RESPONSE OF FRIJOLILLO RHYNCHOSIA MINIMA (L) DC. TO SUPPLEMENTARY PHOSPHORUS WITH THREE SOIL MOISTURE CONDITIONS: I. GROWTH AND DEVELOPMENT


Unidad Académica de Agricultura, Universidad Autónoma de Nayarit, Tepic, Mexico

Colegio de Postgraduados, Instituto de Recursos Naturales, Montecillos, Mexico

Available online: 28 Jul 2011


To link to this article: http://dx.doi.org/10.1080/01904167.2011.592564

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.tandfonline.com/page/terms-and-conditions

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan, sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.
RESPONSE OF FRIJOLILLO \textit{RHYNCHOSIA MINIMA} (L) DC. TO SUPPLEMENTARY PHOSPHORUS WITH THREE SOIL MOISTURE CONDITIONS: I. GROWTH AND DEVELOPMENT


1 Unidad Académica de Agricultura, Universidad Autónoma de Nayarit, Tepic, Mexico
2 Colegio de Postgraduados, Instituto de Recursos Naturales, Montecillos, Mexico

This study was undertaken with the objective of evaluating the response of frijolillo, grown with three levels of soil moisture and supplemented with phosphorus (P). The experiment was carried out under greenhouse conditions without climate control. Plants were tested during the period from germination to vegetative growth stage. Three soil moisture levels (100, 50, and 25% of field capacity) combined with four levels of P (0, 50, 100, and 150 mg kg$^{-1}$) were tested in a factorial arrangement with four replications. This species showed tolerance to drought stress since its leaf area, dry mass of stems and root mass did not decrease with 50% of constant moisture. Furthermore, with the highest concentrations of phosphorus (100 and 150 mg kg$^{-1}$) there was more aerial mass accumulation. Finally, with maximum drought stress (25% moisture) growth of main stem decreased. However, root growth had a maximum length under the lowest moisture conditions.

Keywords: drought stress, P rates, growth rate, drought tolerance index, \textit{Rhynchosia}

INTRODUCTION

In the tropical zone there is great diversity of wild legume plants that represent a potential for domestication and agricultural use as edible crops for human use or by grazing cattle. Frijolillo (\textit{Rhynchosia minima} L.) is a wild legume distributed on the coastal plain in Nayarit, Mexico. In this area, it grows during the dry season, even in saline soils. Therefore, this species is used by cattle as an alternative forage during the dry season. Plants are subjected to different conditions of environmental stress and according with Chen et al. (2000) drought is one of the most serious affecting crop conditions.