

FLUTIANIL

Fungicide

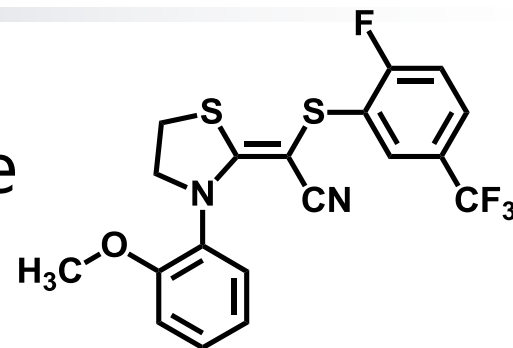
Product name: **GATTEN[®]**



OAT Agrio Co., Ltd.

—Tokyo, Japan—

- New chemical group : cyano-methylene thiazolidine
- Effective in controlling powdery mildew
- **Novel Mode of Action against powdery mildew (FRAC Code U13)**
- **No Cross-Resistance with other chemical classes**



■ US

- Reduced risk status granted for all of the proposed crops.
- Anticipated approval: 2017
- Proposed crops: Apple, Cantaloupe, Cherry, Cucumber, Grape, Squash, and Strawberry

■ Japan

- Registered on Eggplant, Cucumber, Pumpkin and Squash, Watermelon, Melons, Strawberry, and Flowers and Ornamental plants

■ Korea

- Registered on Green & Red pepper (Fresh), Strawberry, Watermelon, Cucumber, Korean melon, and Sweet pepper

■ EU

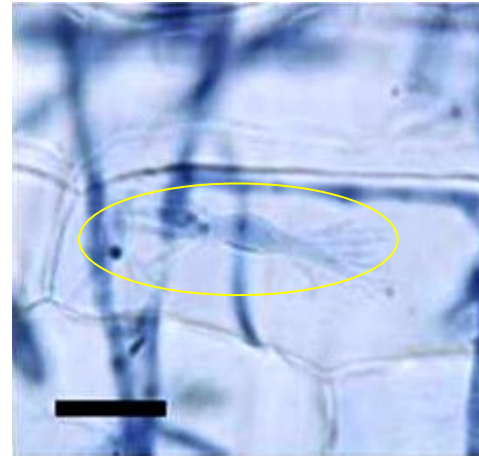
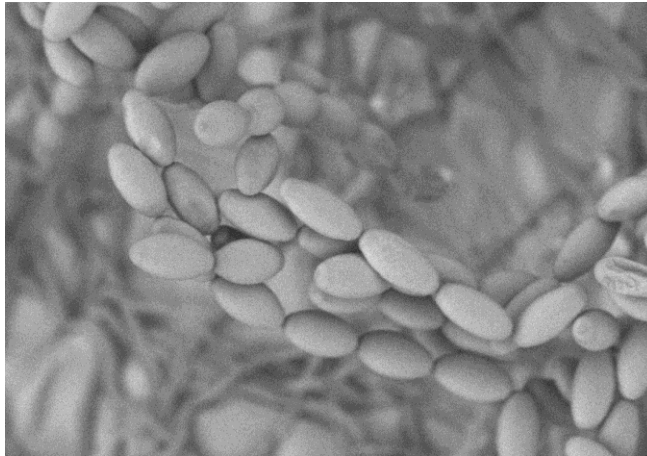
- Under evaluation
- Anticipated registration in 2017
- Proposed crops: Grapes and Flowers and Ornamental plants

US Label (proposed)

