**Objective:**
Quantify the prevalence and incidence of foliar diseases affecting high input, conventional onion production in New York

**Concern over increasing severity of dieback and symptom confusion**

**Fungal foliar diseases:**
- Downy mildew
  - *Peronospora destructor*
- Stemphylium leaf blight
  - *Stemphylium vesicarium*
- Purple blotch
  - *Alternaria porri*
- Botrytis leaf blight
  - *Botrytis squamosa*

Regular application of fungicides for disease management

**Survey-based approach**
- Diseased leaves collected from 16 July to 28 August
  - Conventional (n = 846 from 22 fields)
  - Low input (n = 283 from 10 fields)
- 8 to 73 plants/field
- Multiple locations/field
- Returned to laboratory for further testing and isolations

**Methods**
- Diseased leaves
- Incubated at high humidity in laboratory
- Emerging mycelia identified and transferred to artificial media
- Prevalence (number of fields where a species was detected/total number of fields; %)
- Incidence (number of diseased leaves from which a species was isolated compared to total number of leaves; %)
RESULTS

Stemphylium vesicarium

Alternaria porri

PREVALENCE

| Fungi (Disease) | Low input (%)(n=10) | Conventional (%)(n=22) | t(20) | P
|-----------------|---------------------|------------------------|--------|---------|
| Stemphylium vesicarium | 100 | 100 | 0.00 | 0.806
| Pleospora allii* | 80 | 95.5 | 2.72 | 0.013
| Alternaria porri | 50 | 0 | 0.00 | 0.806
| Alternaria alternata | 60 | 18.2 | 2.72 | 0.013
| Peronospora destructor | 60 | 10.1 | 2.72 | 0.013
| Alternaria spp. | 60 | 9.1 | 2.72 | 0.013
| Colletotrichum spp. | 30 | 4.5 | 2.72 | 0.013
| Umbellularia spp. | 30 | 0 | 0.00 | 0.806
| Umbellularia spp. | 30 | 15.0 | 2.72 | 0.013
| Umbellularia spp. | 30 | 10.0 | 2.72 | 0.013
| No fungi (sterile) | 10 | 36.4 | 2.72 | 0.013

*S. vesicarium is another form (teleomorph) of S. porri

INCIDENCE

Effect of production practice

| Fungi | Low input (%)(283 leaves) | Conventional (%)(846 leaves) | t(20) | P
|-------|---------------------------|-----------------------------|--------|---------|
| Stemphylium vesicarium | 85.5 | 86.4 | -0.16 | 0.869
| Alternaria porri | 14.5 | 0 | 2.33 | 0.023
| Alternaria alternata | 49.5 | 6.0 | 3.85 | 0.001
| Peronospora destructor | 11.1 | 0.1 | 2.13 | 0.038
| Botrytis spp. | 2.1 | 0.5 | 1.42 | 0.160

Effect of location

| Location (number of fields) | Isolation frequency (%)
|-----------------------------|------------------------|
| Elba (6) | 95.7 35.0
| Orange (3) | 78.2 63.3
| Potter (3) | 82.2 73.0
| Sodus (3) | 100.0 69.4

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KEY FINDINGS

Stemphylium leaf blight**
- Found in all fields at high incidence.
  Incidence was not significantly different between low input and conventional fields;

Purple blotch
- Higher prevalence in low input fields;
  Incidence was significantly lower in conventional fields;

Downy mildew and Botrytis spp.
- Low prevalence and incidence but more prevalent in low input fields;

Fungicide used in conventional production may be highly efficacious for the control of purple blotch and other foliar diseases.

Results in context of the survey returned to all participating growers.

NEXT STEPS

- Fungal isolate storage and single-spore for further work and DNA extraction
- In vitro fungicide sensitivity for Stemphylium vesicarium and Alternaria porri isolates
- Identification of the Colletotrichum spp.
RESULTS: OTHER FUNGI

Anthracnose (Colletotrichum spp.)

3.2 to 30% incidence

Onion smudge (C. circinans)
Twister (C. gloeosporioides) – Georgia and other tropical locations
Athracnose (C. coccodes) – MI and OH*

ACKNOWLEDGMENTS

Cornell Cooperative Extension personnel
Elizabeth Buck
Cordelia Hall
Melissa Call
Kevin Besler

Growers and industry

ORDP

Nault program for onion advice!