Twinning projekt EU

”Dalje jačanje kapaciteta u fitosanitarnom sektoru iz oblasti sredstava za zaštitu bilja, zdravlja bilja, sjemena i sadnog materijala, uključujući fitosanitarne laboratorije i fitosanitarnu inspekciju”

Twinning Program
BA/12/IB/AG01

Control Plot Test

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Summary:

- Seed productions
  - Seed lot Sampling

- Control Plot
  - Pre-Control and Post-Control
  - the field
  - Recording and assessing result
- Reference Colletions
  - Standard Sample

Twinning Program: Control Plot Test

Seed productions (1): Seed lot Sampling

An Official Sample should be drawn from each cleaned lot of Basic and Certified Seed submitted for certification and the seed containers should be fastened and identifiable or labelled.

The Official Sample will be divided in three parts

Seed analysis (lab. Test)

Control Plot
(**Pre** and **Post-Control**)

Storage
In climatic room

Control Plot (1): purpose

Control plot tests are used to monitor the identity and purity of variety (being hybrid or non-hybrid), at various stages in the seed multiplication programme, thereby assuring that the quality of seed produced in the OECD Schemes is of a satisfactory level.

Control Plot (2): how many samples

A part of every sample of Pre-Basic or Basic Seed and of a percentage of the samples of Certified Seed shall be checked in a Control Plot test conducted immediately or in the season following the drawing of the samples. The test shall be conducted by, or under the supervision, of the National Designated Authority.

The percentage of Control Plot of Certified Seed is defined by the National Designated Authority. Its level is generally located between 5 and 10 per cent. This percentage could be adapted in according with the result of Control Plot failures and reproduction system of the variety.

Control Plot is required for all samples of Certified Seed when the lot is to be used for the production of further seed generation, being in this case also a pre-control of the following generation.

Control Plot (3): Pre and post control (a)

Control Plot tests are used to verify the identity and purity of variety (being hybrid or non hybrid), in order that the seed quality is a satisfactory level.

Pre-Control is the term applied to variety verification in Control Plot of early generation seed (i.e. Pre-basic and Basic seed).

When an early generation seed lot is being multiplied to produce a further generation of seed, the information provided by a Control Plot is invaluable in that the data on identity and uniformity are available before – or about the same time – as the next seed crop is ready for field inspection.

Control Plot (3): Pre and post control (b)

The Pre-Control plots give a lot of advantages to NDA during the field inspections:

- The plants can be observed as frequently as necessary;
- The observations can be made during the complete growing cycle;
- The observations can be made on all plants and for all characteristics;
- A seed lot can be compared with the Standard and the other seed lots (of same or previous generations);
- The NDA may use an adverse Pre-Control result to reject, in the certification, all fields sowing with the same seed lot.

Control Plot (3): Pre and post control (c)

Post-Control is a term normally applied to variety verification of Certified Seed which is not further multiplied.

In that case in the year that the plots are being grown, the Certified Seed has been sold to farmers and planted for production.

It is called Post-Control, because the result is not available until after the seed has been certified.

The aim of Post-Control test is monitor how efficient the seed production process in maintaining varietal purity and identify ways in which the system might be improved.

Control Plot (3): Pre and post control (d)

In case of Certified Seed wich are to be further multiplied (i.e. not hybrid cereal varieties) the Control Plot will be used as Pre-Control plot.

In case of hybrid varieties it is not possible to check the identity of hybrid during the early generations but only in Post-Control plot.

Control Plot (4): the field

The area where will grow the plots for the Pre/Post-Control should satisfy some conditions:

- The area is sufficiently broad to allow a good crop rotation;
- the environment is good for the growth of plants of that given species;
- the farm has all the equipment and the staff to perform a smooth conduct of the fields.
- the Control Plot field should be designed in such a way that observations can be easily made: i.e. all samples of the same variety are to be grouped together and they are close to the Standard Sample.

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Control Plot (5): recording

- recording of the Control Plots should start when plants reach growth stages at which varietal characteristics can be observed;
- in Control Plot to check the uniformity and the identity, you have to use the «Primary» characteristics;
- when there is a need to support difference in primary characteristics you should use the «Secondary» characteristics;
- during the recording of varietal or species purity it is usefull to resort to the identifications of plants which are different i.e. they must be identified (e.g. by coloured wool) so that they are not counted twice in future visits;
- in case of male sterile hybrid component, all the plants in the plot should be checked to determine if any produces viable pollen.

Control Plot (6): assessing result

- In cereals (wheat, barley, maize etc.) the reject numbers relate to the number of off-type plants observed in a sample to a published standard.
- In self-polinated cereals the varietal purity standard depends on the generations of the seed lot.
- In cross polinated cereals (maize) the varietal purity standard depends both on the generations of the seed lot and on the variety type (hybrid or open-pollinated variety).

