TECH BULLETIN 2

EDITION 2 - April 2018
Technical Services, Syngenta South Africa

syngenta®

Stand Strong with Syngenta this wheat season

The second edition of the TECH BULLETIN is packed with interesting information focussing mainly on cereals. We hope the summer season has been productive despite the many challenges faced, and we believe a very successful winter season is on the way.

In this issue

SmartFarm Inspired

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1AMISTAR Xtra®

not just for disease control

By Adri Anthonissen

AMISTAR Xtra® gives excellent disease control of a broad spectrum of foliar diseases of wheat and barley, however disease control is not the only advantage to applying AMISTAR Xtra®, as a added benefit the product will strengthen the plants and prevent lodging due to weak stems.

The active ingredients in AMISTAR Xtra®, azoxystrobin and cyproconazole, are known for effective and broad spectrum disease control. On wheat Amistar Xtra is registered for the control of Powdery mildew (*Erysiphe graminis*), Leaf rust (*Puccinia recondite*), Yellow or stripe rust (*Puccinia striiformis*), Speckled leaf blotch (*Spetoria tritici*), Glume blotch (*Septoria nodorum*) as well as Leaf scald (*Rhynchosporium secalis*), Net blotch (*Pyrenophora teres*), Leaf rust (*Puccinia hordei*) and Powdery mildew (*Erysiphe graminis*) on Barley.

The effective control of leaf diseases on cereals is not the only advantage to applications of AMISTAR Xtra®. It has been shown in numerous trials over various seasons that the application of AMISTAR Xtra®on cereals will also increase the stem diameter and stem wall thickness, as seen in figure 1 .

The increase in stem diameter can be as much as 8% (see figure 2) and the increase in stem wall thickness can be up to 26% (see figure 3).

The thicker stems are less prone to lodging (see figure 4). Lodging is usually due to a combination of morphological (structural) and environmental causes. If the stems of the plants are weak due to a fast growing pace, lodging can simply be a result of adverse weather such as high winds, heavy rainfall or hail literally pushing the crop over. Plants with weak stems can also lodge due to a heavy crop and the later in the season the lodging occurs the greater the effect on yield. Lodging can contribute to uneven maturity, a higher moisture content and a loss of quality due to sprouting and possible moulding.

The reduction in lodging can lead to reduced harvesting cost and increases in yield as seen in results from trials done in the Western Cape in figure 5.

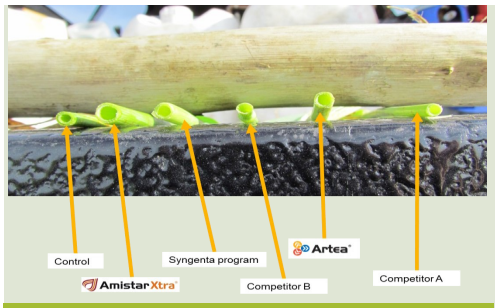
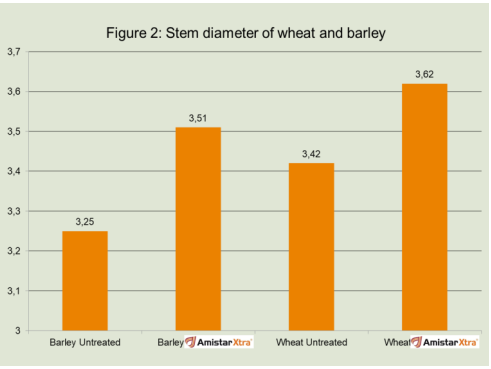


Figure 1: Stem thickness after various fungicide treatments.



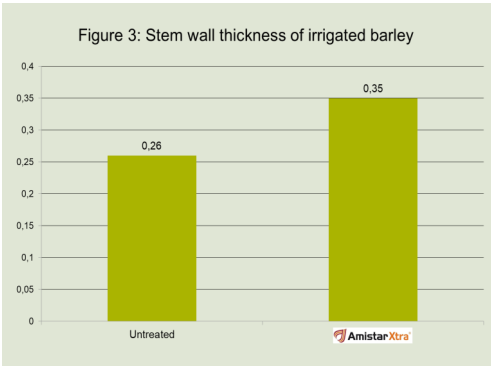
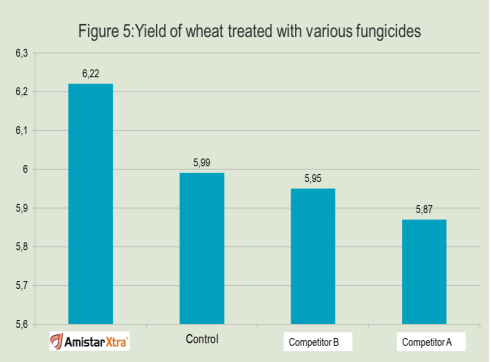


