

Report on trip to Russia, 1992

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DATES OF TRAVEL: May 17, 1992 through July 4, 1992

DESTINATION: France, Switzerland, Austria, Hungary, Czechoslovakia, Germany, Italy, Russia, and Ukraine.

PURPOSE OF TRAVEL: For the collection of various genotypes of leafy spurge and plant pathogens from corresponding localities.

PARTICIPANTS: **Bob Masters**, USDA, ARS; **Anthony Caesar**, USDA, ARS; **Scott Nissen**, Plant Physiologist, University of Nebraska, Lincoln.

CONTACTS: **Lloyd Knutson**, Director, European Biological Control Laboratory, USDA, ARS, Montpellier, France; **Massimo Cristofaro**, Entomologist, NEA, Rome, Italy; **Frantisek Krahulec**, Botanist, Czechoslovakian Academy of Sciences; **Gaetano Campobasso**, Entomologist, USDA, ARS, Rome Italy; **Victor Krivahatsky**, Entomologist, Zoological Institute, Russian Academy of Sciences, St. Petersburg.

Highlights

The highlights, in addition to those expressed by Bob Masters, were the widespread occurrence of soilborne diseases that affect the vigor and reproductive capacity of leafy spurge, possibly in combination with intense insect activity in many localities. In the United States leafy spurge typically produces several shoots from a single crown. In Europe, there is typically a single shoot produced per crown, with numerous diseased root buds and shoots found below ground. This syndrome was noted at nearly every site visited in the survey. *Rhizoctonia* and *Fusarium* spp. are usually isolated from such plants. The insect activity on *Euphorbia* spp. in Russia and the Ukraine was observed by me to be less intense than elsewhere in Europe, where in contrast there was often more than one insect feeding on *Euphorbia*. This reduced insect activity may explain the greater ubiquity and density of stands of *Euphorbia* spp. in Russia and the Ukraine. The

heavy pesticide use and environmental pollution known to affect these areas may be the cause.

In addition to the widespread occurrence of *Rhizoctonia* and *Fusarium* crown rots in Europe, the presence of crown gall disease caused by *Agrobacterium tumefaciens* and associated with *Pythium* spp. was also notable. Of particular personal interest was the association of dense mycelia of a basidiomycete with wilted and chlorotic (dying and root-rotted) *Euphorbia*. This syndrome has been observed in the U.S. also and is under intensive study by me in Montana. There were also interesting leaf spot diseases found near Stavropol and Balashov. Infection of *Euphorbia* spp. by *Cuscuta* spp. (dodder) was additionally noteworthy.

The very helpful cooperation of personnel at the CSIRO Biological Control of Weeds Laboratory in Montpellier, including Saraj Hassan and technical workers there was invaluable. Through their assistance I was able to prepare media for doing transfers from cultures prepared from specimens collected during the initial phase of the exploration.

Recommendations

1. In working with Plant Pathogens, the work of the Scientist has only begun with collection of the sample, an often arduous task in itself. One or more places to stop and culture samples and transfer cultures made previously is extremely valuable, this cannot be emphasized enough. The likelihood of proper handling of the samples is increased by being able to stop at Montpellier to finish culturing and do transfers. Not having to cross 10 time zones as well as encounter numerous layovers while transporting soil samples and equipment assures that there is optimum handling of the samples. If the proper facilities can be assured in Russia or the Ukraine, there would be the possibility of using them as a way station.
2. Because of the widespread occurrence of crown and root disease syndromes observed in Europe, especially in Hungary, Czechoslovakia and Austria, these regions are valuable for the collection of plant pathogenic biological control organisms, and are especially useful as a source of soilborne organisms that have been collected in these areas and which are being presently used in biological control of leafy spurge in the United States and Canada. The great variation in edaphic factors throughout this region causes it to be likely as a source of biocontrol organisms for a variety of situations.
3. Exploration of this region earlier in the year is recommended to allow for easier isolation of the exact species which most often cause the crown rot symptoms. Exploration in this region for plant pathogens is necessary because of the greater possibility of proper facilities for handling of pathogen samples, such as overnight facilities with running water and electrical power for refrigeration.
4. For plant pathological work, it is imperative that the samples be kept cool and be cultured from as soon as feasible during the trip. I sought and was able to obtain plastic artificial ice blocks for this purpose. A portable cooler which runs off of the cigarette lighter would work well with the obvious necessity that the vehicle

be equipped with such a power source. Provision for proper handling of pathogen samples could be considered for work in Russia such as was possible in Balashov at a tourist center where refrigerators were obtainable.

5. Continued exploration throughout other regions of the former Soviet Union is recommended to explore the limits of distribution of *Euphorbia esula/virgata* to understand whether pathogen activity may interact with environmental factors at these limits. Therefore, I recommend collecting near Moscow and in Belarus. Additionally, I recommend that more emphasis be placed on exploring for pathogens in nature preserves, which we were informed were fairly numerous, inevitable in the vast territory that is the former USSR. This approach would for pathogen samples place emphasis on the quality of samples over quantity (collecting along roadsides tends to favor the latter over the former for pathogen collecting) although it probably would entail more effort to find the host.
6. Collecting in the native range of Euphorbias is extremely valuable for comparative purposes alone to understand whether pathogens found in North America are also present in Europe.
7. The potential of plant parasitic nematodes as biological control agents is in need of exploration in a concentrated effort possibly in close cooperation with a local specialist.