

SBI Working Group

**FRAC**

FUNGICIDE RESISTANCE  
ACTION COMMITTEE

## **STEROL BIOSYNTHESIS INHIBITOR (SBI) WORKING GROUP**

### **Annual Meeting 2007 – Protocol of the discussions and recommendations of the SBI working group of the Fungicide Resistance Action Committee (FRAC)**

DMI AND AMINES: CEREAL DISEASES  
GENERAL RECOMMENDATIONS FOR CEREALS  
DMI AND AMINES: NON-CEREAL CROPS AND DISEASES  
RECOMMENDATIONS  
SBI-CLASS III (HYDROXYANILIDES)  
RECOMMENDATIONS

#### **Participants of the working group meeting 2007:**

BASF	Martin Semar Gerd Stammeler
Bayer CropScience	Friedrich Kerz-Möhlendick Andreas Mehl Klaus Stenzel
Dow	Greg Kemmitt
Du Pont	Jean-Luc Genet
Makteshim	Friedrich Mühlischlegel
Syngenta	Andy Leadbeater Helge Sierotzki Christoph Neumann

Date of WG meeting: November 29, 2007  
Venue of the meeting: Hotel Salischer Hof, Schifferstadt, Germany  
Hosting company: BASF AG

## **1. DMI AND AMINES: CEREAL DISEASES**

### **1. 1. WHEAT**

#### **1.1.1. Leaf Spot (*Mycosphaerella graminicola* / *Septoria tritici*)**

Presentation of monitoring data: BASF, Bayer CropScience, Syngenta

- Disease pressure in 2007 in Europe was low to moderate.
- DMI's field performance was generally good when used according to the manufacturers and FRAC recommendations.
- After the slight increase in the frequency of less sensitive isolates from 2002 to 2004, the situation has stabilised between 2005 and 2007.

#### **1.1.2. Powdery mildew (*Blumeria graminis f.sp. tritici* / *Erysiphe graminis f.sp. tritici*)**

In 2007 the disease pressure was low to medium across Europe.

##### **DMI's**

Presentation of monitoring data: Bayer CropScience

- No complaints from field use in practice. The performance of DMI based products was as expected.
- Sensitivity data being presented confirmed that the situation was generally stable remaining in the range of variability seen over the past 10 years.

##### **Amines**

Presentation of monitoring data: BASF, Bayer CropScience

- Field performance of amine based products was good with no complaints in practice.
- Sensitivity data being presented confirmed that like with DMI's the situation was generally stable remaining in the range of variability seen over more than 10 years.

#### **1.1.3. Wheat brown rust (*Puccinia triticina*)**

Presentation of monitoring data: BASF, Bayer CropScience, Syngenta

Brown rust disease pressure was exceptionally high in most of the countries of Europe.

- Performance of DMI's against rust has been maintained. Sensitivity data from 2007 for wheat brown rust showed that the sensitivities in 2007 were in the range of those of the last years.

Analysis of a limited number of Brazilian isolates showed that their sensitivity was in the range of that of the European population tested during the last 10 years. No resistance was detected.

#### **1.1.4. Eyespot (*Tapesia* spp, syn. *Oculimacula* spp.)**

Presentation of monitoring data: Bayer CropScience

- Sensitivity data have been presented for prothioconazole (W and R types). Between 2003 and 2007 there is no change in the sensitivity of both types, stable situation has been observed during the last 5 years.

#### **1.1.5. DTR / HTR (*Pyrenophora tritici-repentis*)**

First sensitivity studies started in 2006 to establish a current baseline, monitoring studies for 2007 still in progress.

### **1.2. BARLEY**

#### **1.2.1. Powdery Mildew (*Blumeria graminis* f.sp. *hordei* / *Erysiphe graminis* f.sp. *hordei*)**

In 2007, disease pressure was low to medium.

#### **DMIs**

Presentation of monitoring data: Bayer CropScience

- The sensitivity of the populations stayed in the range of normal variation.

#### **Amines**

Presentation of monitoring data: Bayer CropScience

- Amine products performed well with no farmer complaints.
- The sensitivity of the populations stayed in the range observed in the previous years.

#### **1.2.2. Scald (*Rhynchosporium secalis*)**

Presentation of monitoring data: BASF, Bayer CropScience, Dupont, Syngenta.

- Disease pressure was low in Europe in 2007.
- Generally stable situation. Sensitivity monitoring data were presented for 2007: the sensitivity of the populations stayed in the range observed in the previous years.

#### **1.2.3. Net Blotch (*Pyrenophora teres* / *Drechslera teres*)**

Presentation of monitoring data: Bayer CropScience, Syngenta

- Disease incidence was moderate in 2007.
- Field disease control was good with no problems reported.
- The sensitivity of the populations in 2007 stayed in the range observed in the previous years.

### **1.3. GENERAL RECOMMENDATIONS FOR CEREALS (DMI'S AND AMINES)**

The recommendations for the use of DMI and amine fungicides in mixture or alternation programmes with different mode of action fungicides remain unchanged.

Repeated application of DMI or amine fungicides alone should not be used on the same crop in one season against risky pathogens (e.g. cereal powdery mildews, barley net blotch, scald) in areas of high disease pressure for that particular pathogen.

