

# Contribution of the French network on chicory genetic resources to a European *ex situ* management of leafy vegetables genetic resources

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## The French network on chicory genetic resources : a collaborative and efficient organization

The network was created in 1994 under the authority of the Ministry of Agriculture and the French Board on Genetic Resources (BRG) which merged in 2008 and became the Foundation for Research on Biodiversity (FRB).

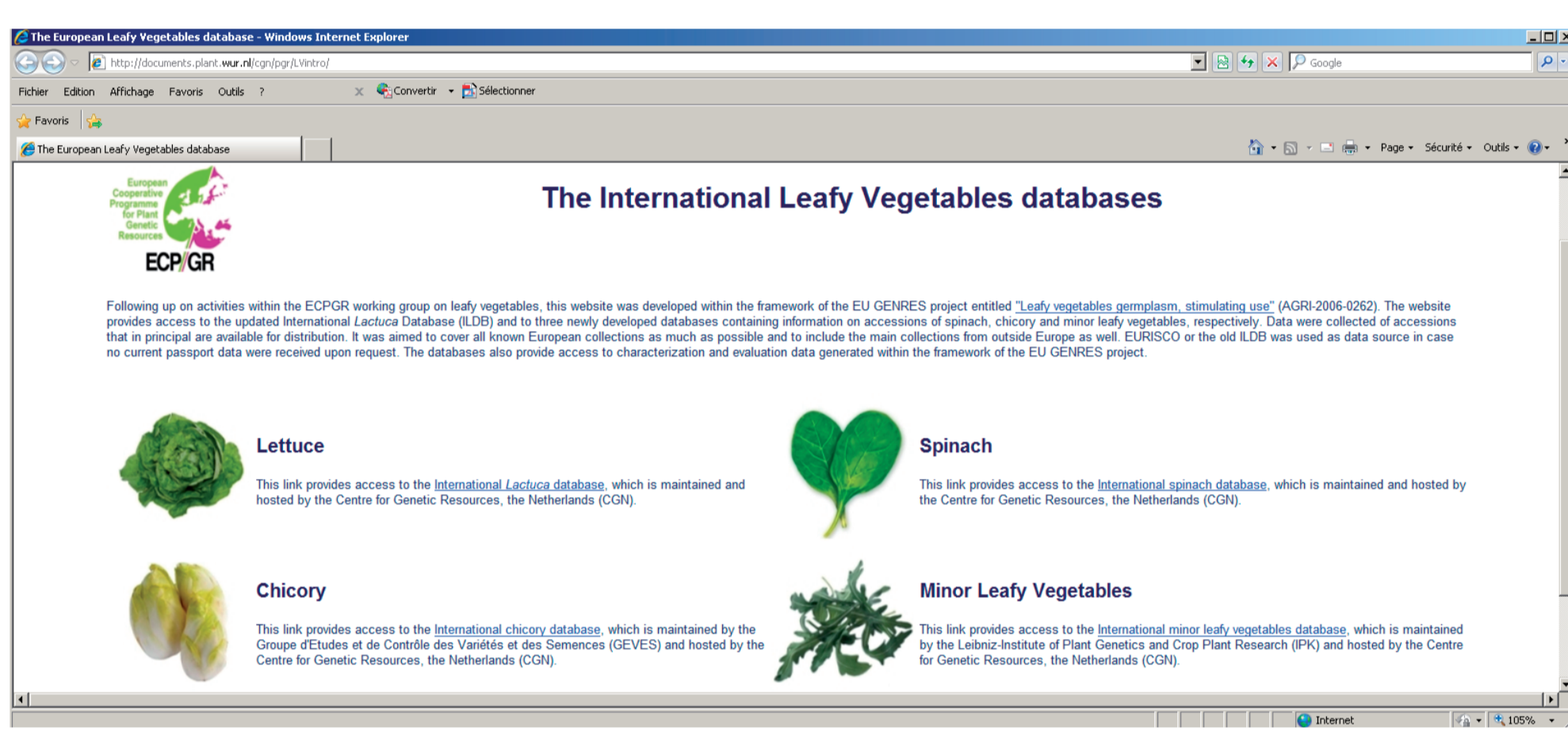
Its mission and organizational rules are defined by the National Charter on genetic resources and the Charter on chicory genetic resources. Current activities (characterization, regeneration, evaluation and distribution) involve 14 partners with GEVES as the coordinator.

