

Technical Working Party on Automation and Computer Programs TWC/37/10**Thirty-Seventh Session
Hangzhou, China, October 14 to 16, 2019****Original:** English
Date: October 11, 2019

EXPERIENCE WITH USING TWO LOCATIONS BY ONE YEAR FOR DUS DECISIONS*Document prepared by an expert from France**Disclaimer: this document does not represent UPOV policies or guidance*

The annex to this document contains a copy of a presentation on “Experience with using two locations by one year for DUS decisions”, to be made at the thirty-seventh session of the TWC.

[Annex follows]

Experience with using 2 locations by 1 year for DUS decisions

UPOV-TWC/37, Hangzhou, October 2019

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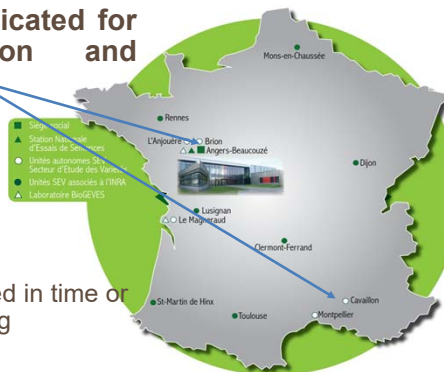
GEVES two different approaches

- **Depending of the group:**
- **Vegetables species since many years**
The two cycles in one year used routinely in the most of species
- **Agricultural species recently**
The two cycles in one year may be used occasionally in few species

Two DUS trials in one year

- At GEVES, mostly for vegetable species and for most of the vegetables applications
- Two main GEVES units dedicated for vegetable species (Brion and Cavaillon)
- Two cases:
 - Two trials in the same units
 - Two trials in 2 locations

In these two cases, trials are separated in time or with a degree of overlapping



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Vegetable species with 2 trials in 1 year

DUS trials conducted in	Places	
	GEVES Brion	GEVES Cavaillon
same GEVES unit	Bean, Carrot, Corn salad, Raddish	Melon, Pepper, Tomato (2 types of growth)
2 GEVES units	Cauliflower, Cucumber, Curled / Plain chicory, Fennel, Leaf chicory, Lettuce, Onion, Red beet, Turnip, Zucchini,	
1 GEVES unit 1 contractor	Cauliflower (only long cycle), Witloof	Garlic

- Indoor lettuce, pepper and indoor tomato: 2 greenhouse trials and 1 openfield trial (variety controls)
- Bilateral agreement between GEVES and contractor (technical institutes) and DUS observations/conclusions upon GEVES staff (approach non used for parents lines submitted for protection)



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Both trials in one GEVES unit



● Trials separated in time

- Fully separated: the 2nd trial begins after the 1st trial has ended (corn salad, raddish, indoor tomato)



- Overlapping in different degrees: 2nd trial begins before the 1st trial which is about to finish (bean, carrot, pepper) or overlap in a certain degree the 1st trial (melon)



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Both trials in one GEVES unit

● Examples of fully separated trials:

- Indoor tomato: 1st trial starts in January and conclusions in June
2nd trial starts in July and conclusions in October
- Corn salad: 1st trial starts in January and conclusions in April
2nd trial starts in September and conclusion in November

⇒ *Enough time to adjust the 2nd trial with accurate varieties*

● Examples of fully separated trials:

- Carot: 1st trial starts in March and conclusions in July
2nd trial starts in June and conclusions in November
- Pepper: 1st trial starts in January and conclusions in June
2nd trial starts in June and conclusions in November

⇒ *Early results of the 1st trial permit to exclude some similar varieties in the 2nd trial*



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Both trials in one GEVES unit

● Trials layout :

Characteristics observed in the 2 DUS trials except for certain morphological ones (bolting, flower, ...) and disease resistances for which only one test is conducted in field for bolting and flower characteristics and in laboratory for disease resistances

● Data analysis :


- The 2 trials are analysed separately
- Similar varieties : they could be adjusted in the 2nd trial for fully separate and slightly overlapped trials and a 3rd trial could be required for trials with a high level of overlapping for which the similar varieties are the same (melon),
- Uniformity : a 3rd trial could be required if off-types are observed only in one trial.

