade: length	Example varieties	Note	Last year cm	This year cm
QN	short	A	3	32	36
	medium		5		
	long	C	7	52	56
		Candidate X		5 42	5 47

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**



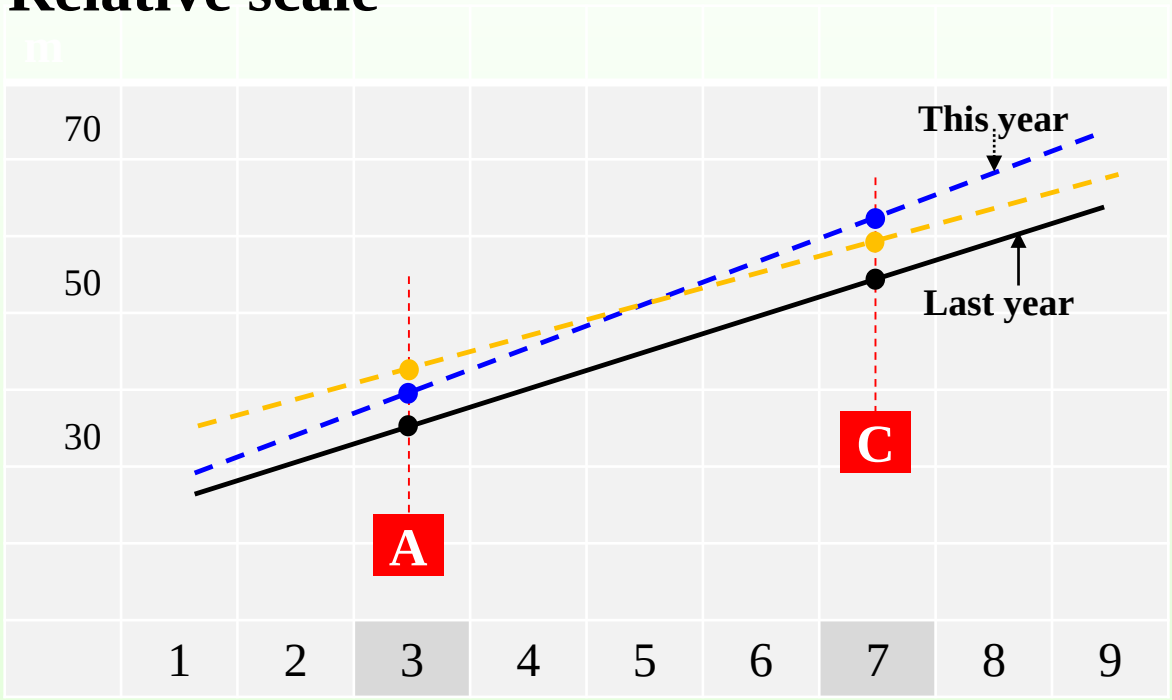
✓ Measurement can be influenced by the environment.

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**



✓ Measurement can be influenced by the environment.

Purpose of Example Variety

What is Example Variety?

(b) to provide appropriate "states of expression" to each variety

- **Relative scale**

		Last year			This year		
	Example varieties	**length**	**range**	**Variety X**	**length**	**range**	**Variety X**
leaf: length				**42cm**			**47cm**
short (3)	**A**	32	**30 -34**		36	**34 - 38**	
short to medium			**35 -39**			**39 -43**	
medium (5)			**40 -44**	5		**44 - 48**	5
medium to long			**45 - 49**			**49 - 53**	
long (7)	**C**	52	**50 - 54**		56	**54 - 58**	

Purpose of Example Variety

What is Example Variety?

Absolute measurement & Relative measurement

	length	note
QN Leaf: length		
short	30 ~ 34.9	3
Short to medium	35 ~ 39.9	
medium	40 ~ 44.9	5
Medium to long	45 ~ 49.9	
long	50 ~ 54.9	7