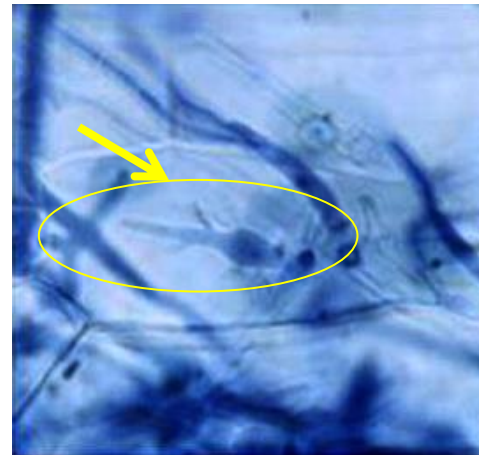
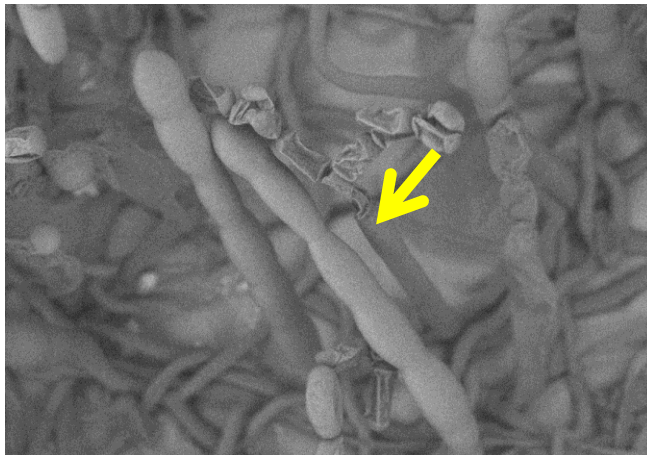
- **Type:** Fungicide
- **Product Name:** GATTEN®
- **Active ingredient:** Flutianil
- **Formulation:** 5% EC
- **Use rate:** 0.04 lb ai/acre (0.01-0.05 lb ai/acre global)
- **Application:** 4-5 times per season, 7 day interval
- **PHI:** 0-14 days
- **Proposed crops:** Apple, Cantaloupe, Cherry, Cucumber, Grape, Squash, and Strawberry
 - All granted reduced risk status

Novel Mode of Action

untreated



10 mg/L
Flutianil



Conidiophores

Haustorium

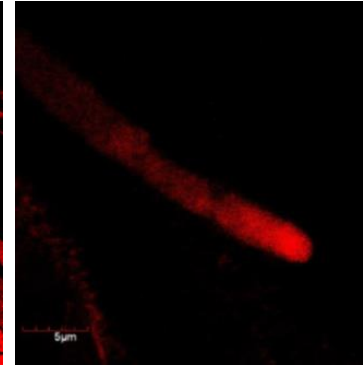
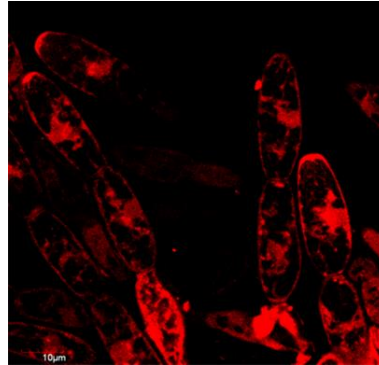
**Inhibition of
haustorial
formation, and
sporulation**

The 1.2-leaf stages of cucumber plants that were inoculated with *Podosphaera xanthii* 7 d before a flutianil application were observed in a low-temperature cryofixation electron microscope

