



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim
“Agricultural development within the rural-urban continuum”

Potential Effect of Global Warming on Germination of a Mexican Wild Species of Commercial Chili

ALMA P. LÓPEZ-VALDEZ, MARISELA PANDO MORENO, HORACIO VILLALON-MENDOZA, ENRIQUE JURADO

Universidad Autónoma de Nuevo León, School of Forest Sciences, Mexico

Abstract

With an effort to understand potential impacts of global warming on a species of commercial wild chili in Northern Mexico, we tested germination in an elevation and a temperature gradient. While initial efforts have taken place for its cultivation, *Capsicum annuum* var. *glabriusculum* known as “chile piquin” is mostly harvested from wild populations. Here we tested the germination of *Capsicum annuum* seeds from different locations across a latitude and an elevation gradient. We predicted that seeds from more tropical and more downslope sites would germinate more under warmer and lower conditions. In our germination study at three elevations we found the highest germination at the lowest site (360 m a.s.l.), lower at the medium elevation site (550 m a.s.l.) and no germination at the point higher than the natural species distribution (1600 m a.s.l.). There was no influence of seeds collection elevation. In a separate experiment we tested several techniques to promote germination in order to get a sufficient number of germinating seeds for statistical analyses to determine the response of seeds harvested at different elevations and latitudes on increased germination temperatures. For this trial we mimicked the daily variations in temperature of the soil surface during the rainy season (September) for the control group and two temperature-increased treatments, one was 2°C higher and the other 5°C higher than the control. Germination using scarification techniques was higher in the control group and lowest in the 5°C increase. The results from this study imply that while current conditions do not allow germination of *Capsicum annuum* seeds at higher elevation than those of its current distribution, higher soil temperatures associated to global warming might decrease germination of *Capsicum annuum* seeds. These results provide useful guidelines for current management plans of wild populations and future agricultural development of the species.

Keywords: *Capsicum annuum*, chile piquin, climate change, seed