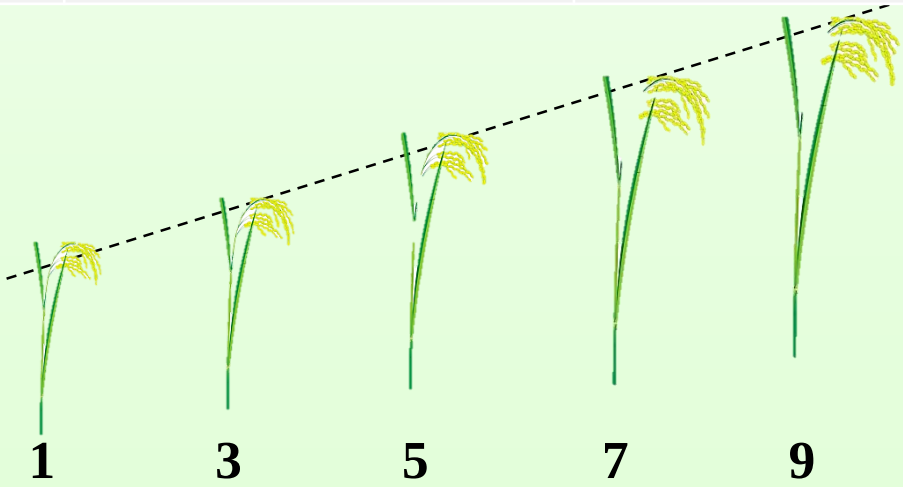
Time	Candidate X	note
Last year	42 cm	5
This year	47 cm	6

		Last year			This year		
	Example varieties	length	range	Variety X	length		Variety X
leaf: length				42cm			47cm
short (3)	A	32	30 -34		36	34 - 38	
short to medium			35 -39			39 -43	
medium (5)			40 -44	5		44 - 48	5
medium to long			45 - 49			49 - 53	
long (7)	C	52	50 - 54		56	54 - 58	

Evaluation of characteristics

(b) to provide appropriate "states of expression" to each variety

26 (*)	70 VS	**Non-prostrate varieties only: Stem length (excluding panicle)**	**Example variety**	**Notes**
QN		very short	Lampo, Leda	1
		short	Loto, Thaibonnet	3
		medium	Ariete, Bahia	5
		long	Baldo	7
		very long	Carnaroli	9



Criteria for Example Variety

What is Example Variety?

- ✓ Well known material freely available and easily accessible,
- ✓ All desired states of expression should be covered with the minimum number of example varieties
- ✓ Expression must not change significantly with environment
- ✓ Should be uniform and stable

Criteria for Example Variety

What is Example Variety?

A example variety should cover as many example states as possible

		1	2	3	4	5	6	7	8	10 (*)	12
		1.(+)VS QN	2.VS PQ	3.VG QN	4.VG QL	5.VG PQ	6.VG QL	7 VG QN	8.VS QN	9.(*) VS QL	10 VS QL
new No.	Name of Variety	Coleoptile: Anthocyanin coloration	Basal leaf: Sheath color	Leaf: Intensity of green color	Leaf: Anthocyanin coloration	Leaf: Distribution of anthocyanin coloration	Leaf sheath: Anthocyanin coloration	Leaf sheath: Intensity of anthocyanin coloration	Leaf: Pubescence of blade	Leaf: Anthocyanin coloration of auricles	Leaf: Anthocyanin coloration of collar
1	Bắc thơm số 7	1	1	5	1		1		3	1	1
14	BM 9962							3			
5	Hoa khôi 4										
6	Hương việt 3										
7	Khang dân 18	1	1		1		1		7	1	1
18	Koshihikari kazusa 2 go										
10	Q5			7					9		

Criteria for Example Variety

What is Example Variety?

- Necessity of example varieties

No need

A characteristic not influenced by the year or environment

(QL characteristics)

Need

A characteristic influenced by the environment

(QN and some PQ characteristics)

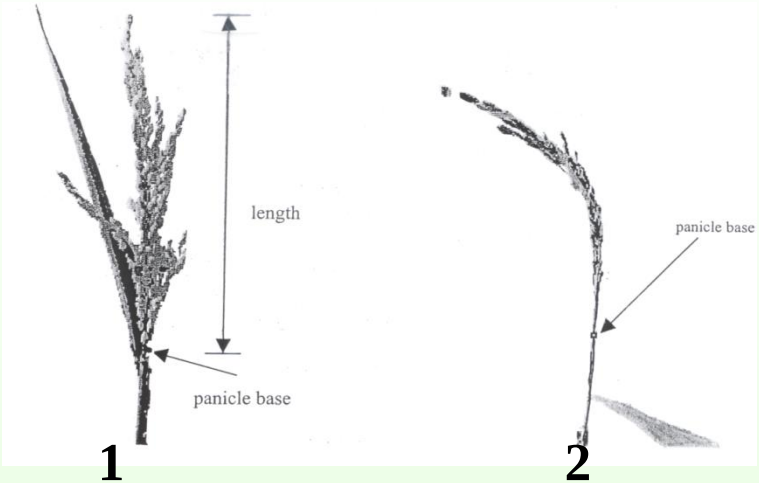
- ✓ **QN :** at least two states of expression should be provided.
- ✓ **PQ :** to provide a set of example varieties to cover the different types of variation within the range of expression of the characteristics.