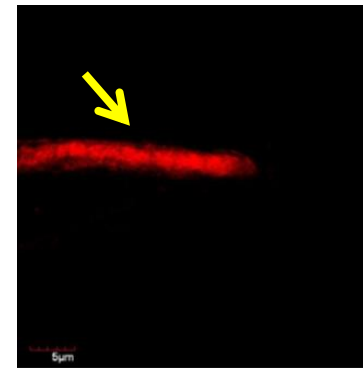
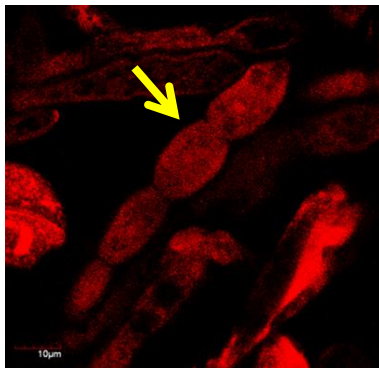
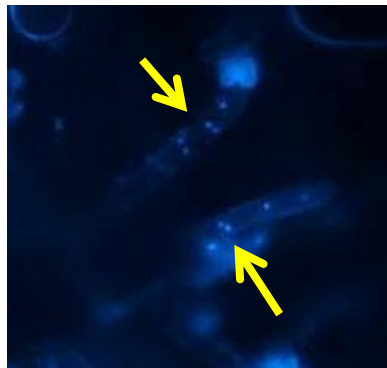
The 1.2-leaf stages of barley that were inoculated with *Blumeria grainis* f.sp. *hordei* 7 days before a flutianil application and stained with lactophenol trypan blue, at 3 d after fungicide application and observed under a microscope. Bars=50 μ m