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Control Plot (7): Italian Experience (a)

Self-pollinated cereals (e.g. wheat):

- We have a crop rotation of two years at least
- **Sowing**
  - Pre-Base and Based seed lots: we sow all samples
  - Certified seed lots
    - All OECD certified samples;
    - All samples under official supervision;
    - From 10% to 50% of seed lots of varieties not listed in Italy;
    - Almost 50% of seed lots of new listed varieties;
    - In other cases almost 1 seed lot for every Reference Number;

4. Mappa di campo

92	93	94	B	B	B	B
91	90	89	88	87	86	85
78	79	80	81	82	83	84
77	76	75	74	73	72	71
64	65	66	67	68	69	70
63	62	61	60	59	58	57
50	51	52	53	54	55	56
49	48	47	46	45	44	43
36	37	38	39	40	41	42
35	34	33	32	31	30	29
22	23	24	25	26	27	28
21	20	19	18	17	16	15
8	9	10	11	12	13	14
7	6	5	4	3	2	1

Control Plot (7): Italian Experience (b)

Self-pollinated cereals (i.e. wheat):

- **Plot:**
  - 6 rows 0,20 m X 7 m
  - n° plant target: 300 p/m^2

4. Mappa di campo

92	93	94	B	B	B	B
91	90	89	88	87	86	85
78	79	80	81	82	83	84
77	76	75	74	73	72	71
64	65	66	67	68	69	70
63	62	61	60	59	58	57
50	51	52	53	54	55	56
49	48	47	46	45	44	43
36	37	38	39	40	41	42
35	34	33	32	31	30	29
22	23	24	25	26	27	28
21	20	19	18	17	16	15
8	9	10	11	12	13	14
7	6	5	4	3	2	1

Twinning Program: Control Plot Test

Control Plot (7): Italian Experience (c)

Cross-pollinated cereals (e.g. maize):

- We have a crop rotation of two years

- **Sowing**
  - Pre-B. and Base seed lots:
    - We sow all samples which are certified under official supervision
    - Other samples are sown by the Seed Company will check under off. Supervison.
  - Certified seed lots
    - We sow 65 samples
    - Other samples are sown by the Seed Company will check under official supervision

- **Plot**
  - Two rows 0,75 m X 6 m
  - n° plant target: 45

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Control Plot (7): Italian Experience (c)

Assessment of Characteristics

Self-pollinated cereals (e.g. wheat):

- all primary characteristics
- some of secondary characteristic
- in case of doubt we check the sample by electroforesis

Cross-pollinated cereals (e.g. maize):

- all primary and secondary characteristics

Control Plot (7): Italian Experience (d)

Reject Numbers

Self-pollinated cereals (e.g. wheat):

3. Purezza varietale e legenda dei caratteri

Variety purity

N° PLANT EVALUATED	Reject thershold. Not conform if the number of off-type is equal or greater of:		
	Prebase e Base	1° Certified	2° Certified
	99,90%	99,70%	99,00%
1000	4	7	16
1200	4	8	19
1400	5	9	21
1600	5	10	24
1800	5	10	26
2000	6	11	29
2200	6	12	31
2400	6	13	33
2600	6	14	36
2800	7	14	38
3000	7	15	40

La valutazione dei risultati è stata effettuata usando il metodo statistico della distribuzione di “POISSON” adottato a livello comunitario (Doc. CE post controllo 1997):

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Control Plot (7): Italian Experience (d)

Reject Numbers

Cross-pollinated cereals (e.g. maize):

alfa ≤ 0.05 Popolazione standard=3%

Number of plants per plot	Max. n° of off-type allowed
	Simple hybrid
28-46	3
47-66	4
67-88	5
89-110	6
111-134	7
135-158	8
159-182	9
183-207	10
208-232	11

alfa ≤ 0.05 Popolazione standard=5%

Number of plants per plot	Max. n° of off-type allowed
	Three or double way hybrid
25-39	4
40-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13

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Varieties: list of varieties (9)

In the OECD scheme the List of Charateristics is an extract from the UPOV list. In the OECD list the characteristics are divided in

- Primary
- Secondary

TAD/CA/S/RD(2008)12/REV2

WHEAT
(*Triticum aestivum* L.)

Stage of examination	UPOV Character Number [1]	Character description
PRIMARY		
Earing	5	Plant: time of ear emergence
	6	Flag leaf: glaucosity of sheath
	8	Ear: glaucosity
	9	Culm: glaucosity of neck
	12	Plant: height
	14	Ear: colour (at maturity)
	15	Ear: shape
	16	Ear: density
	17	Awns or scurs: absent/present
SECONDARY		
Earing	19	Scurs at tip of ear: length
	22 + 23	Lower glume: shoulder width and shoulder shape
	24 + 25	Lower glume: beak length and beak shape
Laboratory	32	Grain: colouration with phenol

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Varieties: list of varieties (10)

VCU : a new variety has sufficient **V**alue for **C**ultivation or **U**se if through its productivity or its qualitative characteristic or its resistance will improve the range of varieties already known.