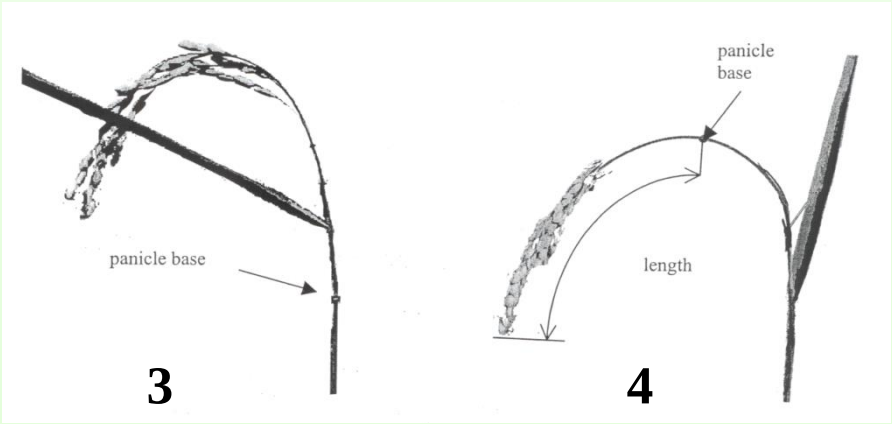
- How to use Example Varieties

PQ characteristics

How to use the example varieties

Select the most similar expression





PQ characteristics

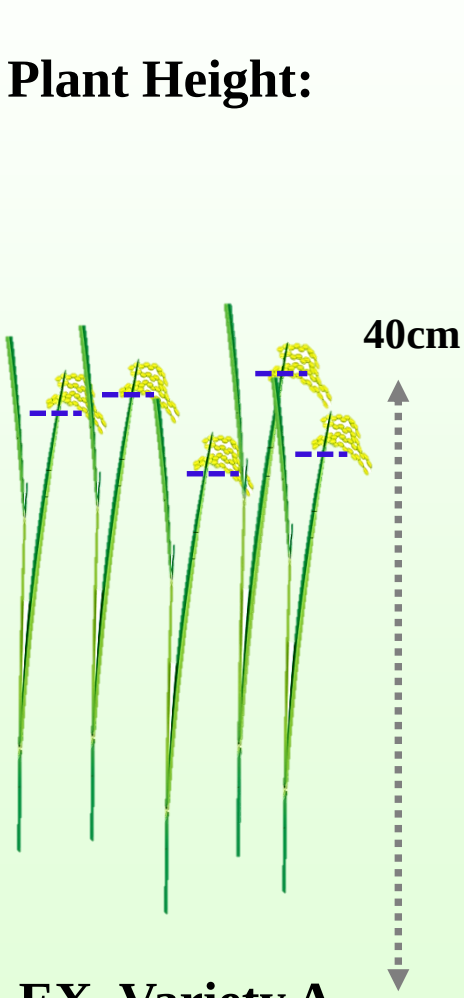
How to use the example varieties

selecting an appropriate type "**Panicle: type of secondary branching**"