Both trials in one GEVES unit

● Variety description :

Description is conducted in only one cycle, *i.e.* the leading cycles defined for each species.


NB: The description is checked during the other cycle

 **GEVES**

VARIETY DESCRIPTION
Draft

1.	Reference number of reporting authority	: CTPS 406203
2.	Reference number of requesting authority	: 406203
3.	Brooker's reference	: FR 2
4.	Applicant (name and address)	: Vilmorin SA route de Mancy BP 8 49250 LA MENTRIE France : Vilmorin SA
5.	Brooker's name	
6.	Botanical name of taxon	: <i>Beta vulgaris</i> L., ssp. <i>Vulgaris</i> var. <i>condensa</i> A.J.C.
7.	Common name of taxon	: Beetroot
8.	Variety denomination	: Crossbush
9.	Variety type	: open pollinated variety
10.	Date and document number of CPVO test guidelines	: 01/04/2009, CPVO-TP06001
11.	Date and/or document number of national test guidelines	
12.	Testing authority	: GEVES, France
13.	Testing station(s) and place(s)	: Geves Bion L'Étang de la Chapelle, 01-08-2018
14.	Period of testing	
15.	Date and place of document	: www.geves.fr

OCVV or National No	Characteristic	Level of expression	Note
1	General germity	multigerm	2
2	Seedling first coloration of hypocotyl	present	9
3	Leaf attitude of petiole	erect to semi-erect	2
4	attitude of blade	semi-erect	3
5	length (including petiole)	medium	5
6	Leaf blade length	short to medium	4
7	width	narrow to medium	4
8	shape	narrow elliptic to medium elliptic	4

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Trials in two locations



● Trials separated in time

- Fully separated: the 2nd trial begins after the 1st trial has ended (cucumber, indoor lettuce)



- Overlapping in different degrees: 2nd trial begins before the 1st trial which is about to finish (openfield lettuce, red beet, turnip...) or overlap in a certain degree the 1st trial (cauliflower, onion, witloof...)



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Trials in two locations

● Trials layout :

- Similar layouts in the 2 DUS trials / locations
- Seeds provided by the leading GEVES station to the 2nd location (other GEVES station or the technical institute)
- Some slight differences in the two trials (size of plots, ...) but in respect to CPVO Technical Protocol
- Characteristics observed in the 2 DUS trials except for certain morphological ones (bolting, flower, ...) and disease resistances for which only one test is conducted in field for bolting and flower characteristics and in laboratory for disease resistances



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Trials in two

locations :

- The 2 trials are analysed separately.
- Distinctness: a 3rd blind trial in the Breeder location if he assures that the candidate is distinct in another pedoclimatic conditions than GEVES units (trial checked by GEVES).
- Uniformity : a 3rd trial in the leading GEVES location could be required if off-types are observed only in one trial.

● Examples :

- Distinctness:
 - If D in the both locations => ok D
 - If D in one location or one cycle => ok D
 - If ND in both locations => additional blind cycle in the Breeder location
- Uniformity :
 - If number of off-type < to the threshold in the 2 cycles => candidate U
 - If number of off-type > to the threshold in the 2 cycles => candidate NU
 - If number of off-type > to the threshold just in one cycle => additional cycle in leading location



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Trials in two locations

● Variety description :

Description is conducted in only one cycle, *i.e.* the leading GEVES location specified for each species

NB: The second location checks the description consistence with the leading location

Indoor lettuce
Cavaillon trial
September to November



Indoor lettuce
Brion trial
January to April



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What to summarize?

- A way to finalize the registration as quickly and well as possible
- 15 years experience within GEVES with 2 DUS trials / locations by year
- Depending on available facilities / staff and on climatic conditions

- Different modalities to organize 2 DUS trials by year :
 - 2 trials in the same GEVES station
 - 2 trials in the 2 GEVES stations
 - 2 trials in a GEVES station and in technical institute
- Databases varieties and reference collections regularly updated
- Advantages and flexibility provided by each modalities
- Good communication and coordination between locations is required