### Official organizations and Technical interbranch institutes :

GEVES/Brion, Agrocampus Ouest/Angers, North Regional Center for Genetic Resources (C.R.R.G.), National Association of Witloof Producers (A.P.E.F.)

### Seed companies :

Clause, Enza Zaden, Florimond-Desprez, Gautier, Hoquet, Momont, Rijk Zwaan, Syngenta, Vilmorin  
Collection : 1800 accessions of which 650 accessions included in the National Collection  
Conservation : cold rooms at 4°C / 30% humidity and in deep freezers at -18°C at GEVES - Brion (long-term) and at GEVES - SNES (safety-base)



## Contributions to Leafy Veg

In order to provide to European gene bank community a good overview of the stored leafy vegetables germplasm, the French chicory genetic resources network has contributed as a partner and as one of the pilots of a European four year program entitled 'Leafy Vegetables, stimulating use' in the framework of the European GENRES program (Action 001 AGRI GEN RES 870/2004). Lettuce, spinach, chicory and minor leafy vegetables are the leafy vegetables on which the twelve participating partners worked.

Besides the International Lactuca DataBase (ILDB), three new international DataBase have been created for spinach, chicory and minor leafy vegetables. The International Chicory DataBase contains more than 1700 accessions coming from 21 collections. The Leafy Veg program aims too at enabling more sustainable production methods and a better quality product through :

- evaluation of accessions for pests and diseases resistance
- evaluation of accessions for quality and abiotic characters
- inclusion of results in the produced / updated databases.



Finished in 2010, this project was coordinated by the Centre for Genetic Resources, the Netherlands (CGN) and resulted in an unique leafy vegetable crops portal on the web (<http://documents.plant.wur.nl/cgn/pgr/LVintro/>).

The majority of time on this project was devoted to regeneration, characterization and evaluation for the genetic resources management and workshops open to the general public to stimulate interest.