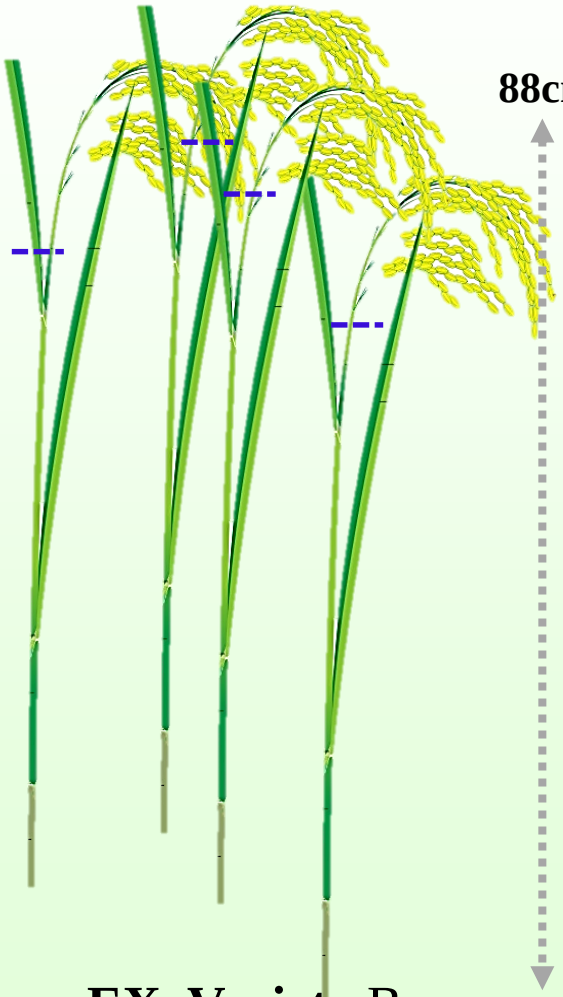
QN characteristics

How to use the example varieties

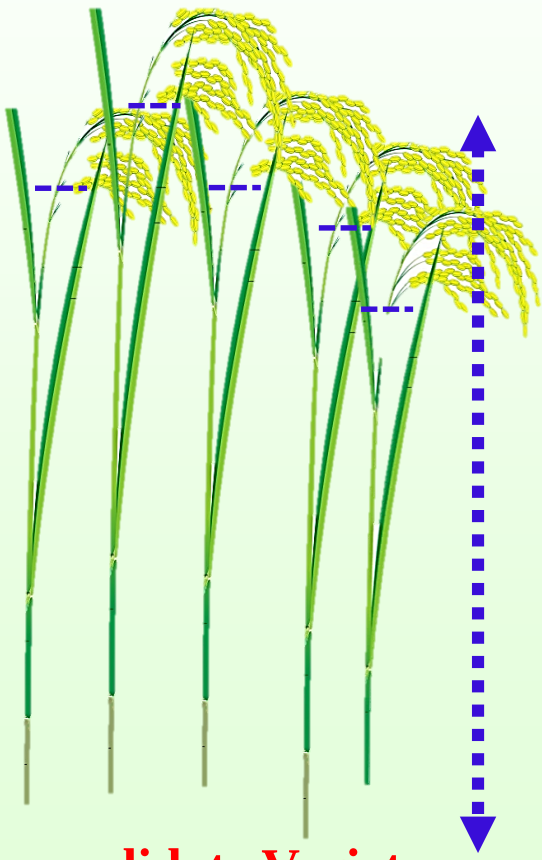
Plant Height:



EX. Variety A
(Note 3)



EX. Variety B
(Note 7)



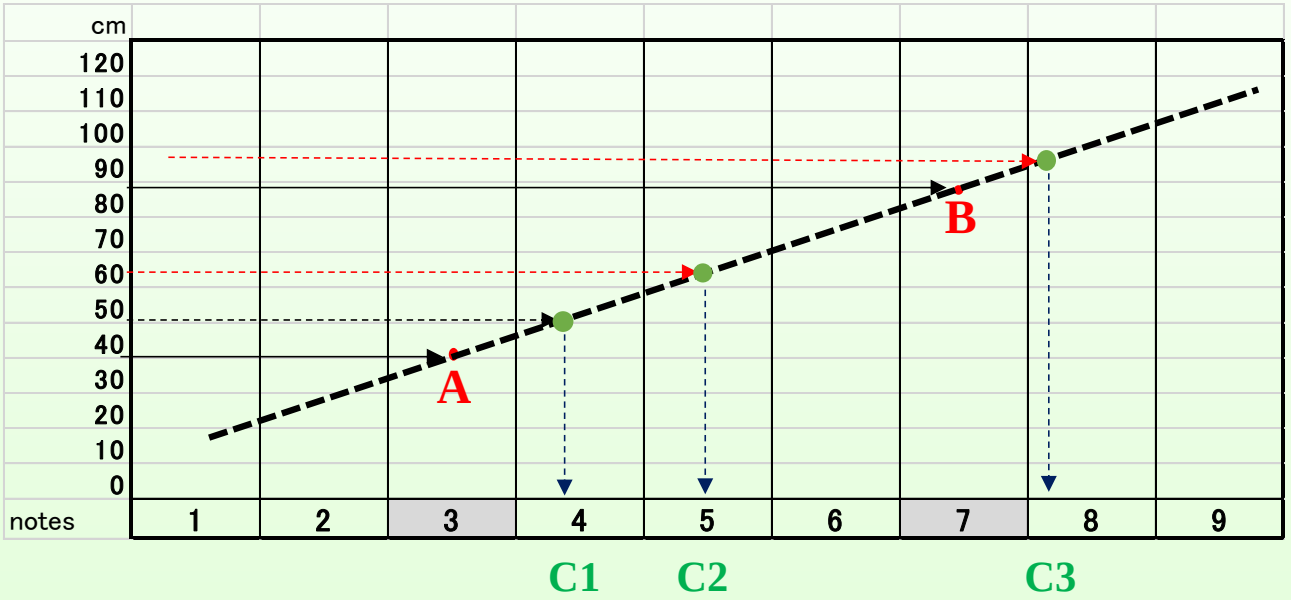
candidate Variety
(Note ?)

