

NEW APPLICATIONS FOR GLASSHOUSE SCREENING TRIALS - BRIDGING DATA GAPS BETWEEN SEASONS

Pesticide development can be a long and time-consuming process. The process often starts in a laboratory, where a wide range of compounds are screened. This process is refined under glasshouse conditions before a narrow range of candidate products are field tested. Every step further refines the selection process.

Field testing is a vital tool in the determination of the efficacy and crop safety aspects of an end use product. The level of variation faced under field conditions is more extreme than those faced in controlled environments, such as glasshouses or during the in-vitro development phases. As a result, it may take a number of seasons to develop confidence in active constituent and formulation loading. Year-on-year the field trial development process will continually refine this process.

In Australia, the pesticide development process is usually not as laborious. Often, compounds have undergone the rigorous screening process in the Northern Hemisphere. Some level of field testing will also have been conducted which will identify the critical positioning process. As a result, a number of seasons of field testing will still need to be conducted but the majority of the process should be defined and only a level of refinement needs to occur.

In some situations the process may not be quite so simple. Differences in field conditions are unlikely to be significantly

different between Australia and the Northern Hemisphere. However, subtle differences may underpin constraints on pesticide chemistry that may not have previously been expected. It may take 1-2 seasons of field testing before this becomes apparent. We have the capacity to assist this process.

SGS Field Trial Services (Seed & Crop) - Australia has worked with one of our sponsor partners to help refine this process between seasons. During one project, it became apparent from field testing that some gaps existed between the expected and actual outcomes of candidate herbicide products. In an unusual step, glasshouse conditions were employed between growing seasons to allow bridging work to be conducted. This solution minimised any potential delay in the generation of additional data.

One of the advantages of glasshouse experimentation is that key target weed species can be studied simultaneously over a variety of different physiological growth stages. SGS Seed & Crop, along with our Seed Testing Division, has the capability to source a wide variety of

weed seed species, cultivate them and then evaluate candidate herbicide(s) efficacy. Other important factors such as soil pH, organic matter, pesticide timing, droplet diameter and tank-mixing can be easily manipulated and compared. A broad matrix of complex scenarios can be studied simultaneously at a very cost effective rate.

One of the outcomes of this season's bridging work was, that as growth of one of the key economically important weed species increased, herbicide efficacy did not correspond proportionally. This was unexpected for the client and as a consequence has helped refine the 2013/4 programme.

SGS is consistently providing solutions.

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Figure 1. A variety of weed species can be targeted in glasshouse trials at different physiological growth stages.



Figure 2. Glasshouse trials are able to quickly assess where application or active constituent(s) have potential weaknesses. In Figure 2 regrowth is occurring after initial burndown.



Figure 3. At 21 DAT regrowth has reached 60% of original potential. A change in direction is required.