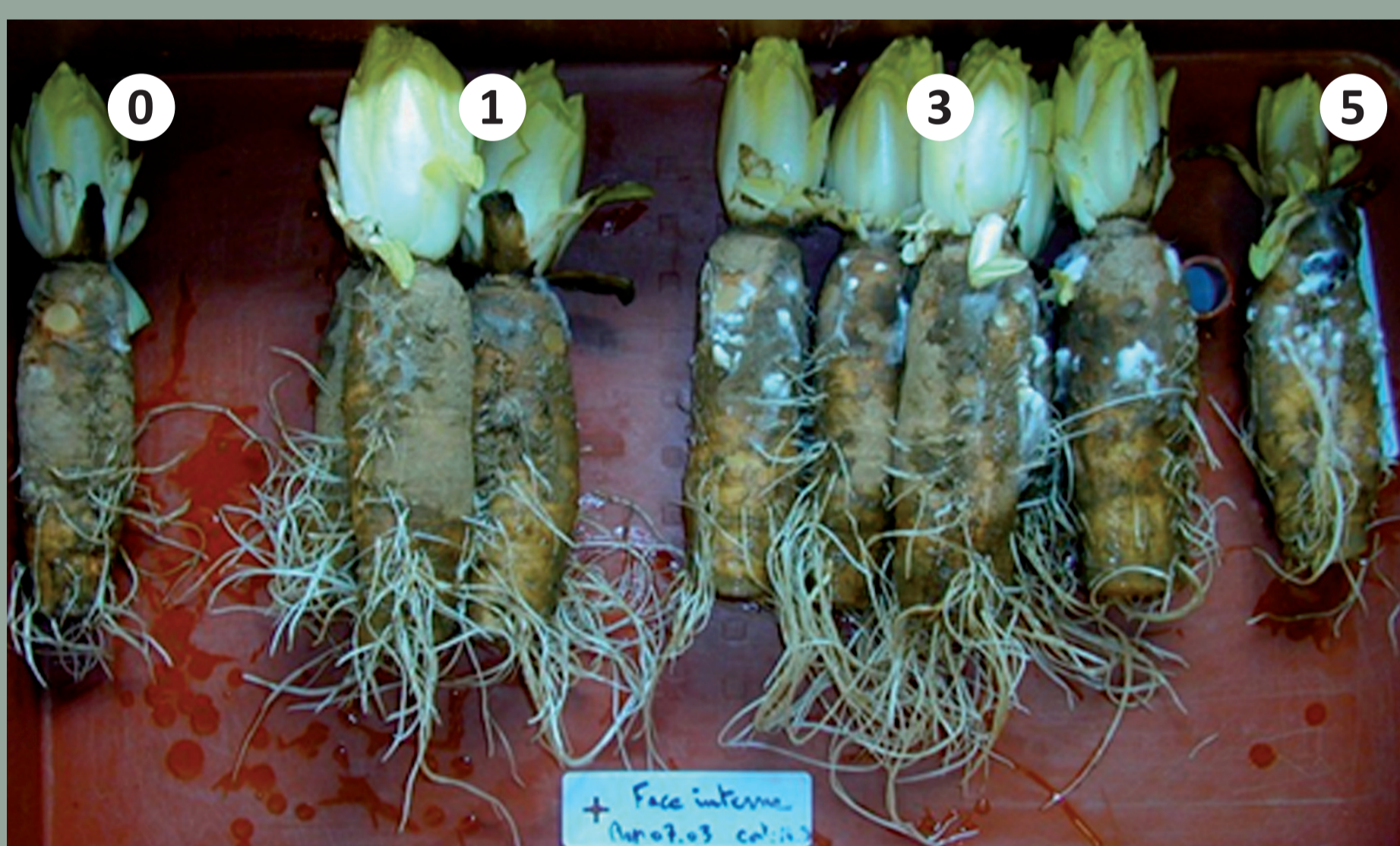
## Diseases evaluation on chicory accessions

### Sclerotinia sclerotiorum

Disease impacting strongly the 15 000 ha of European witloof production  
Tests on witloof chicory in growth chamber 31 accessions evaluated

