FITOSIT: A TOOL FOR PESTS AND DISEASES CONTROL

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ABSTRACT

The GIS is a tool, used in several fields, that can be also employed in beet growing to examine and control the pests and diseases which hit the beet like the *heterodera schachtii*, the BNYVV, etc. It is possible to create maps for pathogens presence and to inquire into the correlations between their biological cycles and the pedoclimatic and geographic characteristics of the epidemiological zone.

ABRÉGÉ

Le GIS est un outil, utilisé dans plusieurs domaines, qui peuvent être également utilisés dans la betterave devenant examinent et commandent les parasites et les maladies qui frappent la betterave comme le *heterodera schachtii*, le BNYVV, etc... Il est possible de créer des cartes pour la présence de microbes pathogènes et d'informer sur les corrélations entre leurs cycles biologiques et pedoclimatic et géographiques les caractéristiques de la zone épidémiologique.

KURZFASSUNG

Das GIS ist ein werkzeug, benutzt auf einigen gebieten, die in der entwickelnden roten rübe auch eingesetzt werden können überprüfen und steuern die plagen und krankheiten, die rote rübe wie das *heterodera schachtii*, das BNYVV, das usw. Schlagen sich zu erkundigen ist möglich, diagramme für krankheitserregeranwesenheit herzustellen und in die wechselbeziehungen zwischen ihren biologischen zyklen und die pedoclimatic und geographischen eigenschaften der epidemiologischen zone.

INTRODUCTION

The spread, on new areas, of diseases and dangerous bugs for the beet growing has determined the necessity of a greater control of their territorial extension for being able to adopt suitable measures for their repression.

For this reason the ERIDANIA SADAM created, within the limits of the project called Sugar 2000, the SIT that allows to manage phytopathological informations that can be diffused to internal and external users.

1.- MATERIALS AND METHODS

In the case of the rizomania, 1971 soils, in which a virus sensitive sugar beet line was sowed, were sampled. The BNYVV diagnosis was carried out by DAS-ELISA test using root body and hairs.

The same soils was employed to see the presence of *heterodera schachtii*. The cysts of this beet nematode were drew out by water and separated by the ethyl alcohol method.

Moreover it was carried out research into 1805 soils to locate Elateridae and cleono, employing potato baits for first and box-traps for the second ones.

The formula used for the risk of spread of the cleono, in the case some treatment does not come carried out, is following: R = n x 1/d. Where n is the number of cleoni and d is the distance expressed in meters.

The maps were developed with ESRI's ArcView GIS 3.2.

2.- RESULTS AND DISCUSSION

In figure 1 the BNYVV spread is represented. It has expressed in hectares and is showing itself during three years 1999 - 2001. The virus is present in 448 soil samples that represent the 22,7% of all soils examined.

In the case of the *heterodera schachtii*, whose percentage of presence is 1.98, it is possible to create zones of phytosanitary protection (1 Km) in which to inspect the presence of the nematode and to carry out the methods of agronomic control that consist in cleaning up the mechanical equipments, not contaminating the cultivations with land and dripping or irrigative waters holding nematode cysts and possible resort to rotations of not host plants or trap plants (fig.: 2 and 3).

As far as the *Temnorrhinus mendicus* is concerned, that has recorded a presence of 22,27%, risk of spread maps (fig.4 and 5) have been created. They can guide farmer in the choice of the dislocation of next pieces of land cultivated with sugar beet and in the choice of the types of treatment that have to be adopted.

Finally, in the case of the *Agriotes spp.*, that present themself with 30,14%, an epidemiological map, representing the insect spreading, has been created (fig.:6).

Fig.1: Superficial dimensions, expressed in hectares, in which it has been found the BNYVV during the survey carried out in 1999, 2000 and 2001

Fig.2: Zones of phytosanitary protection (1 Km) around to lands infested with heterodera schachtii during the research carried out in 1999, 2000 and 2001

Fig.3: Magnification of the zones of phytosanitary protection (1 Km)

