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$$\bar{P}(\text{year}) = \frac{\sum P_i}{N_i} \quad ()$$

$$\% \bar{Vd}(\text{year}) = \frac{\bar{Vd}}{\bar{P}} \quad ()$$

$$P_{\Delta} = \frac{\Delta \%}{\bar{Vd}(\text{year})} \quad ()$$

$$= \% \bar{Vd}$$

$$= \sum Vd_i$$

$$= N_i$$

$$= \bar{P}(\text{year})$$

$$= P_{50}$$

$$= \sum P_i$$

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Study of Variety and Seed Deterioration of *Agropyron elongatum* Germplasm, in Natural Resources Gene Bank

N. Abdi¹, H. Maddah Arefi² and M. Jafari³

¹ Assistant Prof., Islamic Azad University of Arak, I.R. Iran

¹ Assistant Prof., Research Institute of Forests and Rangelands, I.R. Iran

¹ Professor, Faculty of Natural Resources, University of Tehran, I.R. Iran

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Abstract

In order to examine and evaluate the variety and process of deterioration of *Agropyron elongatum* seeds available at Natural Resources Gene Bank, research programs were carried out using 11 types. The 11 accessions underwent separate germinator and greenhouse experiments randomly in three replicates. The recorded traits of the Germinator test included viability, speed of germination, vigor and germination percentage (G.P.). The recorded traits of the test in glasshouse included viability, G.P., speed of germination, plant height, number of tillers and root length 40 days after planting. Significant difference was found between accessions for all of the studied traits. In addition, the reduction in viability and the weight of 1,000 seeds at the time of entering the cold storage were measured. Characteristics such as viability, speed of germination in the germinator and the greenhouse, the length of roots were statistically different that shows the variety of the accessions. There existed also a close accordance between correlation coefficients determined in the germinator under greenhouse conditions. The results of correlation coefficient showed that, Speed of germination, could be indicator of seed vigor. This result was confirmed by a step-by-step regression model. Negative correlation was found between reduction of G.P., speed of germination and seed vigor in germinator condition and G.P., speed of germination and plant root height in glasshouse condition. Therefore, seed deterioration not only reduces viability but also the speed of germination, seed vigor and the preliminary growth of the plant's root. According to this research, viability is extremely influenced by the origin of seeds. In all of the *Agropyron elongatum* accessions, because stored samples of each year were different from other years, therefore reduction of G.P., was highly affected by origin of accessions. It was not possible to differentiate between the effect of maintaining condition and effect of the seed origin. Therefore, it is not recommended to multiply and revive such seeds after several years. Preferentially, every accession should be revived individually.

Keywords: *Agropyron elongatum*, Variation, Seed deterioration, Viability, Speed of germination, Seed vigor

* Corresponding author: Tel: 0918-8632964 , Fax: 0861-4132071 E-mail: nabdi1355@yahoo.com