

HOME

About Journal@rchive

Journal List

Journal/
Society Search

GO

News



Science Links Japan

JST Japan Science and Technology Agency

Japanese journal of crop science

The Crop Science Society of Japan [Info](#) [Link](#)[TOP](#) > [Journal List](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN: 1349-0990

PRINT ISSN: 0011-1848

■ Japanese journal of crop science

Vol.65 , No.2(1996)pp.368-378

[\[Full-text PDF \(1063K\) \]](#) [\[References \]](#)

Plasticity in Taproot Elongation Growth of Several Food Legume Species

Md. Wahiduzzaman MIA, Akira YAMAUCHI and Yasuhiro KONO

1) School of Agriculture, Nagoya University

2) School of Agriculture, Nagoya University

3) School of Agriculture, Nagoya University

[Received: 1995/10/27]

[Published: 1996/06/05]

[Released: 2008/02/14]

Abstract:

Taproot elongation rates (TRERs) of seedlings were investigated with the slant tube method for 27 genotypes of six food legume species in spring, and six selected genotypes of three species in autumn under irrigated and non-irrigated conditions. Shoot growth was also evaluated for comparison. In these experiments, we aimed to evaluate the plasticity in TRER of the species and their genotypes. In spring, most of the species and their genotypes were significantly different in TRERs. Combined ANOVA across the environments revealed that TRERs significantly responded to the environments, especially growing seasons between which root-zone temperatures were markedly different. Under irrigated conditions, TRERs were generally slower in autumn than spring-grown plants. However, the significant species (genotypes) \times environment interactions indicated that the plasticity in TRER differed among species. Comparison between two seasons showed that TRERs of cowpea were more plastic than those of chickpea and lentil, while an opposite trend was evident for shoot growth. TRERs of cowpea, mung bean and black gram (warm-season species) were strongly root-zone temperature dependent, while those of chickpea, grasspea and lentil (cool-season species) were less dependent or independent. Non-irrigated conditions tended to promote shoot growth, but did not affect TRERs of the genotypes of three species. However, the significant genotypexenvironment interaction due to different soil moisture regimes for lentil genotypes showed that genotypic difference also existed in plasticity triggered by soil moisture regimes.

Keywords:

Cicer arietinum L., Lathyrus sativus L., Lens culinaris Medik., Plasticity, Taproot elongation, Vigna mungo (L.) Hepper, Vigna radiate (L.) Wilczek., Vigna unguiculate (L.) Walp

[\[Full-text PDF \(1063K\) \]](#) [\[References \]](#)

[Access Policy](#)

[Privacy Policy](#)

[Link Policy](#)

[Contact](#)

[Amendment Policy](#)

Japan Science and Technology Agency

