



## CONCLUSIONS

### *International Workshop on “Glyphosate Weed Resistance: European Status and Solutions”*

1. Glyphosate is a herbicide with a 38 years long history of increasing and successful commercial uses, and further development and implementation of proper stewardship measures is needed to maintain its efficacy for continued contribution to sustainable agriculture.
2. Weed resistance to glyphosate has appeared in biotypes of 24 species worldwide (*Lolium spp.* and *Conyza spp.* in Europe) because of repeated and almost exclusive use of this active ingredient in some agricultural systems, resulting in the need for farmers to make changes in their weed management programs.
3. The knowledge of weed biology and mechanisms of herbicide resistance is important to minimize the development of new resistance as well as to address and mitigate the effects of existing resistant weeds.
4. Label rates are developed to provide consistently efficient weed control of herbicide applications. Herbicide application, following Good Agricultural Practices, using rates and conditions providing maximum control in the target area is an important recommendation to prevent or delay glyphosate resistance. Sublethal applications should be avoided to reduce risk of resistance development. In this respect, special attention should be given to target weeds known to have developed resistance to glyphosate (s.a. *Lolium spp.* and *Conyza spp.*). Alerting farmers through glyphosate herbicide labels and other ways is needed for proactive action before resistant weeds become a problem. In general, the education and training of farmers and farmer advisors is a critical part of all herbicide stewardship plans.
5. Control of resistant weeds with alternative herbicides or non chemical tools to prevent seed set should be part of cost efficient Integrated Weed Management.
6. Although the number of herbicides available in Europe is lower than in other continents, some active ingredients have shown promising results for control of glyphosate resistant *Lolium spp.* and *Conyza spp.* in tank mixes or sequences with glyphosate applications. Glyphosate remains an useful tool for an economical control of glyphosate sensitive weeds.
7. The complementary active ingredients to glyphosate can be used in mixture, sequences or in rotation, but avoiding the production of weed seeds to reduce the risk of multiple resistance development.
8. In addition to chemical options, repeated mowing, mulching, cover crops, shallow tillage and other cultural methods have a role in perennial crops for weed control.