Sustainable grass weed control with Isoflex™ active: Resistance baseline, a summary of the current status

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Isoflex™ active belongs to the isoxazolidinone class of herbicide chemistries and is classified as a Group 13 herbicide by the Global Herbicide Resistance Action Committee (HRAC) due to its inhibition of Deoxy-D-Xylulose Phosphate Synthase (DXP synthase), a component of the carotenoid biosynthetic pathway. It will be the first herbicide of this group used in cereals. First experiments to evaluate the sensitivity to Isoflex™ active in different biotypes of key grass weed species including *Alopecurus myosuroides* and *Lolium* spp. started in 2014. Baseline sensitivity screening in support of the launches of Isoflex™ active products is ongoing. The analysis is a critical step in the introduction of new products and basis to establish effective stewardship plans.

The introduction of Isoflex™ active with a unique site of action to European cereal crops in resistance stewardship plans will be beneficial for resistance management. To properly steward the new product containing this novel chemistry, it is essential that preliminary baseline sensitivity analysis be conducted as per the HRAC recommendations. This research expands our current understanding of the baseline sensitivity for Isoflex™ active in *Lolium* spp. and *Alopecurus myosuroides* populations from the European region. This research is the first reporting of the baseline sensitivity screening for 33 populations of *Lolium* spp. and 72 *A. myosuroides* populations, representing as many as six key countries in the European region. To date, none of the results have shown any differences in sensitivity to Isoflex™ active in *A. myosuroides* and *Lolium* ssp. biotypes compared to the sensitive reference populations. Overall, no indication of cross or multiple resistance between the Isoflex™ active and other mode of action were identified in the tested populations. This lack of relationship with existing resistance profiles strongly supports the value of Isoflex™ active as a tool for producers in the region to control problematic weed species and further validates the need for innovations in the cereals market. Both *Lolium* spp. and *A. myosuroides* have a history of evolving resistance to commercial herbicides. Regardless of the value Isoflex™ active can provide for managing resistant populations, it is critical that integrated weed control measures including tillage, rotating modes of action and crop rotations are considered, as these will be necessary to effectively steward this product upon release.

Further results and details can be found at Rouse & Hennens (2023).

References

Rouse, C., D. Hennens, 2023: Sustainable grass weed control with Isoflex™ active: A summary of current status, 25ème Conférence du Columa, Journées internationales sur la lutte contre les mauvaises herbes, Orléans – 5, 6 et 7 Decembre 2023.