Reduced rates of DMI's have been shown to accelerate the shift to less sensitive populations. It is critical to use effective rates of DMI's in order to ensure robust disease control. DMI's must provide effective disease control and be used at manufacturers recommended rates.

When used in mixture recommended effective rates of the SBI should be maintained. Split and reduced rate programmes, using multiple repeated applications at dose rates below manufacturers' recommendations, provide continuous selection pressure and accelerate the development of resistant populations, and therefore must not be used.

To ensure good performance in situations of high disease pressure it is of importance to adhere to dosages and spray timings as recommended by manufacturers. Highly curative applications should be avoided. Application timing has to be appropriate to all mix partners' characteristics. Mixing with a non-cross resistant fungicide at effective dose rates may contribute to a higher level disease control.

The amine fungicides are effective non-cross-resistant partner fungicides for DMI's on cereals for the control of pathogens included in the label recommendation of each respective product.

## **2. DMI AND AMINES: NON-CEREAL DISEASES**

### **2.1. SOYBEAN:**

#### **Asian soybean rust (*Phakopsora pachyrhizi*)**

Presentation of monitoring data: Bayer CropScience, Syngenta

- Current baseline studies were carried out in 2006 and 2007, no less sensitive isolates were detected.
- Refer to the general recommendations for SBI's.

### **2.2. VINE:**

#### **Powdery Mildew on grape vine (*Erysiphe necator*)**

Monitoring studies for 2007 still in progress, data for 2006 presented by Bayer CropScience.

- For 2006: Disease pressure was moderate across Europe in 2006. Performance of DMI's and amines was as expected. Stable situation for the amines over the last years. Sensitivity for DMI's was generally in the normal range of fluctuation with higher mean resistance factors in northern Italian regions but was considered to be in the range of normal fluctuation. No complaints from practice.

- Recommendations:

DMI's and amines should be used preventative and curative situations should be avoided.

The existing strategy for effective disease control and resistance management continues to be successful and the use recommendation is a maximum of 4 applications per season, before symptoms occur. The strategy includes the use of mixtures or alternation with non-cross resistant fungicides.

To ensure that SBI's can remain the effective basis for control of *Erysiphe necator* in grape vine, their use should adhere to the full recommended rate (either alone or in mixture) at the recommended timing and application volume and an accurate treatment of each row.

## **2.3. APPLE:**

### **2.3.1. Apple Scab (*Venturia inaequalis*)**

Monitoring studies for 2007 still in progress

- Disease pressure was low to moderate across Europe.
- The performance of DMI's was good on this disease in 2007 when compounds were used according to the manufacturers' and FRAC recommendations within spraying programmes.
- Recommendations:

DMI fungicides are not recommended for season long use and a maximum of 4 DMI sprays either alone or in mixture is recommended.

Where repeated fungicide applications are required, DMI's should be used in mixtures or (block) alternations with a non-cross resistant fungicide. Application of recommended label rates is important.

Preventative applications should always be the first choice with DMI's. Curative applications are only recommended when accurate disease warning systems are available.

### **2.3.2. Powdery Mildew on apple (*Podosphaera leucotricha*)**

No monitoring in 2007

- No complaints were received on the performance of DMI's when compounds were used according to the manufacturers' recommendation and FRAC recommendations.
- For recommendations see General Recommendations.

### **2.3.3. Oilseed rape (*Leptosphaeria maculans* (*Phoma lingam*))**

Presentation of monitoring data: Bayer CropScience, Syngenta

- First monitoring data from 2006 and 2007 showed a narrow sensitivity range, no indication for reduced sensitivity.
- For recommendations see General Recommendations.

## **2.4. BANANA:**

### **Banana Sigatoka (*Mycosphaerella fijiensis*)**

The conclusions and guidelines of the Feb. 2006 meeting of the FRAC Banana Working Group are available on the FRAC Website (<http://www.frac.info/frac/index.htm>). The next meeting of the group is planned for February 2008.

## **3. SBI-CLASS III (HYDROXYANILIDES: Fenhexamid)**

### ***Botrytis cinerea on grape vine***

Presentation of monitoring data: Bayer CropScience

- Monitoring data were presented for the 2007 season.
- No complaints were received on the performance of Fenhexamid in 2007.
- Resistant isolates were detected in Europe, but with stable and low frequency over the last years not affecting the field performance

### **Recommendations for the use of Fenhexamid:**

- Use fenhexamid only protectively.
- Straight product:

Spray programmes with a maximum of 3 treatments per season: max. 1 application with fenhexamid

Spray programmes with 4-5 treatments/season: max. 2 applications with fenhexamid

Spray programmes with 6 and more treatments: at the maximum one third of all botryticide applications

- Mixtures:

Both partners - if applied alone at the dose used in the mixture - must have sufficient activity against Botrytis. Not more than 50% of all Botryticide-treatments should be made with fenhexamid-containing mixtures.

## **4. NEXT MEETING**

Next annual meeting is planned for December 04, 2008, in conjunction with the QoI WG meeting on December 02/03, 2008.

Hosting company of the meeting: Syngenta