QN characteristics

How to use the example varieties

Converting measurements to notes

variety	height	Notes
A	40cm	3
B	88cm	7
C1	50	4
C2	65	5
C3	97	8



Step for selecting example varieties

How to set up Example Varieties

- **Converting measurements to notes**
- how to make a “Note setting table”
  - Step1: get an interval value
    - ✓ Put value of note 7 → note 7, value of note 3 → note 3

notes	1	2	3	4	5	6	7	8	9
			40				**88**		

- ✓ an interval value → (88-40) / 4 = 48/4 = 12

notes	1	2	3	4	5	6	7	8	9
			40				**88**		

12 12 12

Step for selecting example varieties

How to set up Example Varieties

- Step2: get a value of range of each note

✓ get a value of range of Note 3.

"40" is middle value in the range of Note3.

notes	1	2	3	4	5	6	7	8	9
		40-6=34	40	34+12=46			88		
			6 6				6 6		

starting point of Note3 → 40- 12/2 = 40-6 = 34

note setting table

notes	1	2	3	4	5	6	7	8	9
interval	~10	22~	34~	46~	58~	70~	82~	94~	106~

34-12 34+12

Step for selecting example varieties

How to set up Example Varieties

- Step3: get notes from "note setting table"

note setting table

notes	1	2	3	4	5	6	7	8	9
interval	**~10**	**22~**	**34~**	**46~**	**58~**	**70~**	**82~**	**94~**	**106~**

variety	height	Notes
A	**40cm**	**3**
B	**88cm**	**7**
C1	**50**	**?**
C2	**65**	**?**
C3	**97**	**?**

