Ryegrass is problematic in mainly the Western Cape's wheat fields and in some irrigation areas. This weed has the ability to develop resistance to various herbicides.

Biological control of weeds in small grain

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Invading weeds can reduce a wheat crop's yield to 33%. South Africa's producers face many problematic weeds and to add injury, weeds developed resistance to many herbicides. Other control measures are therefore desperately needed.

SMALL GRAIN PRODUCTION is hampered by many factors and these have a negative effect on crop production and the yields that can be obtained. Literature reminds us that yield reduction solely due to invading weeds can be estimated at around 33% for wheat and 40% for maize (Oerke, 2006). This can have a tremendous impact on the producers' ability to farm.

During a study by Drennand and Alshallash (1996), it was found that a species of ryegrass, *Lolium multiflorum*, at densities of up to 200 plants/m^2 can decrease wheat yields by between 12% and 15%, while similar trials by Liebl and Worsham (1987) reported that a density rage of 0 to 100 plant/m^2 can reduce grain yields by 4,2% for every 10 plants/m^2. *L. multiflorum* densities of 10 plants/m^2 reduced wheat yield by between 1,3% and 1,6%. Every additional 10 plants/m^2 of *L. multiflorum* reduced the wheat yield by 140 to 2 000 kg/ha (Pedreros, 2001).

South Africa

South Africa has many problematic grass weeds and broadleaved weeds that occur throughout the small grain production areas. The most problematic grass weed is still ryegrass (*Lolium* spp.), occurring mainly in the Western Cape and some of the irrigation areas of South Africa. Ryegrass has the ability to develop resistance to various herbicides in a relatively small timespan.

Although it is very difficult to quantify the ryegrass problem in South Africa, survey data, gathered from 2008 to 2011, showed that only 4 out of 162 samples were still sensitive to herbicides from Group A, Group B, Group D and Group G (according to the HRAC table of CropLife South Africa). This means that 97,5% of the samples screened, showed resistance to either one or more of the herbicides tested.

The sheer level of ryegrass resistance in South Africa indicates that other control measures are desperately needed. The continuing success of herbicides is threatened by the development of herbicide resistant weed biotypes as a result of the extensive and repetitive use of a particular class of herbicide.

In the past, research has focused on the management of ryegrass and identification of herbicide resistance in various populations (Ferreira, 2011). Since cross-resistance to various herbicides has been identified in most South African