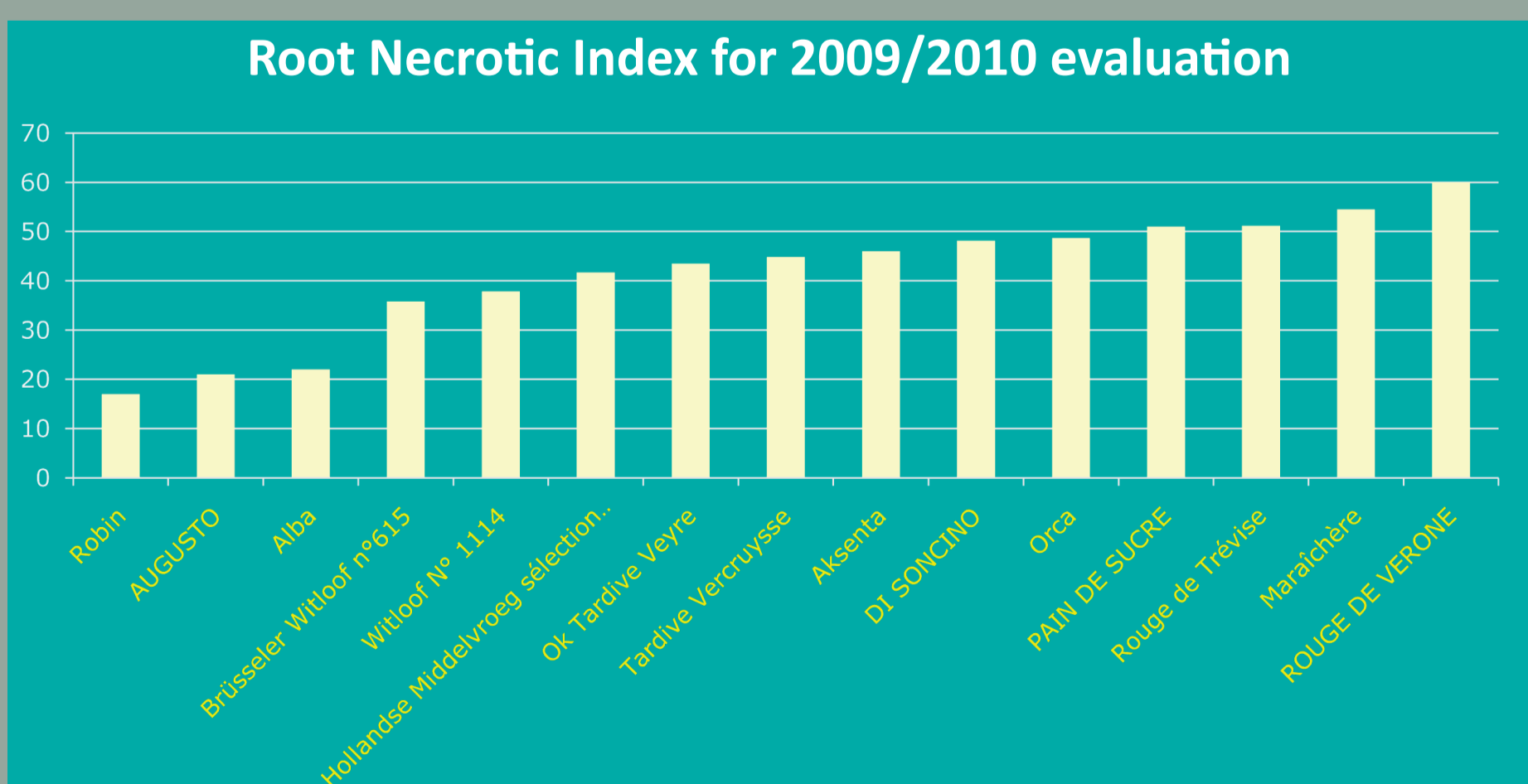
#### Scale of notation :

0 (no symptoms) to 5 (development of fungus on leaves)



Root Necrotic Index :  $\sum (\text{Nb plants class X} \times X) / (\text{Nb total plants} \times 6) \times 100$   
X from 1 to 5