Figure 4: Lodging in untreated wheat vs wheat treated with AMISTAR Xtra®



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2Herbicide resistance

By Francois Viljoen

Currently there are 490 unique cases of herbicide resistance weeds globally consisting of 254 species causing huge problems for growers. It is important to use herbicides in a responsible manner with resistance management in mind in order to prevent or delay resistance development in still sensitive species.

One of the biggest problems facing growers today is the increased appearance of herbicide resistance. Resistance can be defined as the inherited ability of a weed to survive a rate of herbicide which would normally give effective control. Normally, herbicides will kill susceptible plants in a population, however there are some plants that possess natural resistance. These plants will survive an herbicide application and reproduce. Currently there are 490 unique incidences of herbicide resistance weeds globally consisting of 254 species (148 dicots and 106 monocots). All herbicides are clustered into groups with similar sites/modes of action, basically the way or method how they kill a weed.

Resistant weeds already exist against herbicides belonging to 23 of the 26 known herbicide modes of action and to 163 different herbicides. Herbicide resistance has been reported on 92 crops in 70 countries (weedsciences.com). Continuous use of the same chemical with the same mode of action will result in the increase in resistant plants within a field over various seasons, until more resistant plants than susceptible plants occurs, resulting in a resistant population. Factors influencing the evolution of resistance include the number or density of weeds in a field, natural frequency of resistant plants, fitness of the resistant plants, frequent use of herbicides with similar mode of action, cropping rotations with reliance on herbicides and low application rates.

There are a range of different mechanisms by which herbicide resistance can be conferred. The two most important and prevalent mechanisms include target site resistance and enhanced metabolism. Firstly, a herbicide has a particular target site of action (biochemical site within the plant with which the herbicide directly interacts). If the shape of the target site is somewhat altered, the herbicide no longer binds to the site of action and is unable to exert its phytotoxic effects (Refer to Figure 1). Two major groups for the control of grass weeds, ALS inhibitors, and ACCase inhibitors disrupting two different enzymes in the plant is vulnerable to target site resistance. The second most important mechanism of resistance, is the enhanced metabolism of the weed, in other words the increased degradation of the herbicide into nontoxic products for the weed (Refer to figure 2).

The team

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Metabolic resistance affects most herbicides to some degree but only in very severe cases does it result in complete loss of control.

Control of Ryegrass (*Lolium* sp.) is becoming more difficult in various areas. It is believed that FOP (e.g fenoxaprop) specific target site resistance exist, in other words affecting efficacy of these FOP's products. A change in the structure of the target site means that fops can no longer bind, but AXIAL® , and 'dims' can (Figure 3).

AXIAL® possesses a unique DEN chemistry which is not affected by the same way. It can be used after FOP, DIM (e.g cycloxydim) and ALS (e.g sulfonylurea's) chemistry in an integrated approach. Due to the limited amount of new active ingredients (a.i.'s) entering the market, current products should be used with care and always with weed resistance management in mind. Using integrated weed management practices is recommended by HRAC. These include the use of multiple modes-of-action herbicides with overlapping weed spectrums in rotation, sequences or mixtures. Also, always use the full recommended dosage rate combined with proper application practices and timing. Scout fields for potential resistant plants surviving and remove mechanically to prevent reproduction.