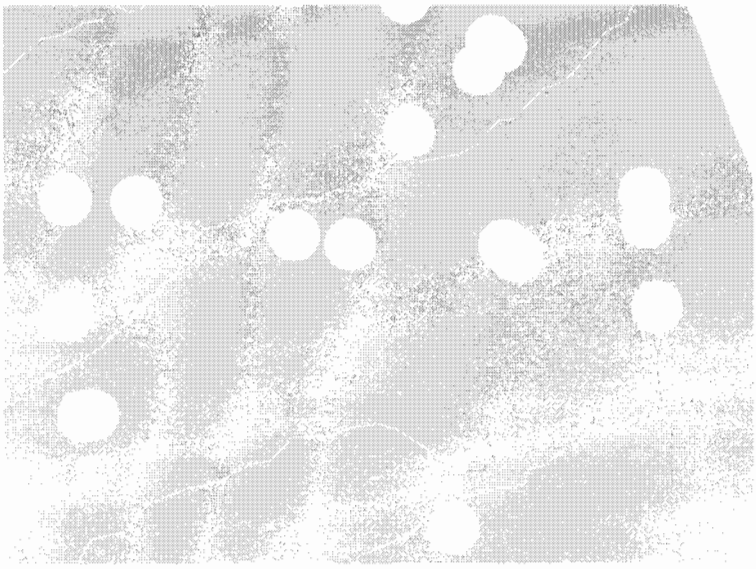

Fig.4: Risk of Temnorrhinus mendicus spread map that is relative to 2000, 2001 and 2002

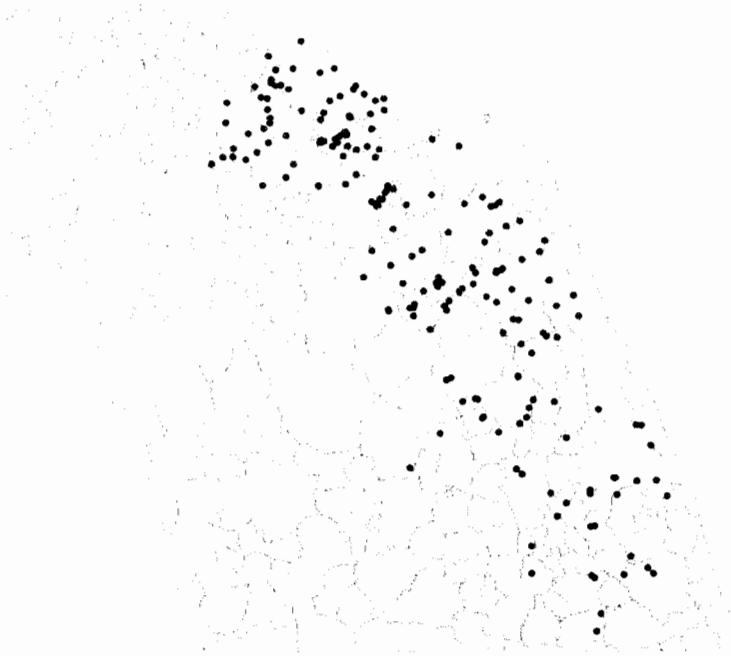

Fig.5: Particular magnified of the Risk of Temnorrhinus mendicus spread map

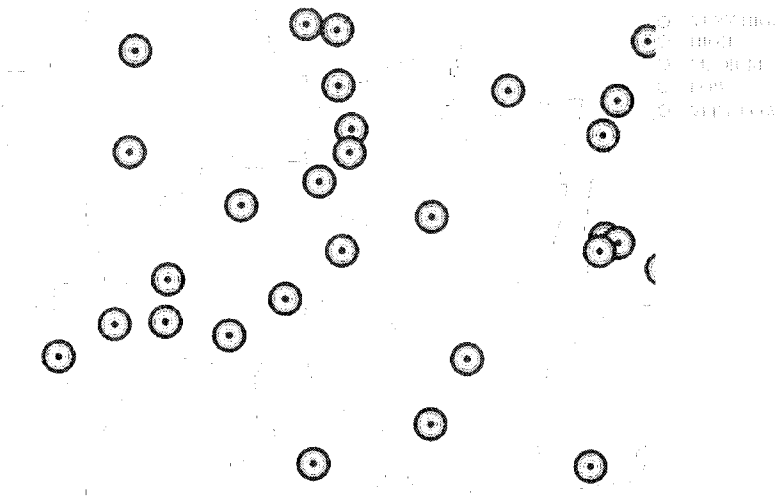

Fig.6: Plots of ground in which it was found the presence of Agriotes spp. during the survey carried out in three years: 2000, 2001 and 2002.