Novel Mode of Action

untreated



10 mg/L
Flutianil



conidiophores

conidiophores

Hyphae

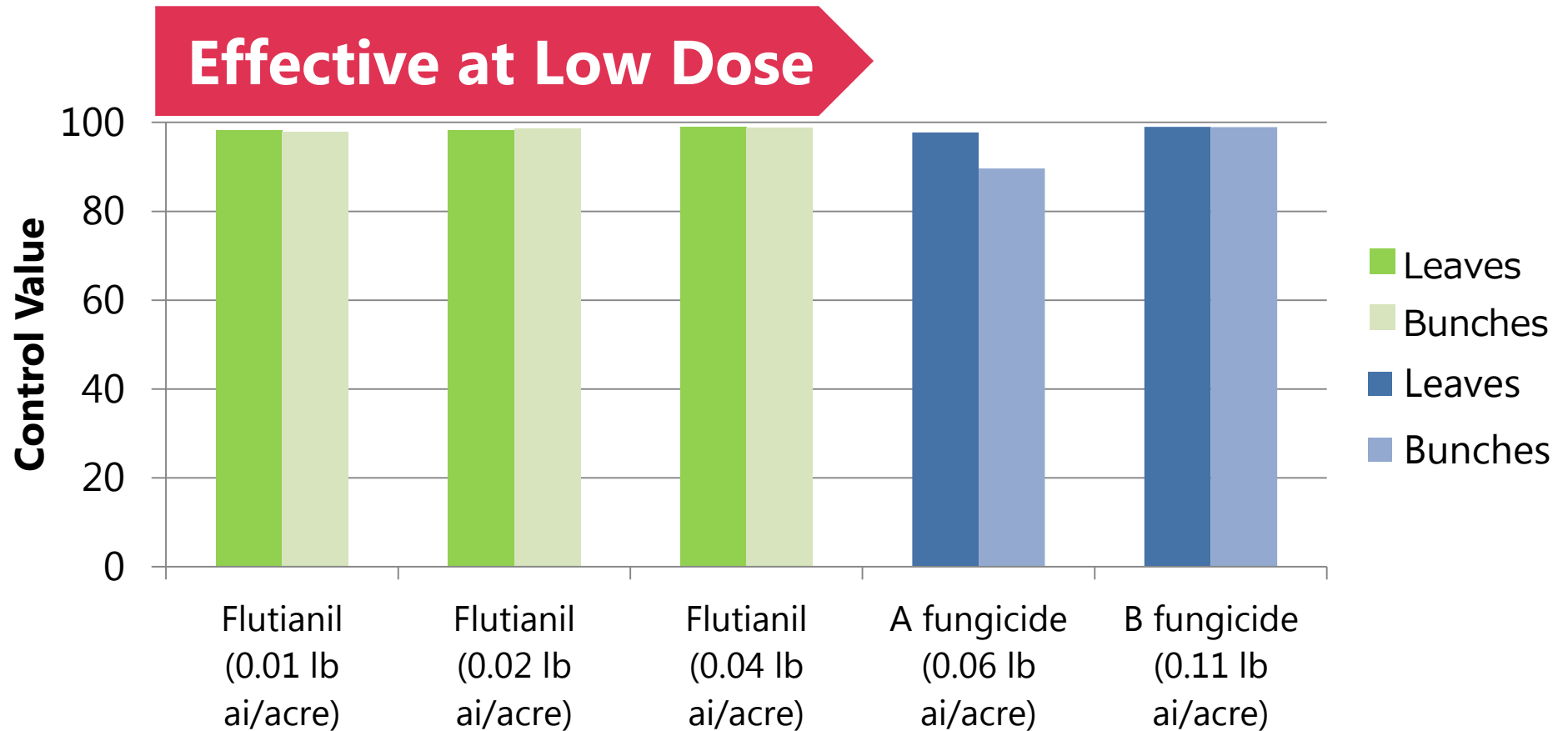
Nuclei
distribution

Actin organization

Actin disruption
and abnormal
nuclei were
observed

The 1.2-leaf stages of barley that were inoculated with *B. grainis* f.sp. *hordei* 7 days before a flutianil application and stained with DAPI or rhodamine phalloidin, at 3 d after fungicide application and observed under a microscope.