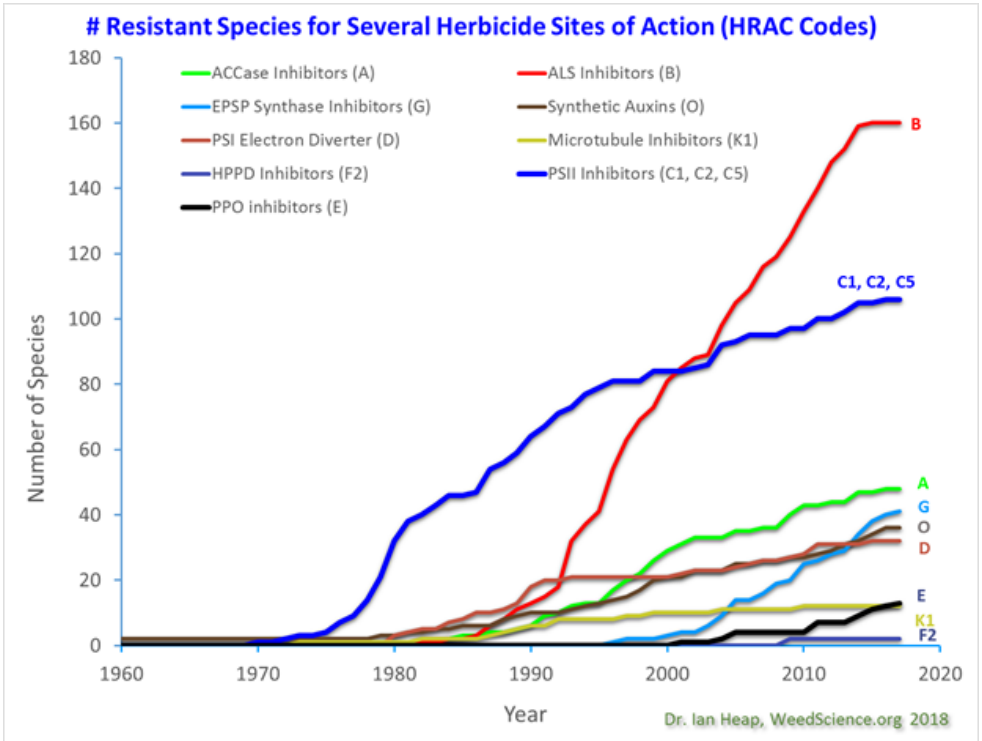


Table 1: Number of resistant species for several herbicide sites of action (HRAC codes)

Figure 1: Target site resistance

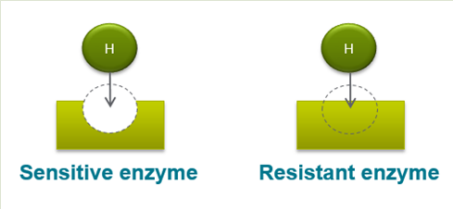
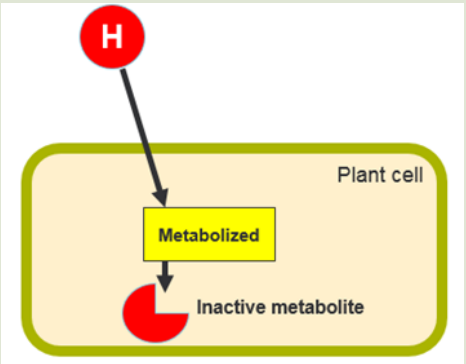


Figure 2: Enhance metabolism



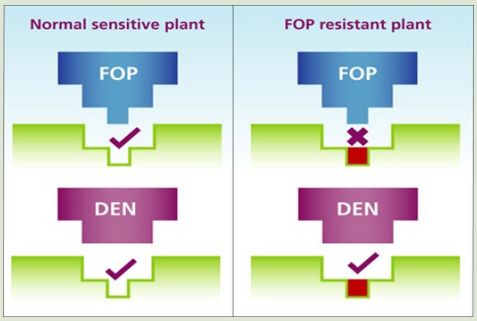


Figure 3: Indicating target site resistance difference between AXIAL® (DEN) and FOP chemicals

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3Russian wheat aphid

Eating wheat for breakfast, lunch and dinner

By Tia Ferreira

The Russian wheat aphid is considered the most important aphid where dryland wheat is cultivated. Aphids can reach plague proportions if the necessary control measures are not in place.

In South Africa wheat is produced in both the winter and the summer rainfall regions. The Russian wheat aphid (RWA) is considered the most important aphid where dryland wheat is cultivated. Aphids can reach plague proportions (Fig. A) if the necessary control measures are not in place.

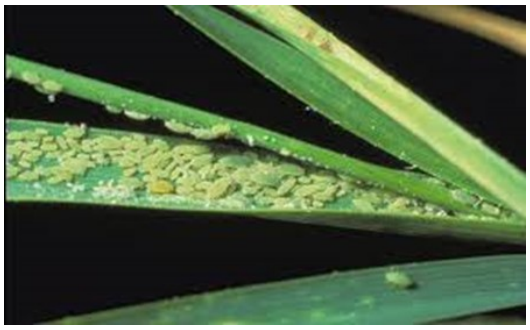

Fig. A: Russian wheat aphids congregating on leaves.

