

Progress Report (08/08/07): IYS Risk Index to Predict Virus and Thrips

WRIPM Center Sub-Award K009607-CO3, CFDA No. 10.303

Funding (\$58,716) was authorized by the WRIPM Center on 2 February 2005 to Colorado State University researchers (Drs. H. F. Schwartz, W. S. Cranshaw and R. Khosla) to initiate field studies in 2005 and 2006 in Colorado in areas with a history of *Iris Yellow Spot Virus* (IYSV).

The overall goal was to develop multi-faceted management strategies that will reduce grower reliance upon high-risk pesticides, while at the same time improve productivity, profitability, sustainability and food safety for onions grown in diverse cropping system in the western U.S. and elsewhere. We investigated cultural practice effects upon thrips and tospovirus management in the western U.S., and will develop a Risk Index Model for future validation in the western U.S. The specific objectives of this study were to:

- I. Determine the relationship of Iris yellow spot to soil properties, plant stress, and management practices.
- II. Develop an Iris yellow spot Risk Index for validation by growers and crop consultants to identify and avoid high risk situations in different cropping systems.

2005 Results & Associations:

- Thrips were spatially dependent at one or more evaluations in 3 of the 5 fields
- IYSV was spatially dependent in 2 of the 5 fields
- Thrips populations and IYSV incidence were correlated in 2 of the 5 fields
- IYSV and thrips were affected weakly to strongly by soil nutrient levels in 4 of the 5 fields; primarily by phosphorus, and then by potassium, magnesium and organic matter content

2006 Results & Associations:

- Thrips were spatially dependent at one or more evaluations in 2 of the 3 fields
- IYSV was spatially dependent in 2 of the 3 fields
- Thrips populations and IYSV incidence were correlated in 1 of the 3 fields
- IYSV and/or thrips were affected weakly to strongly by soil nutrient levels in 4 of the 3 fields; by potassium, magnesium, nitrogen, calcium, sodium, cation exchange capacity and/or organic matter content

Combined data sets (years) are still being evaluated as we develop an Iris Yellow Spot Risk Index for validation by onion growers and crop consultants in Colorado and other western onion-growing states where these pests continue to be priority threats to the crop. These final analyses and the proposed Risk Index will be included in our Final Report that will be submitted by December 31, 2007.

Brief Update:

IYS Risk Index to Predict Virus and Thrips

WRIPM Center Sub-Award K009607-CO3, CFDA No. 10.303

The specific objectives of this study by Colorado State University researchers (Drs. H. F. Schwartz, W. S. Cranshaw and R. Khosla) were to: (I) Determine the relationship of Iris yellow spot to soil properties, plant stress, and management practices; and (II) Develop an Iris yellow spot Risk Index for validation by growers and crop consultants to identify and avoid high risk situations in different cropping systems.

Preliminary results from 2006 revealed that:

- Thrips and IYSV were each spatially dependent at one or more evaluations in 2 of the 3 fields; and were correlated in 1 of 3 fields.
- IYSV and/or thrips were affected weakly to strongly by soil nutrient levels in 4 of the 3 fields; by potassium, magnesium, nitrogen, calcium, sodium, cation exchange capacity and/or organic matter content

Combined data sets (from 2005 and 2006) are still being evaluated as we develop an Iris Yellow Spot Risk Index for validation by onion growers and crop consultants in Colorado and other western onion-growing states where these pests continue to be priority threats to the crop. These final analyses and the proposed Risk Index will be included in our Final Report that will be submitted by December 31, 2007.