#### Results :



## Conclusion :

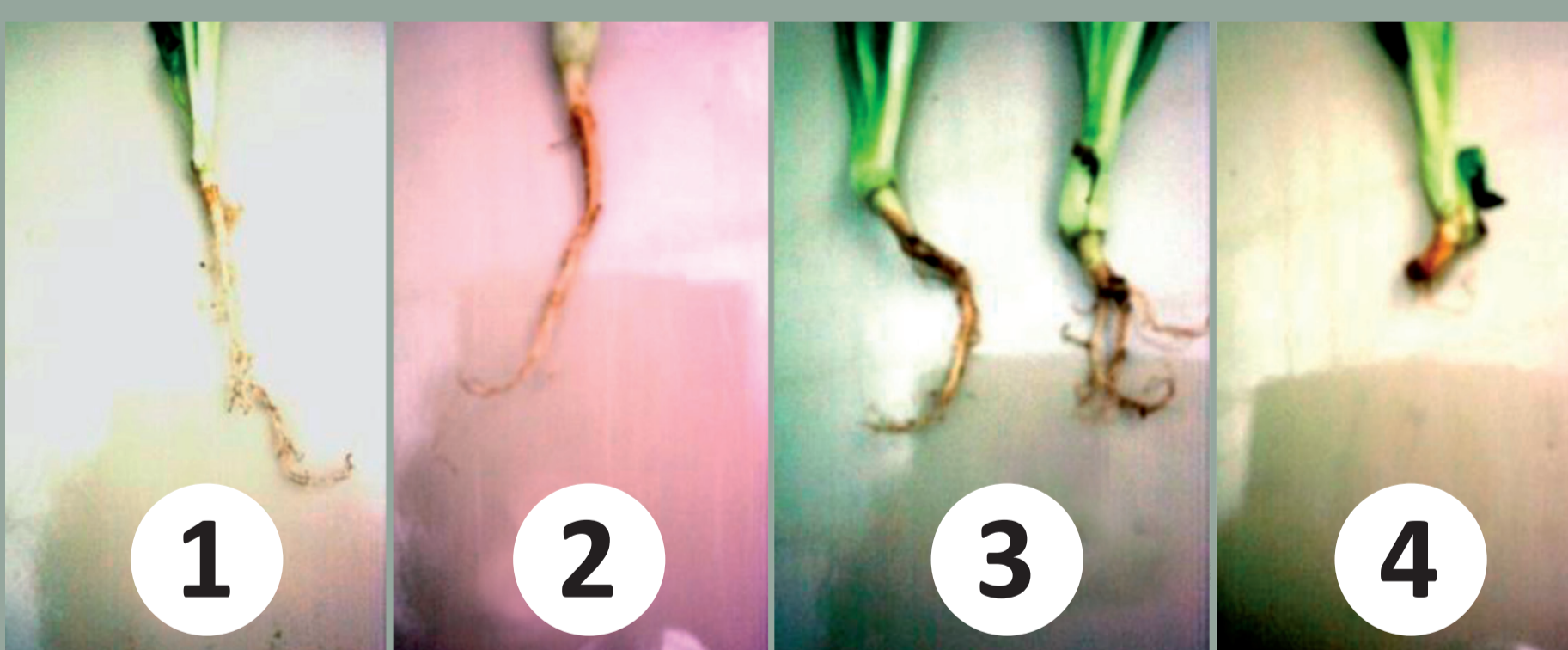
Accessions have been identified for new breeding programs concerning resistance to *T. basicola* and *A. cichorii*. For *S. sclerotiorum*, the developed method is currently used for commercial varieties providing useful information for the producers. New program on disease resistance could be engaged : *Sclerotinia* on endives, ...

### Thielaviopsis basicola

Disease increasingly important for the production of French endive  
Early tests on young plants in pots 79 accessions

