



Weed Resistance Working Group

1. Criteria for Weed Resistance Population Validation

1. Criteria for Confirmation of Herbicide-Resistant Weeds – with specific emphasis on confirming low level resistance.

<http://www.weedscience.org/Pages/ResistanceCriterion.pdf>

This paper outlines the criteria used by the “International Survey of Herbicide-Resistant Weeds” to document new cases of weed resistance on the <http://weedscience.com/> web site. These criteria are worldwide recognized as THE STANDARD in particular by the Weed Science Society of America (WSSA) and the Global Herbicide Resistant Action Committee (HRAC). One main point is that the initial characterization of a putative weed resistant biotype have to be tested using a dose response experiment under controlled conditions using whole plants and non-linear regression models have to be used to compare biotypes.

2. Criteria for Confirmation of Herbicide-Resistant Weeds.

<https://hracglobal.com/files/Criteria-for-Confirmation-of-Herbicide-Resistant-Weeds.pdf>

This paper summarizes the main criteria used by the “International Survey of Herbicide-Resistant Weeds” with some additional information.

3. Log-logistic analyses of herbicide dose-response relationships.

Seefeldt, S.S., Jensen, J.E. and Fuerst, E.P. 1995. *Weed Technology* **9**, 218-227.

Abstract. Dose-response studies are an important tool in weed science. The use of such studies has become especially prevalent following the widespread development of herbicide resistant weeds. In the past, analyses of dose-response studies have utilized various types of transformations and equations which can be validated with several statistical techniques. Most dose-response analysis methods 1) do not accurately describe data at the extremes of doses and 2) do not provide a proper statistical test for the difference(s) between two or more dose-response curves. Consequently, results of dose-response studies are analyzed and reported in a great variety of ways, and comparison of results among various researchers is not possible. The objective of this paper is to review the principles involved in dose-response research and explain the log-logistic analysis of herbicide dose-response relationships. In this paper the log-logistic model is illustrated using a nonlinear computer analysis of experimental data. The log-logistic model is an appropriate method for analyzing most dose-response studies. This model has been used widely and successfully in weed science for many years in Europe. The log-logistic model possesses several clear advantages over other analysis methods and the authors suggest that it should be widely adopted as a standard herbicide dose-response analysis method.

Additional index words: Lack-of-fit test, logistic curve, models, non-linear regression.