QN characteristics

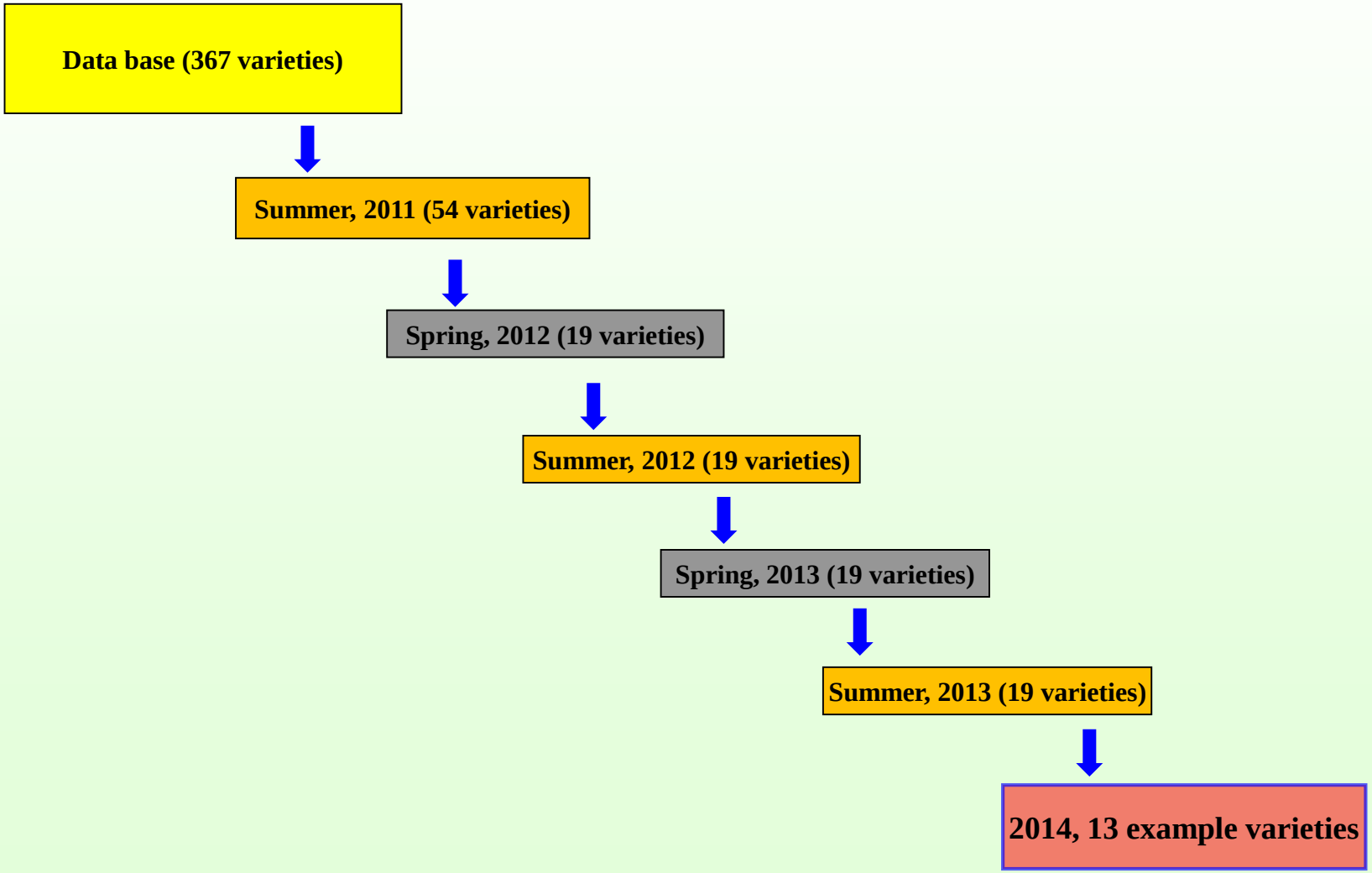
How to use the example varieties

- **Converting measurements to notes**

  - ✓ steps
    - calculate mean of height of example varieties and candidate variety
    - get an interval value
    - get a value of range of each note (make a “note setting table”)
    - get notes from “note setting table”

- How to set up Example Varieties

The process of selection of Example Varieties for Rice in Vietnam



Step for selecting example varieties

How to set up Example Varieties

Example: **plant height**

- Step1: collecting data
  - ✓ Collect the existing varieties
  - ✓ Measuring "plant height" of above varieties by Growing test
- Step2: analyzing the data
  - ✓ Sort the data. Find Max and Min value from the data.

1	2	3	4	5	6	7	8	9	10
71	72	72	72	73	76	76	77	77	77
11	12	13	14	15	16	17	18	19	20
78	78	80	80	81	81	83	83	84	84
21	22	23	24	25	26	27	28	29	30
85	85	87	87	89	89	89	91	91	91
31	32	33	34	35	36	37	38	39	40
91	93	93	94	96	97	102	105	106	107

Step for selecting example varieties

How to set up Example Varieties

- Step2: analyzing the data

✓ Put the Max. value → note 7 (or 8), Min. value → 3 (or 2)