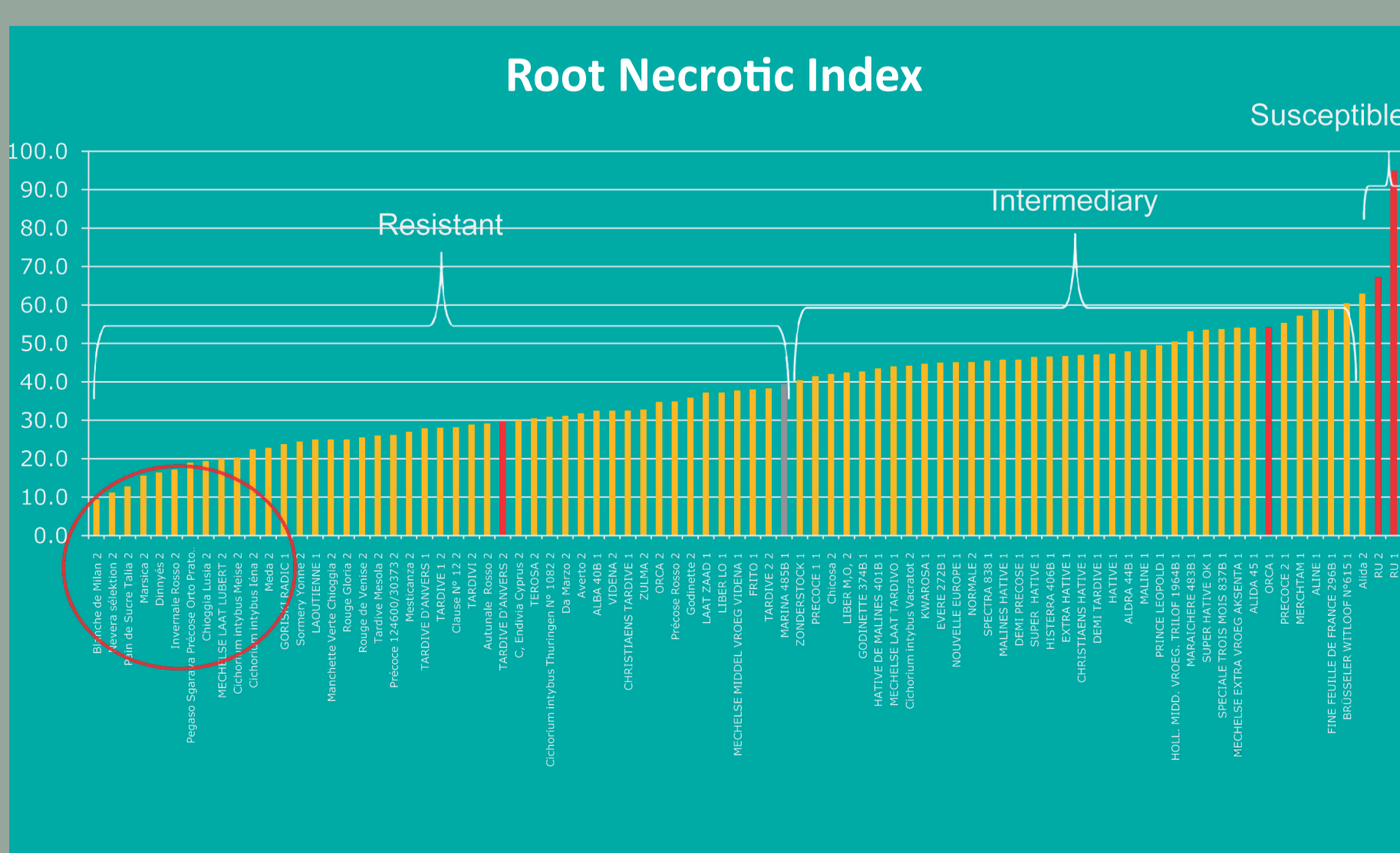
#### Scale of notation :

1 (no symptoms) to 4 (complete reduction of the roots)



Root Necrotic Index :  $\sum (\text{Nb plants class Y} \times Y) / (\text{Nb total plants} \times 4) \times 100$   
Y from 1 to 4

#### Results :



### Alternaria cichorii

Disease impacting the marketing of chicory leaf  
Tests in field 68 accessions

#### Scale of notation :

Scale of notation : 0 (100 % susceptible) to 9 (100 % resistant)



#### Results :

Accessions	Accession morphological homogenous			Accession morphological heterogenous							
	Global note	Std Deviation	Final note	Mean note defined plant by plant	Std Deviation	Spread of the notes plants					Final note
						Note 3	Note 4	Note 5	Note 6	Note 7	
GORISKI RADIC	3.73	0.43	4								
A GRUMOLO BIONDA	7.75	0.43	8								
ES4	4.28	1.09	5								
899				3.57	0.68	25	17	5	0	0	4
943	3.75	0.43	4								
CLAUSE N°12	7	1.00	7								
MEGA				4.37	0.67	3	25	16	2	0	5
ROUGE DE VERONE				4.69	0.67	0	21	23	2	2	5
DI VERONAR: A PALLA				4.94	0.52	0	8	34	5	0	5
CIC DELLA CATALOGNA	5.49	0.50	6								
PEGASO SGARAVA	3.75	0.43	4								
P.ORTO P.	4.96	0.71	5								
CHIOGGIA LUISA	3.5	0.50	4								
BLANCHE DE MILAN				4.78	0.84	2	14	23	4	2	5
TARDIVA MESOLA											
YOURI	9	0.00	9								
DI SONCINO	5.25	0.43	5								
CATALOGNA	5.25	0.43	5								