COURSE REGISTRATION FORM

Teacher	Maja Meseldžija
University	University of Novi Sad, Faculty of Agriculture
Course	Herbicides-Plants Interaction
Target	Agricultural Middle Schools and Agricultural Extension Service
Type	blended
Duration	2 days - 16 hours

Description	After completing the course, participants (teachers and counselors) order to master the basic theoretical and practical knowledge about the interactions of plants and herbicides or herbicide influence on physiological processes in plants, their mechanism of action, activation, and the fate of herbicides in plants (metabolic processes), phytotoxicity, selectivity, resistance, all in purpose of recognizing phytotoxicity symptoms in weeds and cultivated plants. The contribution of this course is mastering the knowledge and diagnosis damage in a plant, and complements the basic knowledge of teachers and counselors about possible herbicides harmful effects.

Contents	Theoretical part: Herbicide basic characteristics. Herbicide application. Herbicide mode of action. Harmful effects of the herbicides. Inorganic compounds with herbicidal activity. Organic compounds with herbicidal activity. Herbicides target site of action in plants. The phytotoxicity and selectivity of herbicides. Damage and symptoms of herbicide to the plants according to the mode of action. Herbicide resistant biotypes of weed species. Transgenic crops. The herbicide metabolism. The herbicides fate in the environment. Practical part: Bioassay methods. Herbicides selectivity and scale for phytotoxicity determining. Methods of studying the herbicide residues in the soil. Determination of herbicide resistance in weeds. The biological effect of herbicides on the organisms in the water. Herbicides effects on soil microorganisms.

Objectives	To ensure that students attain an understanding of the interaction herbicide-plant (cultivated and weed species), mode of action, the basics of metabolism and degradation of the herbicide. Qualifying for the recognition of phytotoxicity symptoms to weed and cultivated plants and the acquisition of skills in the determination; training in recognizing the effect of herbicides with different modes of action (bleaching effect, chlorosis, necrosis, leaf curling, leaf distortion, inhibition of growth). This way can encourage the expert exchange of teachers in agricultural schools

	and counselors, and it's possible to perform them to know how to diagnose phytotoxic changes in plants. Teachers will later be able to convey to students the importance of the changes that are followed in the examination of herbicide and advisers will be able to propose to the producers to change the way of work or the use of certain herbicides.

Activities	The first day of the course provided the participants listen to lectures (*PowerPoint* presentations). It is planned to realize through the individual work (individually solving simulated problems) and work in small groups (practical work with plant materials). During the practical work of the course, participants will have the opportunity themselves to solve the given problems. With the ability to use literature and the internet, the course participants will have the task to recognize the symptoms and make a diagnosis. They will have an opportunity to present their conclusions and learn to make graphical representations of data. The second day of the course is planned to be performed online using Moodle and the Internet. The *online* program users will be able to connect their knowledge with the new situations, solve case studies and comparing procedures. The participants of the course will have available materials on phytotoxicity and will be able to handle independently the contents created with the help of dedicated teaching materials. In the online course, participants will be asked to use literature, and will be enabled for its implementation. Applies knowledge will be able to check on the recommended site, with present herbicide symptoms. Knowledge gained on the first day of the course, will have the opportunity to check in the symptom recognition and the test resolution. In the end, a blog discussion on herbicide-plant interactions will be organized. Using *Moodle*, it's enabled the constant availability of materials and constant insight into the issues to be treated, and users will have a high degree of self correction and advancement.

Materials	*PowerPoint* presentation, literature, PC/laptop, internet, graph paper, calculator, herbicides, plant material, petri dishes, flower pots, filter-paper, tweezers, micropipette.