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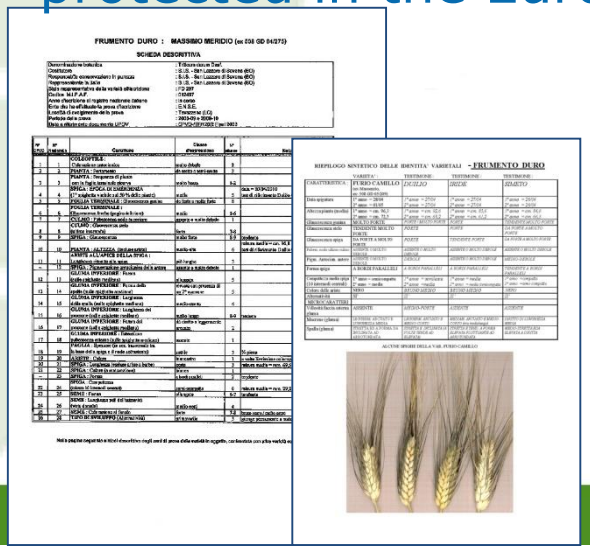
Varieties: Reference Collections (1)

The Reference Collection is the base for a correct conduction of inscriptions or post-control trials. The reference collection may include the variety descriptions and/or living plant material (Reference Sample).

The Reference Collection for a given species should include all varieties of common knowledge. (e.g. varieties listed or protected in the European Union)


FRUMENTO DURO : MASSIMO MERIDIO

SCHEDA DESCRITTIVA

RIEPILOGO SINTETICO DELLE IDENTITA' VARIETALI - FRUMENTO DURO

Varieties: Reference Collections (2)

The Reference Sample

Definitive Samples come from the seeds sent to the breeder for the inscription trial. These sample are stored by the Listing Authority that will use them as official standard for registration purposes.

Standard Samples are used by the National Designated Authority in pre/post-control trials to verify that all seed samples of the variety in certifications correspond to the variety description at the moment of listing.

Varieties: Reference Collections (3)

In case of Hybrid Varieties , it is the final generation of Certified seed which will constitute the Standard Sample, but for hybrid varieties it may be necessary to have separate Standard Samples which represent the inbred lines and parental components which are used at the Basic and Pre-basic seed level to produce the hybrid cultivar.

Varieties: Reference Collections (4)

When the germination of the Standard Sample begins to fall or the stock of seed needs replenishing, a new sample should be requested. There must, however, be sufficient time allowed for the comparison of the new sample and the old sample in a field test for at least one cropping season in order to check its authenticity and before the original Standard Sample is discarded.

The new sample should be obtained directly from the breeder or the maintainer or in alternatively it is permitted to use a sample from pre-basic seed lot. In both case the new sample should be checked to ensure it is identical to the Definitive Sample.

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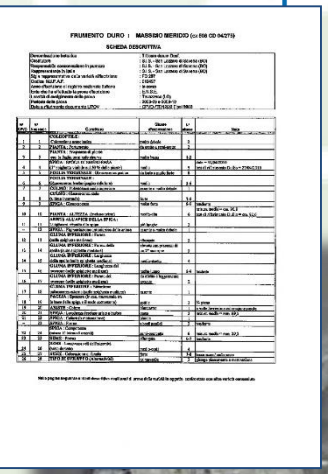
Varieties: Reference Collections (5)

In the case the variety is listed in another country, it is essential for the Standard Sample to be obtained from that foreign Authority and not directly from the breeder. In that case is useful obtain with the sample also the Official Description.


FRUMENTO DURO : MASSIMO MERIDIO (cv 856 CD 04277)

SCHEDA DESCRITTIVA

Although Standard Sample is the most reliable standard by which seed certification samples can be judged, it should be used in conjunction with the official description, bearing in mind that the description of varieties may have some limitations since it is not always sufficiently precise for the purpose of identifying varieties.

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Varieties: Italian Reference Collections (1)

Durum wheat: 469 samples

Rye: 5

Triticale: 70

T. spelta: 22

Soft wheat: 340

Barley: 120

Oat: 50

Rice: 334 samples

Maize
- Hybrid:2350
- Parental Lines:3596

Varieties: Italian Reference Collections (2)

Sample Storage:

- How: seeds are stored in paper bags. These bags are put in vacuum plastic bags.
- How Much: it depends on the species (maize varieties 1 kg, maize parental line 0,5 kg, wheat and other cereals 2 kg).
- Where: in a cold room (temperature 3°/4°C, umidity 30/40%).

- How Long: every 5 years we test the germinability.

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Varieties: Italian Reference Collections (3)

- Italian varieties:

Seed sample requested from breeder (specified quantity and quality);

Verification of breeder's sample: side by side comparison in field trial with first submitted sample (Reference Sample).

- Foreign varieties:

Seed sample requested from EO or breeder (specified quantity and quality);

Verification of EO's sample: comparison in field trial of the characteristics of the variety with the official description;
Verification of breeder's sample: side by side comparison in field trial to identitify the sample requested from foreign authority (EO).

Thank you for attention