

THE EXTENT OF NEMATODE INFECTION OF GERMPLASM IMPORTED FROM CANADA IN THE QUARANTINE LABORATORY OF EMBRAPA.



Recursos Genéticos e Biotecnologia



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INTRODUCTION

The LABORATORY OF NEMATOLOGY of Embrapa Genetic Resources and Biotechnology, located at Brasília, DF, Brazil (Figure 1), has been analysed imported plant germplasm for detecting exotic nematodes associated to this material.

In this context, the COMPUTER INFORMATION SYSTEM was developed, in collaboration with Catholic University of Brasília, on a nematological database for giving support to germplasm nematological analysis data, covering the period of 1981 to 2003.

The aid of COMPUTER INFORMATION SYSTEM to this Laboratory is very important to organise database with accuracy and to make it available, when they require to the Nematological Laboratory, for people which are interested in a specific subject.

The imported materials from CANADA, were also registered on this COMPUTER INFORMATION SYSTEM.



Figure 1: View of Laboratory of Nematology at Embrapa Genetic Resources and Biotechnology, Brasília, Brazil.

MATERIAL AND METHODS

The GERMLASM COMPUTING SYSTEM was elaborated using the fourth generation of language that gave one fast development, following the exist standard 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 detecting plant-parasitic nematodes in the last 22 years, imported from many different Countries, included Canada.

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

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

Going on Research: In database of analysed plant materials has been doing the registration refer to 2004.

RESULTS

From this study, that used the GERMLASM INFORMATION SYSTEM, it was verified, into different introductions of plant materials, that came from Canada could introduce the new pests into a new area through the germplasm or the commercial material, and the results are shown in Table 1.

In 717 different botanical accessions, that were introduced, only 20 were found nematode infected accessions, but five had a important parasitic nematodes.

Potato has been found infested with an important quarantine nematode *Ditylenchus dipsaci* (four accessions) (Figure 2) and Figures 3 and 4 shows this parasite on potato plant and inside the tissue. In Figure 5, show the results of *Datura* with *Aphelenchoides besseyi* (one accession).

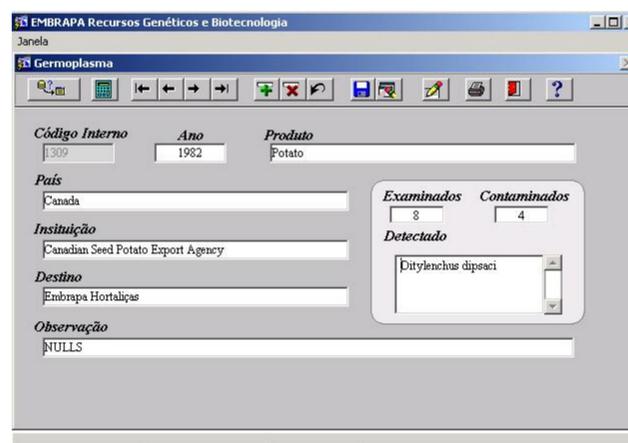


Figure 2: Germplasm Information System showing the nematological analysis data of the imported Potato from Canada, showing detected exotic nematode.

The accessions were submitted thermal and chemical treatments for nematode eradication, which was successful in majority accessions.

With these phytosanitary methods, the Plant Quarantine Laboratory collaborates actively to reduce the risk of new nematode introduction.

Although there are several species of nematodes of quarantine importance in Canada, the donor institutions have been taking precautions against the possibilities of spreading these parasites into new areas in different countries.

The database of nematological analysis is located at Embrapa Genetic Resources and Biotechnology, Brasília, 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 support by GERMLASM INFORMATION SYSTEM and it can be very good tool for helping on this Laboratory.

The SIG has been giving a reliable and accurate information on nematological analyses and thereby lending strong support to Brazilian Agriculture.

Table 1. Commodities infected by nematode imported from CANADA, during 1981 to 2003.

Detected Nematode	Year	Commodities	Institution of Destination – Brazilian State	Analysed Accessions	Infected Accessions
<i>Aphelenchus</i> sp.	2002	Wheat	Embrapa Trigo - RS	13	13
<i>Aphelenchoides besseyi</i>	1986	<i>Datura</i>	Embrapa Hortaliças - DF	1	1
<i>Aphelenchoides</i> sp.	1984	<i>Lotus</i>	Empresa de Pesquisa Agropecuária de Santa Catarina - SC	2	2
<i>Ditylenchus dipsaci</i>	1982	Potato	Embrapa Hortaliças - DF	8	4



Figure 3: Potato plant infected by *Ditylenchus dipsaci* imported from Canada.



Figure 4: *Ditylenchus dipsaci* inside the tissue.

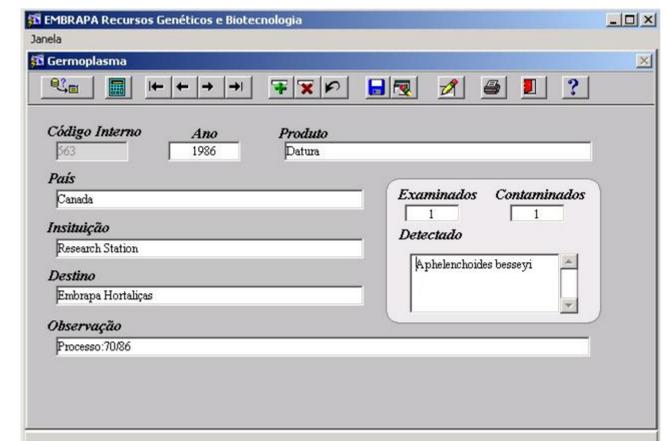


Figure 5: Germplasm Information System showing the nematological analysis data of the imported *Datura* from Canada, showing detected nematode.

CONCLUSION

1. From this study, using the GERMLASM INFORMATION SYSTEM, it was demonstrated that the donators should take preventive measures 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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