The RWA is a small (<2.0 mm), spindle shaped; light yellow green to grey green aphid (Fig. B) with very short antennae and a double tail.

Fig. B: Russian wheat aphid.

When the aphids feed on the leaves of susceptible young plants the leaves roll up tightly and lie flat on the ground. Elongated white to yellow lines appear on the leaves of larger plants which sometimes turn purple after cold weather conditions. The wheat plant is most susceptible to damage by the RWA between the start of the flag leaf stage (GS 14) until complete spike development (GS 18). CRUISER® is a seed treatment product that is highly effective against the Russian wheat aphid as well as beetles, sucking pests and thrips. It contains thiamethoxam, which is a second generation neo-nicotinoid insecticide. It has a contact, stomach and systemic action.

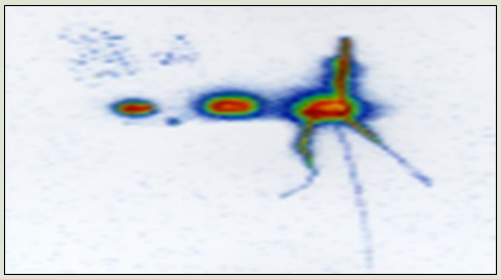

Fig. C: Rapid uptake and translocation of CRUISER®.

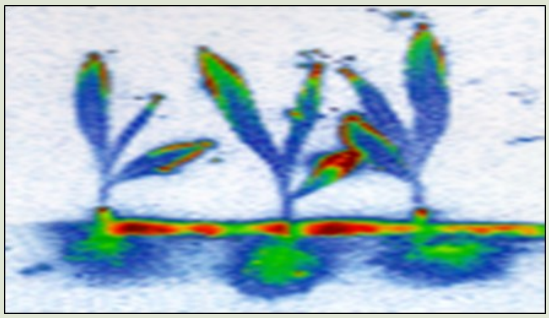

Fig. D: Complete systemic control of CRUISER®.

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CRUISER® has the benefit that it is highly water soluble. This means that CRUISER® is less dependent on soil moisture for activation. It forms a treatment halo around the seed to protect against seed-feeding pests. It has a rapid uptake and translocation to all parts of the seedling and complete systemic protection against pests (Fig. C and Fig. D).

The preparation of the treatment slurry is easy and quick and there is less dust-off during planting. Less product remains in the bottom of seed bins and it is less abrasive on the planting mechanisms. It is also compatible with all types and models of planters.

4REGLONE® on Canola

By Francois Viljoen

When the seeds are ready, don't hesitate. Use REGLONE® on Canola

Syngenta have recently announced the label extension of REGLONE® as a desiccant on canola. This is exciting news as REGLONE® have been a trusted desiccant on various other crops for a number of years. Pods of canola are prone to shattering just before harvest, and can contribute to yield losses ranging from 10-25%, and under extreme conditions up to 70%. Under optimal conditions, REGLONE® have shown to help canola growers with reducing pod shatter and drop, therefore increasing yield. REGLONE® also dries down canola faster by bursting surface cells of green tissue, enabling growers to harvest within days after application.

It is critical to apply REGLONE® at the correct stage. Applying too early will result in too much immature and under-developed seed in the final harvest. At least 90% of individual seeds across the plant must be brown. Less mature areas might add to the green seed count and should be managed differently. Additionally, factors such as the weather, spray timing, boom height and water volume should be considered when applying as the efficacy could be greatly influenced.

Figure 1: 90% of seed turned brown

Best application Practices:

Weather

- REGLONE® is activated by sunlight and should be applied during these times. Spraying in low light scenarios (e.g. cloudy periods) gives the product time to be distributed in the plant before activation.
- Rainfast within 15 min.

Timing

- Spray when 90% of seeds have turned brown
- Harvest as soon as the crop has dried down

Application rate

- 1.175 – 2.350 L/ha

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5The importance of Quality Seed Treatment

By Wayne Jansen van Rensburg – Syngenta Seedcare Technology Manager S&E Africa

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Seed treatment has become an attractive method to protect seeds and seedlings against biotic and abiotic stresses however the quality of the seed treatment is vital to ensure the best possible protection.

