

Freesia Sneak Virus



A New Find for the United States

Mary Ann Hansen
VT Plant Disease Clinic

Freesia Sneak Virus (FreSN) in Virginia

- **Freesia samples with necrotic speckling received by VT Plant Disease Clinic from commercial grower March 2008**
- **Origin of bulbs: Netherlands → NJ → VA (shipped to NJ Sept '07)**
- **Planted in crates: 25 bulbs / crate**
- **Potting mix supplemented with garden soil**
- **Grown in greenhouse**
- **10% of 300 plants affected; no distinct pattern**

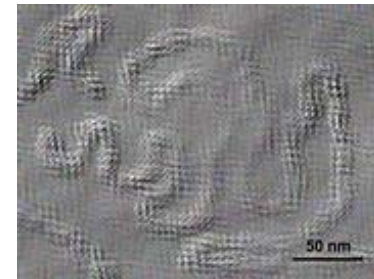
Virginia Cooperative Extension



- **Photo sent to diagnostics listserv**
 - Recommendation: Contact John Hammond (USDA)
- **Sample tested negative for BYMV and potyvirus group by Agdia, Inc.**
- **Sample tested positive for FreSN by PCR after several tests (Anna Maria Varia, USDA)**
 - Ophiovirus and a few unidentified, virus-like particles also seen with EM
- **CP sequence of VA FreSV = CP sequence of Italian infected freesias**

Freesia Sneak Virus

- **Genus Ophiovirus :**
 - ssRNA, negative-sense, filamentous virus with divided genome
 - Other members:
 - Tulip Mild Mottle Mosaic Virus
 - Mirafiori Lettuce Bigvein Virus
 - Lettuce Ring Necrosis Virus
 - Vectored by soil-borne fungus *Olpidium brassicae*
- **RT-PCR used to create genus-specific DNA primer (A.M. Vaira, et al.)**



Freesia Sneak Virus: Background

- Necrotic disorders of freesia (fam. *Iridaceae*) described formally since 1973 in northern Europe (Dorst)
- Similar disorders seen more recently in Italy (Vaira, 1999)
- Ophiovirus particles seen by EM in crude sap from diseased plants but not healthy plants
- Ophiovirus often occurs in combination with other viruses, e.g. potyviruses, putative varicosavirus
- Ophiovirus particles unstable and difficult to purify

Freesia Sneak Virus: Background

- FreSV also infects **Lachenalia** (fam. *Hyacinthaceae*)
 - Freesia, lachenalia = monocots native to South Africa





Followup to VA Case

- **VDACS visited site**
 - All remaining plants with symptoms sent to USDA lab
- **APHIS held two conference calls**
- **NJ SPHD contacted: no symptoms on any plants at supplier**
- **NJDA will monitor new bulbs coming to supplier this year**
- **Proposed testing of soil from VA nursery for *Olpidium***
- **No regulatory action: virus has most likely been present on imported freesias in US for many years, but detection technology was inadequate until recently**

Unanswered Questions

- **Can FreSV cause symptoms in the absence of other viruses?**
- **How long does FreSV survive in the fungus?**
- **Is expression of FreSV symptoms dependent on environmental conditions?**