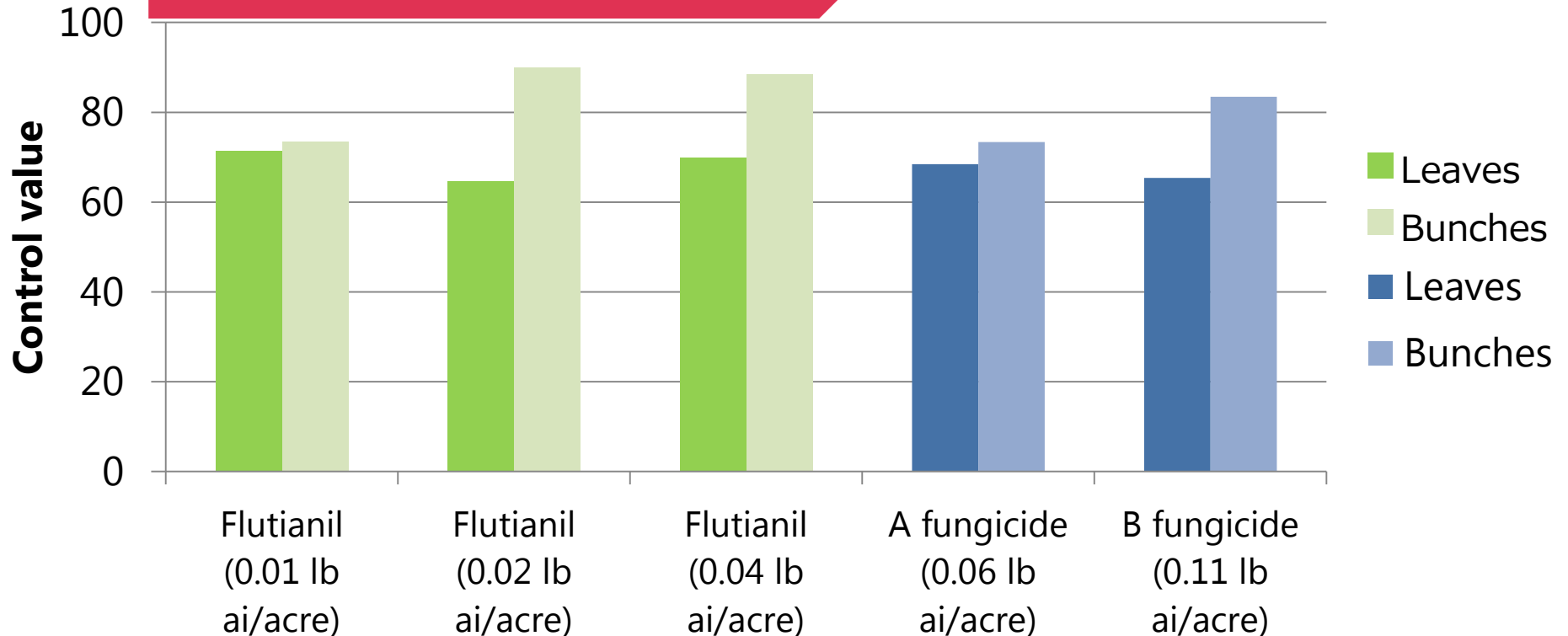
Erysiphe necator on Chardonnay Grape



- Location: Italy
- Four applications, targeted for every 10 days until color change
- Assessment was determined at 11 (leaves) and 10 (bunches) days after the last application
- Application: 1 – 6/28/11, 2 – 7/9/11, 3 – 7/20/11, 4 – 7/31/11

