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微信公众号: 大豆科学

[1] 闫春娟, 宋书宏, 孙旭刚, 等. 基因型肥料互作下大豆群体的时空分布特征[J]. 大豆科学, 2014, 33(03): 340-346.
 [doi:10.11861/j.issn.1000-9841.2014.03.0340]
 YAN Chun-juan, SONG Shu-hong, SUN Xu-gang, et al. Temporal spatial Distribution Characteristics of Soybean (Glycine max L.Merr.) Under Genotype fertilizer Interaction Condition[J]. Soybean Science, 2014, 33(03): 340-346.
 [doi:10.11861/j.issn.1000-9841.2014.03.0340]

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基因型肥料互作下大豆群体的时空分布特征

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第33卷 期数: 2014年03期 页码: 340-346 栏目:
 出版日期: 2014-06-25

Title: Temporal spatial Distribution Characteristics of Soybean(Glycine max L.Merr.) Under Genotype fertilizer Interaction Condition

作者: 闫春娟 (KeySearch.aspx?type=Name&Sel=闫春娟); 宋书宏 (KeySearch.aspx?type=Name&Sel=宋书宏); 孙旭刚 (KeySearch.aspx?type=Name&Sel=孙旭刚); 王文斌 (KeySearch.aspx?type=Name&Sel=王文斌)
 辽宁省农业科学院 作物研究所, 辽宁 沈阳 110161

Author(s): YAN Chun-juan (KeySearch.aspx?type=Name&Sel=YAN Chun-juan); SONG Shu-hong (KeySearch.aspx?type=Name&Sel=SONG Shu-hong); SUN Xu-gang (KeySearch.aspx?type=Name&Sel=SUN Xu-gang); WANG Wen-bin (KeySearch.aspx?type=Name&Sel=WANG Wen-bin)
 Crop Institute of Liaoning Academy of Agricultural Science, Shenyang 110161, China

关键词: 时空分布特征 (KeySearch.aspx?type=Keyword&Sel=时空分布特征); 大豆 (KeySearch.aspx?type=Keyword&Sel=大豆); 基因型 (KeySearch.aspx?type=Keyword&Sel=基因型); 肥料 (KeySearch.aspx?type=Keyword&Sel=肥料)

Keywords: Temporal spatial distribution characteristics (KeySearch.aspx?type=Keyword&Sel=Temporal spatial distribution characteristics); Soybean (KeySearch.aspx?type=Keyword&Sel=Soybean); Genotype (KeySearch.aspx?type=Keyword&Sel=Genotype); Fertilizer (KeySearch.aspx?type=Keyword&Sel=Fertilizer)

分类号: S565.1

DOI: 10.11861/j.issn.1000-9841.2014.03.0340 (http://dx.doi.org/10.11861/j.issn.1000-9841.2014.03.0340)

文献标志码: A

摘要: 田间条件下, 探讨NPK肥对不同基因型大豆群体时空分布特征及产量的影响。结果表明: 随着生育进程的推进, 植株叶面积指数、地上部生物产量呈单峰曲线变化规律, 叶面积指数峰值出现在出苗后的第8周, 而辽豆14和辽豆21地上部生物产量峰值分别出现在出苗后的第12周和第14周。NPK肥提高了叶面积指数平均值。随着植株的不断生长, 相对生长速率值变小。大豆茎主要分布于植株下部, 叶片主要分布于中上部, 叶柄、荚皮和籽粒主要分布于中间部位。植株冠层中部的叶绿素值高于上层和下层, 辽豆21叶绿素平均值优于辽豆14, 但叶绿素总和却低于辽豆14, NPK肥提高了叶绿素平均值及总和。叶面积累计指数LAI¹与透光率倒数的对数ln(I₀/I_p)间呈显著正相关。基因型和肥料显著影响大豆产量, NPK肥提高了两品种的产量, 但辽豆21产量提高得更多。NPK肥也提高了植株的株高、主茎节数、节间长度。无论何种供肥水平, 辽豆14的产量显著高于辽豆21, 且辽豆14的株高更低、节数更多、节间长度更短。

Abstract: Applying NPK fertilizer in different varieties to affect the physiology and structure of plant and influence the capacity of agroecosystem to capture light and convert that light energy into biomass, ultimately affecting productivity and yield in soybean(Glycine max L.Merr.).The objective of this study was to determine if fertilizers and genotypes had direct and interactive effects on temporal spatial distribution characteristics of soybean growing under field conditions.The results showed that LAI and shoot biomass gradually increased and then declined as a single peak curve with the growth and development of soybean.The maximum value of LAI appeared in the eighth weeks after emergence;Peak points of shoot biomass in Liaodou14 and Liaodou21 occurred at the 12th and the 14th weeks after emergence, respectively.NPK enhanced the average value of LAI for two varieties.Relative growth rate of all treatments started to decrease with the growth and development of soybean.Stem and leaf was mainly distributed in the lower part of plant and the middle and upper part of plant, respectively;petiole, pod and seed of soybean are mainly distributed in the middle part of plant.Chlorophyll meter values of the upper canopy and lower canopy were lower than that of the middle canopy.Although mean value of leaves SPAD in Liaodou21 was higher than that of Liaodou14, the sum of all leaves SPAD in Liaodou21 was lower than that of Liaodou14.NPK increased the mean value and the sum of leaves SPAD for both varieties.There were significant positive linear dependence between leaf area accumulation index LAI and ln(I₀/I_p) for all treatments.Genotype and fertilizer had significant effects on yield in soybean.Compared with no fertilizer,NPK enhanced yield for two soybean cultivars,but Liaodou21 enhanced more than that of Liaodou14.NPK also increased plant height,main stem nodes and internode length.But Liaodou14 had significant higher yield than that of Liaodou21 regardless of fertilization application.Liaodou14 also showed consistently lower plant height,more main stem nodes,shorter internode length than that of Liaodou21,which may be contributed to reasonable plant type with high yield in soybean.

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备注/Memo 收稿日期:2013-09-13

基金项目:转基因生物新品种培育重大专项(2013ZX08004-005);国家“十二五”科技支持计划(2011BAD35B06-2-3)。

第一作者简介:闫春娟(1983-),女,硕士,助理研究员,主要从事大豆育种与栽培研究。E-mail:yanchunjuan1983@163.com。

通讯作者:王文斌(1968-),男,硕士,研究员,主要从事大豆育种与栽培研究。E-mail:wbwang@163.com。

更新日期/Last Update:2014-08-01

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