

Yearly Difference in Normalized Seed Weight of Cultivated *Iris dichotoma* Pall. in Mongolia

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Abstract

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Maximum of mean seed weight was observed at 1997 while normalized seed weight was significantly higher at 1982 and 1995, compared with other years. Seed weight variation is positively correlated with mean seed weight for earlier rainy season years, excluding later rainy season years (1982 and 1995). Low and high seed weight variation associated for years with colder and wetter in May and with hotter and drier in May, suggesting drought in May might be effective on seed weight variation of *I. dichotoma*. Moderate normalized seed weight associated for years with hotter in June, while high and low normalized seed weight for years with cooler and cool in June, suggesting *I. dichotoma* might use both photosynthetic productions and under-ground-storage for seed maturity. Mean seed weight and seed weight variation were linked to precipitation amount, whereas normalized seed weight was linked to precipitation periodicity. Seed weight variation detected delay of regrowth, caused by early drought, while normalized seed weight suggested seed weight response to complete seed maturation after droughty season, using photosynthetic productions and under-ground-storage. The results suggest that normalized seed weight might be useful to recognize seed weight response of *I. dichotoma* for climatic factors, better than mean seed weight and seed weight variation.

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Introduction

Evolution of seed weight is governed by climatic factors (Zhang, 1998; Moles *et al.*, 2005; Liu *et al.*, 2014), and evaluated by spatial and temporal differences. Present study considers on temporal differences of seed weight. Aniszewski *et al.* (2001) found different groups of seed weight during the 10 years experiment, suggesting selection pressure. Radic *et al.* (2013) reported that seed weight of sunflower has significantly differences between years, and these differences are found with observed sterile lines and with restorer lines. Manalo *et al.* (1998) suggested that seed weight variation due to the difference in the climatic condition of the years was greater in non-nodulating lines than

nodulating cultivars.

Narantsetseg (2015) suggested that normalized seed weight is related with climatic aridity and precipitation amount in the genus *Peganum* L., based on seed weight data, which collected from different botany-geographic regions in Mongolia. Then, previous study found normalized seed weight was different with seed dispersal types in *Peganum* genus and different climatic aridity, suggesting normalized seed weight could recognize seed dispersal response in different climatic aridity. This study hypothesize that normalized seed weight is useful to test seed weight response to climatic effects, better than mean seed weight and seed