notes	1	2	3	4	5	6	7	8	9
			71				**107**		

✓ an interval value → (107 -71) / 4 = 36/4 = 9

notes	1	2	3	4	5	6	7	8	9
			71				**107**		

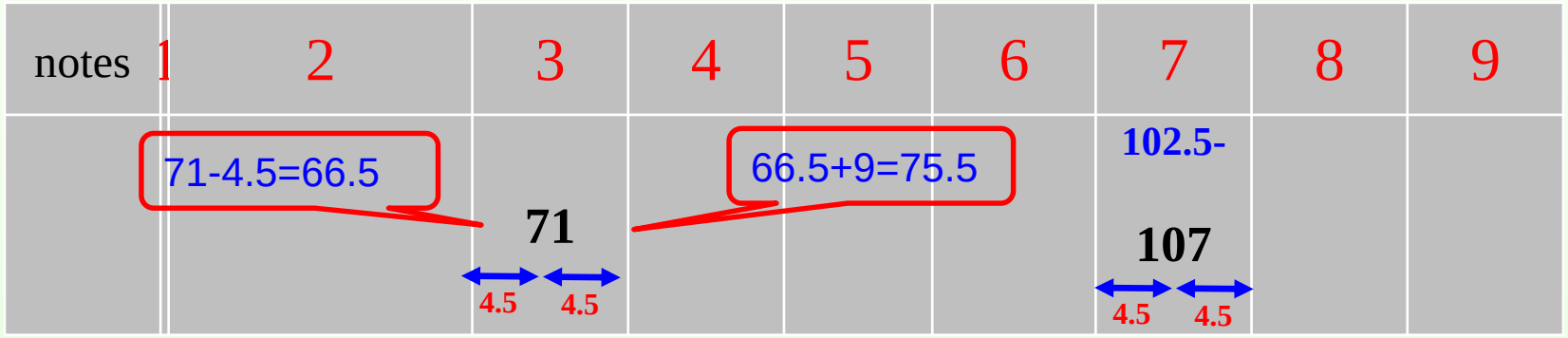
9 9 9

Step for selecting example varieties

How to set up Example Varieties

- Step2: analyzing the data

✓ get a value of range of Note 3.
"71" is middle value in the range of Note3.



starting point of Note3 → 71- 9/2 = 71-4.5 = 66.5

starting point of Note4 → 66.5+9=75.5

Step for selecting example varieties

How to set up Example Varieties

- Step2: analyzing the data

✓ calculate the range of each note **[note setting table]**

starting point of Note 3 → 66.5 -9 = 57.5
starting point of Note 4 → 66.5 + 9 = 75.5
starting point of Note 5 → 66.5 + 9*2 =84.5 (the same hereafter)

notes	1	2	3	4	5	6	7	8	9
interval	**~57.4**	**57.5~**	**66.5~**	**75.5~**	**84.5~**	**93.5~**	**102.5~**	**111.5~**	**120.5~**

66.5-9 **66.5+9**

Step for selecting example varieties

How to set up Example Varieties

- Step2: analyzing the data

Attribute the note to each variety according to [note setting table]

1	2	3	4	5	6	7	8	9	10
71	72	72	72	73	76	76	77	77	77
03	03	03	03	03	04	04	04	04	04
11	12	13	14	15	16	17	18	19	20
78	78	80	80	81	81	83	83	84	84
04	04	04	04	04	04	04	04	04	04
21	22	23	24	25	26	27	28	29	30
85	85	87	87	89	89	89	91	91	91
05	05	05	05	05	05	05	05	05	05
31	32	33	34	35	36	37	38	39	40
91	93	93	94	96	97	102	105	106	107
05	05	05	06	06	06	06	07	07	07

- Example: Stem: length 40 existing Variety

✓ Max: 107 , Min: 71, range(Max – Min): 36

✓ Average: 85.6 cm

✓ Number of notes (07 – 03)= 4

✓ interval values for each note: 9cm

Step for selecting example varieties

- Step3: confirming the data

✓ Confirm the data of each variety by re-examination.

  - Make a "note setting table" and attribute the note to each variety in second year.

✓ Compare both notes of each variety in first year and second year.

✓ Select the varieties the both notes showed the stable value in first year and second year.

✓ Finally select a representative variety for each note as example variety.

Step for selecting example varieties

How to set up Example Varieties

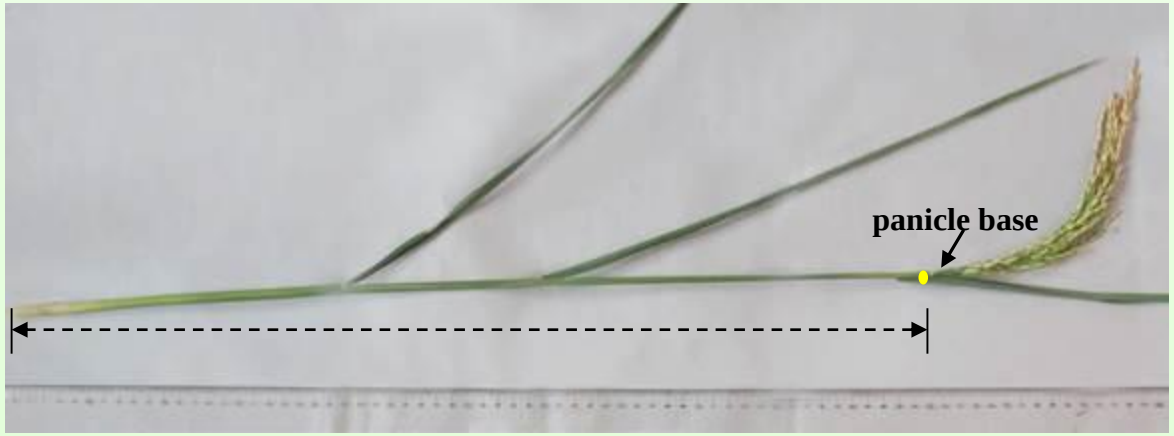
Table of Example varieties and notes (only QN characteristics)