Erysiphe necator on Tempranillo Grape

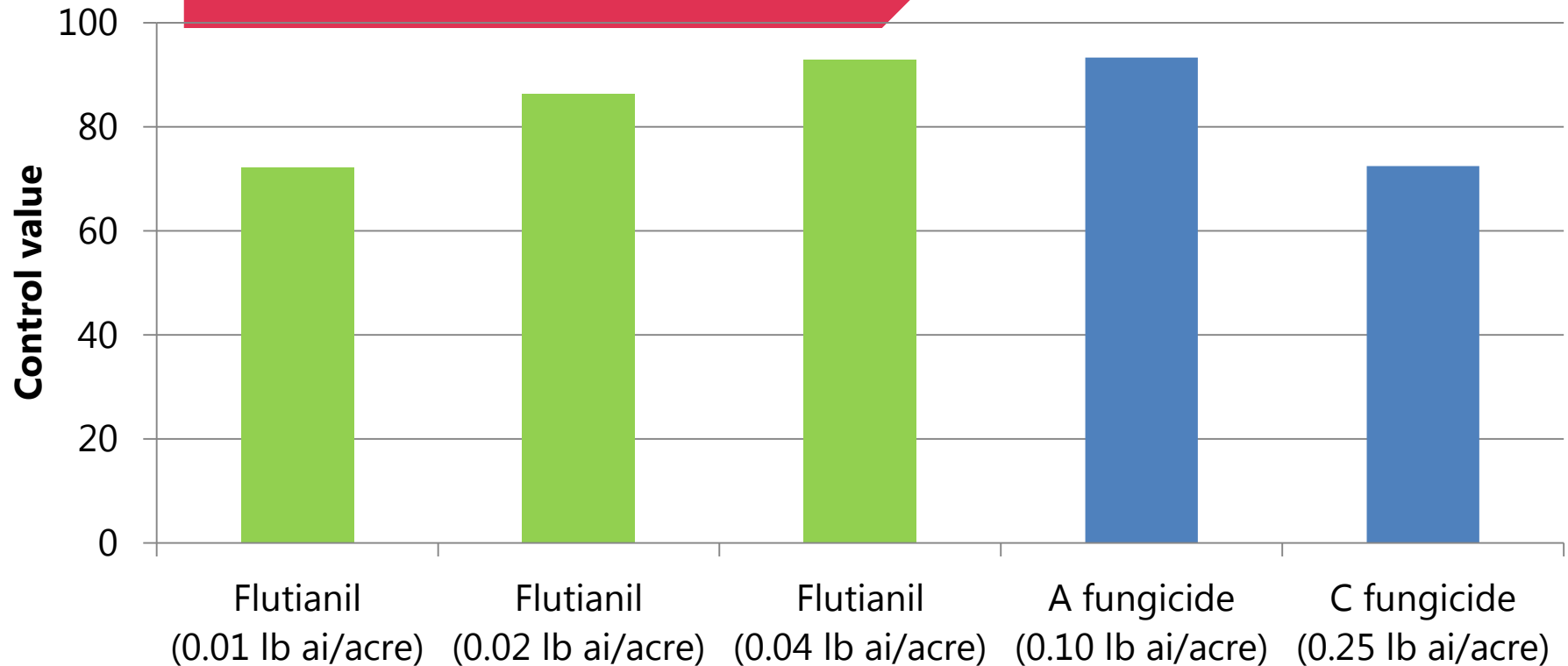
Effective at Low Dose



- Location: Spain
- Four applications made every 7-10 days. Applications were started late in the season when bunches were already formed.
- Assessment was determined at 12 (leaves) and 8 (bunches) days after the last application
- Application: 1 – 7/7/11, 2 – 7/15/11, 3 – 7/27/11 and 4 – 8/4/11

Podosphaera xanthii on Leaves of Yellow Squash

Effective at Low Dose



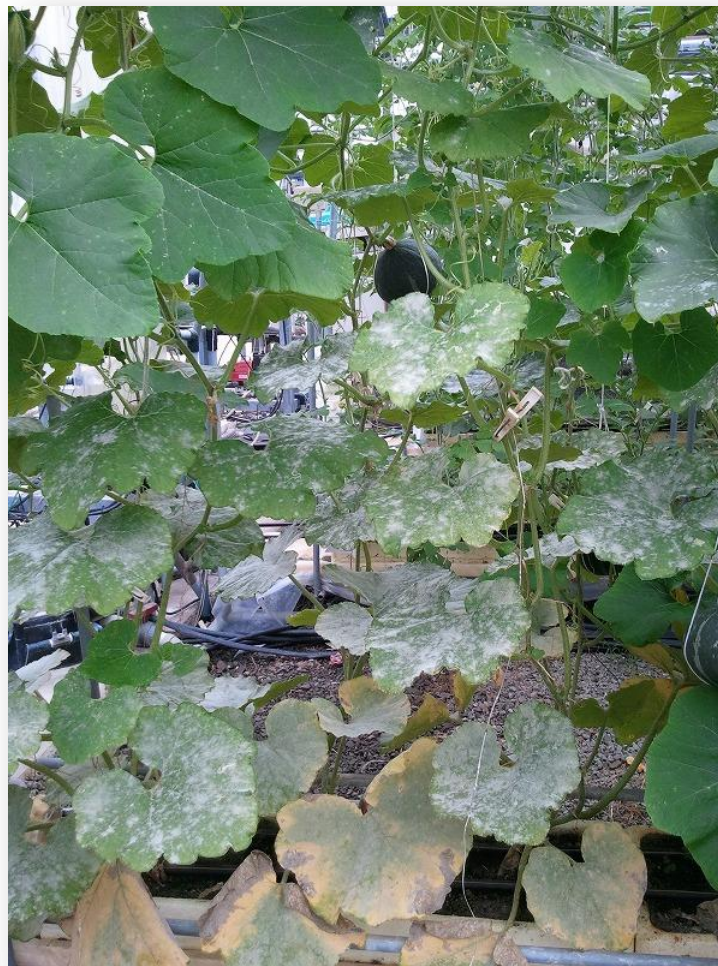
- Location: Raleigh, NC
- Five applications targeted at 7 days intervals
- Assessment was determined at 7 days after the last application
- Application: 1 - 7/27/2011, 2 - 8/3/2011, 3 - 8/10/2011, 4 - 8/17/2011, 5 - 8/24/2011

Sphaerotheca fuliginea on Squash

0.03 lb ai/acre Flutianil



untreated



- Location: Tokushima, Japan, OAT AGRIO
- One application targeted, Assessment was determined at 25 days after application
- Application: 1 - 6/18/2012

Thank you



OAT Agrio Co., Ltd.

—Tokyo, Japan—