

# Highlights from the PRF WEED CONTROL SYMPOSIUM

The growth of soya bean production over the past ten years has been significant. In the 2004 production season, only 150 000ha were planted, resulting in a production of 223 000 tons compared to the previous season's 687 300ha planted with a production of more than one million tons. This means good news for South African producers, resulting in a decreased demand for soya beans and soya bean meal imports.

**S**oya bean is a remarkable crop, not only capable of obtaining its own nitrogen, but also known to increase maize yield by more than 10% when planted after soya bean in a normal production season. Despite all the positive characteristics of this crop, there is still a long way to go before achieving the Protein Research Foundation's (PRF) goal of one million hectares planted, with an average yield of 2,5t/ha by the year 2025.

One of the limiting factors in achieving this goal is improved weed control in soya bean fields. To this end, the PRF presented two symposia during July this year, one at Delmas and another at Nampo Park – attended by 270 people, consisting mostly of producers and agricultural advisers. The PRF Weed Control Symposium highlighted a few aspects of paramount importance for producers.

#### Timing is key

Prof Stephen Knesevic of the University of Nebraska in the United States, who is an international expert on weed control, presented alarming figures on the amount of income lost due to delayed

weed control. A general figure of 2,5% yield loss is predicted for a delay in weed control between successive vegetative growth stages.

These growth stages, when one set of leaves is followed by the next, can take between five and seven days, depending mainly on daily temperatures. The type and number of weeds will, however, play a major role and can increase this number. This predicted percentage is only applicable for the period where weeds and soya beans grow simultaneously.

**The growth stage of weeds will determine the efficiency of weed control.**

In South Africa, especially under dry land conditions, stored soil moisture is of paramount importance. Any weeds on a field prior to planting will reduce stored soil moisture and thus increase the risk of poorer yields for the following crop.

The importance of crop rotation and the positive role it can play in addressing the difficulty to control weeds was also highlighted, especially where conservation agriculture is practised. In this case, chemical weed control is the only viable option to ensure weed-free fields.

#### Know your herbicide and weeds

It is critical for effective weed control, to be familiar with the appropriate herbicides registered for use in soya bean production. Prof Charlie Reinhardt from the University of Pretoria emphasised the fact that although several formulations exist, there are less than ten modes of action available to combat weeds. Producers need to take note of this, as well as be aware of weed species present in a field. The growth stage of weeds (weed size) will determine the efficiency of weed control. The larger the weeds, the less effective control will be.

Great emphasis was placed on the importance of reading and understanding the information on a herbicide product label. Any deviation from the labelled instructions will inevitably result in poor or no weed control.

The growth stage of soya bean needs to be taken into account before any herbicide should be applied. A good example is where glyphosate is applied during flowering stages, which may cause crop damage and consequent yield loss. It is equally important to comply with any waiting periods as specified on all herbicide labels.

### Herbicide resistance

Several speakers emphasised the looming problem of certain weeds becoming resistant to known, widely used herbicides such as glyphosate. This is mostly due to the excessive use of a single product. To avoid this problem, producers are advised to rotate herbicides and use different modes of action (i.e. different groups of herbicides).

### Allelopathy

A warning was raised by Prof Reinhardt that allelopathy (the secretion of chemicals from weeds into the soil) may affect soya beans more than most producers realise. One of the major culprits is yellow nutsedge (*Cyperus esculentus*) that may have a detrimental effect on soya bean growth when infestation levels are high. A generally unknown fact is that the common

*radiatorbossie* (*Senecio consanguineus*) may even affect nitrogen fixation as well as causing allelopathy.

### Water quality

Dr Brian de Villiers of Villa Crop Protection emphasised

the need to ensure that the water quality should be optimal when mixing herbicides. A great concern was raised for where glyphosate is mixed with high pH water, containing high levels of carbonates ('hard water'). Glyphosate molecules will bind to the carbonates and thus reduce the efficiency of the herbicide.

To overcome this problem, ammonium sulphate has to be added to the water. The optimal pH level for herbicides is between four and six, and an excessively low or high pH can have a negative effect on herbicides. It was emphasised that the purity of ammonium sulphate is critical and that only products from reliable companies should be used, and specially formulated to mix with herbicides.



Poor weed control costs you more than you think. (Photograph: Wessel van Wyk)



Proper weed control ensures top yields. (Photograph: Wessel van Wyk)

### Optimising agricultural practices

From a practical point of view, it was stressed that any herbicide tank mix should be applied immediately and should not stand overnight to be applied the following day.

The need for every producer to optimise agricultural practices for the successful production of soya bean is vital, according to Cobus van Coller, a soya bean producer from the Viljoenskroon district. It is of paramount importance to overcome problems or obstacles by modifying implements to enhance efficiency. Van Coller has modified his spray equipment to accommodate some labour on the sprayer operating tabs, in order to spray patches of hard-to-control weeds such as couch grass (*Cynodon dactylon*).

The influence of wind and dust during herbicide application was also highlighted. It is essential not to spread lime or apply herbicides when wind speeds are excessively high.

Van Coller's philosophy is to eradicate all weeds, where possible, during winter to ensure a clean seedbed at planting time. Where moisture is a limiting factor, as experienced in most parts of South Africa where soya beans can be produced, a weed-free seedbed holds significant advantage to preserve soil moisture.

The symposium offered numerous thought-provoking ideas to soya bean producers and agricultural advisers. It is now up to all the relevant individuals to apply what they have learnt and for agricultural advisers to spread the message. 🌱