	Leaf blade: Length	*Leaf blade: Width*	*Time of heading (50% of plants with heads)*	*Stem: Thickness*	*Non-prostrate varieties only: Stem length (excluding panicle)*	*Panicle: Length of main axis*	*Panicle: Number per plant*	*Time of maturity*	*Grain: Weight of 1000 fully developed grains*	*Grain: Length*	*Grain: Width*	*Decorticated grain: Length*	*Decorticated grain: Width*
BM 9962					**7**	**7**							
ĐTL2							**3**						
Hoa khôi 4		**5**										**5**	
Hương việt 3				**5**									**3**
Khang dân 18									**3**		**3**		
Koshihikari kazusa 2 go			**3**	**3**	**3**	**3**	**5**	**3**		**3**		**3**	**7**
NTL1	**6**		**5**					**5**	**8**				
NV1											**7**		
P6 đột biến		**3**											
Q5	**4**												
ST7										**7**			

Step for selecting example varieties

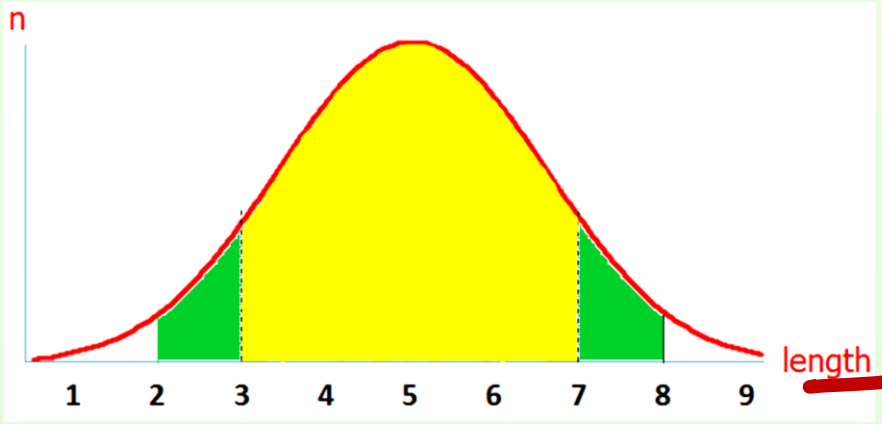
How to set up Example Varieties

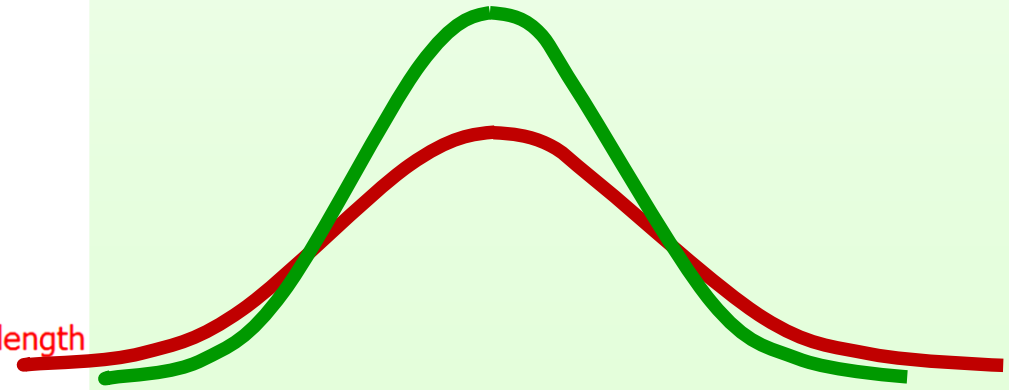
	Vietnamese	English	Japanese	Giai đoạn	Mã số	Example varieties
26 QN VS	**Thân: Chiều dài (trừ bông). Chỉ với giống không bò lan**	**Stem: length (excuding panicle). Non-prostrate verieties only**	稈：長さ（穂を除く、浮稲を除く）	70		
	Rất thấp	very short	極短		1	
	Thấp	short	短		3	Koshihikari kazusa 2 go
	Trung bình	medium	中		5	
	Cao	long	長		7	BM9962
	Rất cao	very long	**極長**		9	



Step for selecting example varieties

- How to allocate the Notes
  - whether the sample size is enough
  - whether the range of variation of the sample is large or small
  - The interval value is enough for distinguishing varieties?





Thank you
for your attention

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