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FIELD DISEASES OF TROPICAL YAMS (DIOSCOREA SPP.) AND THEIR CONTROL IN PUERTO RICO

(Maladies des ignames tropicales (Dioscorea spp.) rencontrées au champ et leur contrôle à Puerto-Rico)

Julia MIGNUCCI, R. TORRES-LOPEZ, P.R. HEPPERLY and D. RAMOS-BUSIGO
Dept. of Crop Protection, Agricultural Expt. Sta.,
College of Agric. Sci., Univ. of Puerto Rico,
Mayaguez Campus
Mayaguez, P.R. 00708

SUMMARY

For the last 5 years, we have studied yam diseases and their control in Puerto Rico. Damaging diseases occurring on yams from planting to harvest include : seed-tuber rot (*Penicillium* spp., *Fusarium oxysporum* and *F. solani*), root rot (*F. oxysporum* and *Pythium* sp.), stem basal canker (*F. oxysporum*), vascular wilt (*F. oxysporum*), virus (shoe string and mosaic viruses), anthracnose (*Colletotrichum gloeosporioides*), leaf spots (*Curvularia eragrostidis, C. geniculata*, and *Cercospora* sp.), scorch (unknown etiology), rectangular leaf spot (*Aphelenchoides ritzemabosi*) and stem blight (*Botryodiplodia theobromae*). *Penicillium* spp., *Fusarium* spp., *Curvularia* spp., *Pythium* sp., *C. gloeosporioides* were all found tuberborne inhabiting either the cortex or deeper internal tissues. For controlling these diseases we tested a range of practices and their integration. These include : chemical control, use of varietal resistance, and cultural practices. We will describe the symptomatology, etiology, epidemiology, and control of these yam diseases.

RESUME

Pendant les 5 dernières années, nous avons étudié les maladies de l'igname et leur contrôle à Puerto-Rico. Les maladies dommageables, de la plantation à la récolte comprennent : la pourriture des tubercules-semences (Penicillium spp., Fusarium oxysporum et F. solani), la pourriture racinaire (F. oxysporum et Pythium sp.), le chancre de la base des tiges (F. oxysporum), le flétrissement vasculaire (F. oxysporum), des viroses (virus des feuilles filiformes et de la mosaïque), l'anthracnose (Colletotrichum gloeosporioides), des taches foliaires (Curvularia eragrostidis, C. geniculata et Cercospora sp.), l'écorchure (étiologie inconnue), les taches foliaires rectangulaires (Aphelenchoides sp.) et la flétrissure des tiges (Botryodiplodia theobromae). Les Penicillium, Fusarium, Curvularia, Pythium sp. et C. gloeosporioides sont tous rencon-

trés dans le tubercule, soit au niveau du cortex, soit dans les tissus internes plus profonds. Afin de contrôler ces maladies, nous avons testé une gamme de pratiques ainsi que leur intégration. Celles-ci comprennent : la lutte chimique, l'utilisation de la résistance variétale et les pratiques culturales. Nous décrirons la symptômatologie, l'étiologie, l'épidémiologie et le contrôle de ces maladies de l'igname.

INTRODUCTION

In Puerto Rico an other countries yam field diseases have recently been recognized as important contributors to production losses (MIGNUCCI, et al., 1981a, 1981b, 1982, 1985 RAMOS and MIGNUCCI, 1985). Traditionally, viral diseases of foliage have be considered most limiting to *Dioscorea rotundata* cultivars while anthracnose was viewed as the major constraint for *D. alata* commercial production (MIGNUCCI, et al. 1981b ; 1981c ; 1982, 1984, 1985). In Puerto Rico, we have encountered other field diseases of yams of which little information is available (MIGNUCCI et al., 1985). We have been interested in identifying these diseases, calculating the losses associated with them and determining their distribution in the island's yam production zone. Efforts were focused also toward describing disease symptoms, pathogen identification, host susceptibility and developing control methods via an integrated approach. Research results on these areas will be summarized here.

Yam diseases can be classified into two groups. The first group covers those diseases that affect the tubers and that occur from harvest or during storage and shortly after emergence (MIGNUCCI et al., 1983, 1984a, 1984b). The second group, i.e., those occurring from emergence to senescence of field plants, will be described here.

MATERIALS AND METHODS

Disease and Pest Survey : At the end of 1980 and throughout 1981 growing seasons, a disease and pest survey was conducted throughout the yam growing zone of Puerto Rico. The survey covered 48 farms of 10 municipalities. Each farm was visited 3-4 times during the 12-month growing cycle to assess diseases and pests at various stages of crop development and during yam storage. The survey included an interview with the farmers using a questionaire to record agronomic practices and farmers views. Samples of plant parts were taken to the laboratory to isolate, identify, and culture organisms associated with damage and losses. Photographic records were taken of plants, agronomic practices, symptoms, etc.

Monitoring diseases and pests : A disease and pest nursery was yearly planted since 1980 to 1983 at the Alzamora fields in Mayaguez. The yam collections planted every year