Seed treatment has become an attractive method to protect seeds and seedlings (up to 6 weeks after germination) against biotic and abiotic stresses ranging from insects & disease pests as well as environmental factors.

The quality of seed treatment application on seeds play a vital role. A very small amount of active ingredient has to be applied evenly over the surface area of a large amount of seeds. As an example the active ingredients fludioxonil in CELEST® XL is 25g per 1L of product. This 25g active ingredient has to cover between 2 to 3.5 million maize seeds (approximately one ton depending on seed size).

Successful application starts with the correct application equipment for the task at hand and also includes operator skills and experience. With new technologies, we at the Syngenta Seedcare Institute can assess the quality of the seed treatment and make sure the optimum seed treatment dosage as well as coverage is adhered to, therefore allowing the seed to reach its maximum potential.

There are a lot of factors that can influence the seed treatment quality and performance in the field, including:

- Dust. Make sure the seeds are “dust free”, this could affect the adherence of the seed treatment on the seed
- Respect seed treatment label rates
- Calibrate treatment equipment
- Use recommended recipes (slurry mixes)
- Add polymers (binding agent) to the slurry mix, which reduces “dust off” / abrasion of the seed treatment from the seed
- Trained operators
- Use high quality seed treatment products

In the below pictures (Figures 1 & 2) you can clearly see the difference between good and poor coverage on the treated seed. Poor coverage can affect the amount of active ingredient per seed, which could resulting in a non-optimal dosage per seed and poor seed protection.

Figure 1: Quality seed treatment

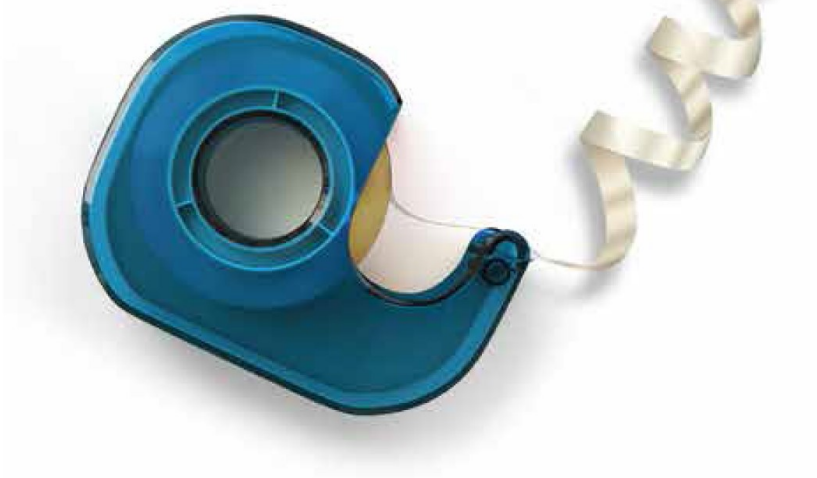
Figure 2: Poor quality seed treatment

Ramularia comes to a sticky end with BRAVO®

3 reasons to choose BRAVO®:

1. Excellent contact action: With it's wide spectrum, you not only control *Ramularia*, but you also manage the resistance development with BRAVO®'s multi-level activation mechanism.
2. Size matters: Smaller active particles in the formulation ensures better coverage for more effective protection for your barley.
3. It really sticks: WeatherStik™ technology ensures long term protection for your barley, regardles of the weather.

BRAVO®. The smart choice for long term control of *Ramularia*.



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Bravo® 720

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READ THE LABEL FOR FULL DETAILS.
BRAVO® contains chlorothalonil (phthalimide) 720g/l (Reg. nr. L7005, Act No. 36 of 1947). CAUTION.
Syngenta Suid-Afrika (Edms) Beperk, Privaatsak X60, Halfway House, 1685, Tel: (011) 541 4000, www.syngenta.co.za

See individual product labels for complete label directions.
CELEST® XL contains fludioxonil 25g/L and mefenoxam 10g/L (Reg. no. L6353, Act 36 of 1947), CRUISER® contains thiamethoxam 600g/L (Reg. no. L7546, Act 36 of 1947)
REGLONE® contains diquat ion 200g/L as dibromide salt 373.5g/L (Reg. no. L1115, Act 36 of 1947), AMISTAR Xtra® contains azoxystrobin 200g/L and cyproconazole 80 g/L (Reg. no. L8567, Act 36 of 1947), BRAVO® contains chlorotalonil 720g/L (Reg. no. L7005, Act 36 of 1947)

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