BASF
Top and Soft Fruit Products: properties and mode of action.
‘Yield is dependent on control of the factors that balance the production of assimilates’

**Negative factors**
- Disease
- Drought
- Stress
- Lack of N

**Positive factors**
- Healthy leaves
- Shock tolerance
- Adequate N, H₂O
- Immune system

**Assimilate Balance**

Pyraclostrobin affects **ALL** of these factors
Boscalid relieves environmental stress
Treatment with pyraclostrobin 7 days prior to inoculation significantly reduced the incidence of TSWV in Impatiens.

**Tomato Spotted Wilt Virus  Impatiens 2006**

**Average number of leaves per plant with symptoms**

- **Day 7**
  - Pyraclostrobin: 1.0
  - Untreated: 1.5

- **Day 14**
  - Pyraclostrobin: 3.0
  - Untreated: 4.0

- **Day 21**
  - Pyraclostrobin: 4.5
  - Untreated: 5.0

- **Day 28**
  - Pyraclostrobin: 2.0
  - Untreated: 3.0
Stress-reducing effects of fungicides

Inhibition of ethylene production

- Pryaclostrobin
- Kresoximmethyl
- Azoxystrobin
- Boscalid
- Fluoxastrobin

Time after stress regime [h]

T. Jabs. BASF L/hof 2004
Effective and long lasting disease control

BASF trial Newent

Untreated  Signum 0.75  Signum 1.0  Signum 1.5  Signum 1.8  myclobutanil 0.45  tolyfluanid 1.5

➔ Healthier, firmer fruit. Longer shelf life
Pyraclostrobin encourages better uptake & utilisation of N

- Higher yield
- Less residual nitrogen
Translaminar activity of pyrimethanil

88%
Control on underside when applied to top side

56%
Control on topside when applied to underside

79%
Control on right handside when applied to opposite side of leaf

Source: Pyrimethanil Biological Dossier
Vapour effect of pyrimethanil on adjacent untreated plants

Treated 20g/hl

Redistribution of Pyrimethanil by vapour effect

Untreated adjacent plant

96% control*

72% control

Glasshouse trial, Untreated control 30% Botrytis in infected leaves
Key stages in the natural infection process of *Botrytis* spp. Where the fungicides work

1. Spore adhesion, germination and appressorium formation (< 4h)
2. Penetration of host cell wall and secretion of hydrolytic enzymes, resulting in localised cell necrosis (> 4h)
3. Formation of 'necrotic flecks' caused by diffusion of enzymes ahead of infection (24h)
4. Widespread tissue necrosis, mycelial invasion and formation of conidiophores (4 days)

Fungicides:
- **Boscalid / Pyraclostrobin**
- **Ipodione (multi-site)**
- **Pirimethanil**
- **Iprodione** (multi-site)
Botrytis kills host plant cells by secreting hydrolytic enzymes.

Pyrimethanil inhibits enzyme secretion and stops fungus from killing plant cells.

Untreated Botrytis fabae spore (centre) kills many host cells.

Pyrimethanil treated host cell death is prevented.
Fungal enzymes (red) digest host cells. Nutrient (blue) uptake into mycelium

Scala inhibits enzyme secretion into fungus. No nutrient uptake by fungus.

untreated

Scala treated
How Scala works

*Botrytis* spore on plant tissue

**Fungal enzymes (red) destroy host cells. Nutrient (blue) uptake into mycellium.**

**Scala inhibits enzyme secretion.**
Fungus destroys plant cells and produces millions of spores.

Scala destroys fungus.

untreated

Scala treated
Signum works as a preventative treatment against fungal disease.

When applied at the beginning of the fungal life cycle, disease development is prevented by the inhibition of spore germination or growth of the germination tube.
Boscalid - Activity

Protectant activity
Locally systemic with acropetal movement
Translaminar activity

Translocation of $^{14}$C treated Boscalid in grape leaves

High concentration    Low concentration
*Venturia inaequalis* (Apple scab) – spore formation

Untreated 5 weeks after infection

No sporulation at 28 days after pyraclostrobin treatment
Crown Rot *Phytophthora cactorum*
Properties of dimethomorph
Locally systemic activity

C\textsubscript{14} dimethomorph
distribution 1.5 hours after
application onto the stem of
a potato plant.
Properties of dimethomorph
Locally systemic activity

C\textsubscript{14} dimethomorph distribution 5 days after application onto the stem of a potato plant.

Point of application

Contact surface retention, translaminar movement and transpiration stream movement into new growth
Disease life cycle of Potato Late Blight (*Phytophthora infestans*)
Apply immediately after planting

Overhead spraying is the most effective method

To maximise root uptake
  – Use high water volumes
  – Irrigate after application – most important
  – Or organise rain!

Use dimethomorph preventatively

Dose: 3 kg of product/ha per application
BASF Crop Protection in soft fruit

PARAAT®

Masai®

Stroby® WG

Roovral® WG

SCALA®

SCALA®

Growth stage

Pre-flowering

first flowers

full flowering

flowers fading & fruit development

senescence

dormancy

BBCH

45

60

65

69 - 89

91 – 97

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Effective and long lasting disease control

- Increased marketable yield
- Healthier, firmer fruit. Longer shelf life