Agricultural example with 2 trials in 1 year

- At GEVES, different using in few agricultural species

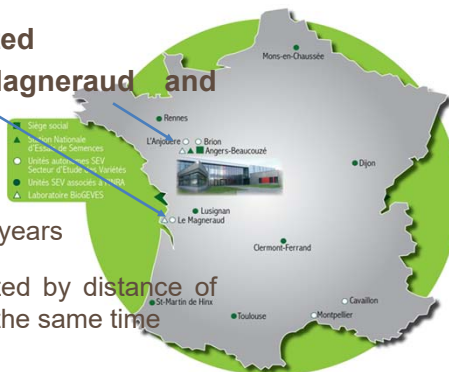
Example of DUS Sunflower

- Two main GEVES units dedicated for DUS Sunflower (Le Magneraud and Anjouère)

- One case :

- Two trials in 2 locations during 2 years

In this case, trials are separated by distance of the location approximatively in the same time

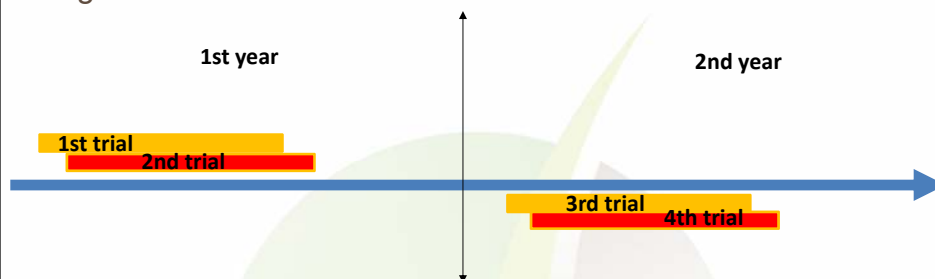


Trials in two locations

- Trials separated in distance



- Overlapping in function of climatic conditions: 2nd trial begins a little after the 1st trial which is overlap in a certain degree



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Trials in two locations

- Trials layout :

- Similar layouts in the 2 DUS trials / location
 - Seeds provided by the leading seed GEVES units (same sample)
 - Some slight differences in the two trials (size of plots, ...) but in respect to CPVO Technical Protocol
 - All Characteristics observed in the 2 DUS trials
-
- For Agricultural species, 2 years are conducted in 2 locations = 2 cycles/year



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Trials in two

Locations

● Data analysis :

- The 2 trials are analysed separately year by year.
- Distinctness: 2 possibilities (for Line and Hybrid)
- Distinctness : usually assessed during the second year in trial 3 and 4, due to the use of GAIA at the end of the first year.



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Trials in two

Locations

● Data analysis :

- The 2 trials are analysed separately year by year.
- Uniformity: Same approach for Line and Hybrid

● Examples :

- Uniformity :
 - If number of off-type < to the threshold in both of the 2 cycles
=> candidate U
 - If number of off-type > to the threshold in one cycle (1 location) => candidate 3rd cycle on one of the two locations (it depends of the year)
 - If number of off-type > to the threshold in both of the 2 cycles
=> candidate refused for lack of uniformity (noun additional cycle)

● Opportunities:

- Possibility to have a Uniformity information/decision after 1 year for the most of candidates
=> allow to the breeder to withdraw the candidate (in 2nd case) before the end of the studies (lower cost...) or refuse the candidate directly (in 3rd case).



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Trials in two locations

- **Variety description :**

Description is conducted during two years in two locations (= 4 cycles)

Characteristics scored visually as QL:

Keep the majority of the overall size.

Characteristics scored visually (1 to 9):

Validation by replication of all scores, and mean of them.

Measured characteristics as QN:

Validation by replication/location/year of all data, and with the mean a regression is applied.

What to summarize?

- A way to finalize the DUS as well as possible
- 20 years experience within GEVES with 2 DUS trials in 2 locations by year but the notion of 2 cycles is recent (about 5 years) and is not usual
- Depending on available facilities / staff and on climatic conditions
- One modality to organize 2 DUS trials by year
 - 2 trials in the 2 GEVES units, one leading unit for:
management of activities,
harmonization of trials,
collection management,
data validation, etc.
- Databases varieties and reference collections regularly updated
- Advantages and flexibility provided by each modalities
- Good communication between units is required



Thank you for your attention



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[End of Annex and of document]