Information Computer System giving support in recovered results of nematological analysis of plant germplasm imported by Brazil from European Countries

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INTRODUCTION

The **LABORATORY OF NEMATOLOGY of Embrapa Genetic Resources and Biotechnology** has been analysing imported plant germplasm for nematodes.

In this context, the **Computer Information System** was developed on a nematological database to give support to the germplasm nematological analysis data, covering the period of **1981** to **2003.**

The aid of **Computer Information System** to this Laboratory is very important to organize databases with accuracy and to make it available for people which are interested in a specific subject.

The material from the **European Countries** also were registered on this Computer Information System.

MATERIAL AND METHODS

The **Germplasm Computing System** was elaborated using the fourth generation of language that gave a fast development, following the existent stardand in database.

The language also contributed in friendly interface elaboration for the researcher interactions of **Embrapa Genetic Resources and Biotechnology.**

The Computer System was registered all detected plant-parasitic nematodes in the last 22 years, imported from many different **European Countries**.

The recovered data were regarding to specific germplasm accession in separated for each germplasm introduction in a year (Figure 1).

The database included materials exchanged between 1981 to 2003, and identified the common and scientific name of germplasm, origin, destination, the number of analysed and infected acessions and the name of detected nematodes.

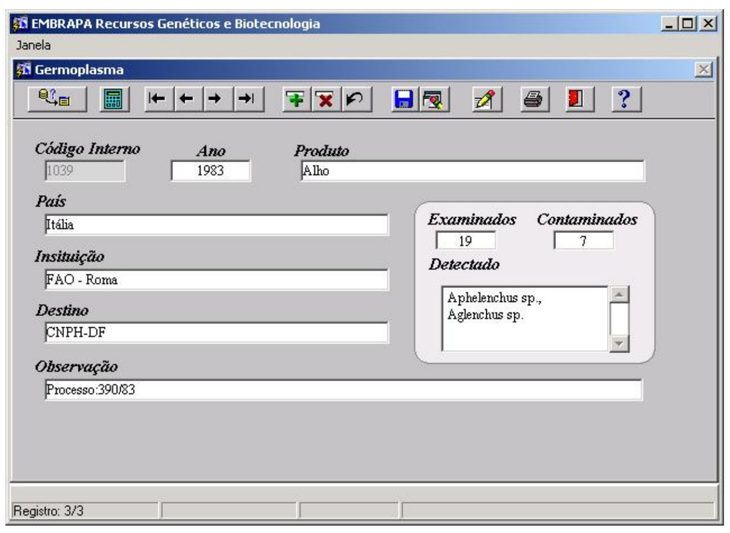

Figure 1. View of the result of nematologycal analysis, using the Computer Information System.

RESULTS

From this study, that used the **Germplasm Computer System**, it was verified, into different introductions of genetic materials, that the **European Countries** could have introduced the new pests into a new area through the germplasm or the commercial material, and the results are shown in **Tables 1 and 2.**

In **7,129**different botanical accessions, 221 accessions were infected by different nematode species, being 3.1 % of contamination (Table 3).

The database of nematological analysis is located at Embrapa Genetic Resources and Biotechnology, Brazil.

The pest interception is very important to diminish the risk of entrance of new nematode species, but the track down of the nematode origin can be supported by the **Germplasm Computer System** and it can be a very good tool for helping the Nematology Laboratory.

The cost benefit analysis demonstrated by the database revealed a great contribution to the Brazilian Agriculture.

Table 1. Imported plant materials from some European Countries **without** nematodes.

Plant Material	N^0 Analysed	N^0 Infected	Detected Nematode
GREEK			
Tomato	4	0	No nematodes
SCOTLAND			
Beans	1	0	No nematodes
Potato	21	0	No nematodes
WALES			
White clover	1	0	No nematodes

Table 2. Results from the survey in Germplasm Information System, refer to nematological analysis of imported materials from European Countries, during 1981 to 2003.

Plant Material	N^0 Analysed	N^0 Infected	Detected Nematode
BELGIUM			
Salix sp.	37	37	***Aphelenchoides* sp.**
DENMARK			
Forage	1	1	***Aphelenchoides* sp.**
Lolium sp.	4	1	***Aphelenchoides* sp.**
Vegetables	33	33	***Ditylenchus terricolus***
ENGLAND			
Pinus spp.	331	15	***Ditylenchus* sp.**
FINLAND			
Barley	1	1	***Aphelenchoides besseyi*; *Meloidogyne* sp.**
FRANCE			
Grape	31	15	***Aphelenchoides bicaudatus*; *Aphelenchus* sp.; *Trichodorus sp.***
Melon	48	1	***Ditylenchus* sp.**
Panicum spp.	600	5	***Aphelenchoides* sp.**
Pineapple	11	5	***Aphelenchoides* sp.; *Helicotylenchus* sp.; *Pratylenchus* sp.**
Rice	1588	5	***Aphelenchoides besseyi***
GERMANY			
Barley	46	14	***Aphelenchus* sp.**
ITALY			
Garlic	34	7	***Aphelenchus* sp.; *Aglenchus* sp.**
Ginger	1	1	***Aphelenchoides* sp.**
Sage-prush	1	1	***Aphelenchus* sp.**
THE NETHERLAND			
Beet	37	7	***Aphelenchoides* sp.; *Ditylenchus* sp.**
Bromeliacea	11	10	***Ditylenchus equalis*, *Tylenchus* sp.**
Cucumber / Lettuce	12 / 8	1	***Aphelenchoides* sp.**
Lolium sp.	15	1	***Aphelenchoides* sp.**
Melon	34	3	***Ditylenchus* sp.; *D. emus*; *Seinura* sp.**
Onion	5	1	***Aphelenchus* sp.**
Potato	44	13	***Aphelenchus* sp.; *Aphelenchoides* sp.; *Globodera* sp.**
PORTUGAL			
Coffee	11	11	***Aphelenchoides* sp.; *Ditylenchus* sp.; *Ekataphelenchoides* sp.**
Dactylis / *Festuca*	2 / 2	4	***Aphelenchoides* sp.**
Chickpea / Triticale	4 / 25	0	
Lotus	*4*	*1*	***Aphelenchoides sp.***
Grape	29	28	***Aphelenchoides* sp**

Table 3. Total imported accessions that came from European Countries.

Countries	Analysed Accessions	Infected accessions	Contamination (%)
Belgium	79	37	46.84
Denmark	173	35	20.23
England	1,176	15	1.28
Finland	4	1	25
France	3,186	31	0.97
Germany	1,290	14	1.09
Greek	**4**	**0**	**Zero**
Italy	416	9	2.16
The Netherlands	451	37	8.21
Portugal	129	30	23.25
Scotland	**22**	**0**	**Zero**
Spain	192	7	3.65
Sweden	6	5	83.33
Wales	**1**	**0**	**Zero**
TOTAL	**7,129**	**221**	**3.1**

CONCLUSION

1. From this study, using the **GERMPLASM COMPUTER SYSTEM**, it was demonstrated that the donators (**European Institutions**) should take preventive measures to eliminate these parasites from these important genetic materials before the exchange procedures.

2. The cost benefit analysis showed by the database, a great contribution to the Brazilian Agriculture and the pest interception (in the last 22 years) was crucial in minimizing the risks of introduction of new species of nematodes.

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