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[1]林蔚刚,吴俊江,刘丽君,等.保护性耕作对土壤部分物理特性及大豆产量的影响[J].大豆科学,2010,29(02):238-243.
[doi:10.11861/j.issn.1000-9841.2010.02.0238]
LIN Wei-gang,WU Jun-jiang,LIU Li-jun,et al.Impact of Conservation Tillage on Some Soil Physical Properties and Soybean Yields (Glycine max L. Merrill) [J].Soybean Science,2010,29(02):238-243.[doi:10.11861/j.issn.1000-9841.2010.02.0238]

点击复制

保护性耕作对土壤部分物理特性及大豆产量的影响

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第29卷 期数: 2010年02期 页码: 238-243 栏目:
出版日期: 2010-04-25

Title: Impact of Conservation Tillage on Some Soil Physical Properties and Soybean Yields (Glycine max L. Merrill)

文章编号: 1000-9841 (2010) 02-0238-06

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关键词: 耕作 (KeySearch.aspx?type=Keyword&Sel=耕作); 土壤水分 (KeySearch.aspx?type=Keyword&Sel=土壤水分); 土壤温度 (KeySearch.aspx?type=Keyword&Sel=土壤温度); 土壤物理特性 (KeySearch.aspx?type=Keyword&Sel=土壤物理特性); 大豆产量 (KeySearch.aspx?type=Keyword&Sel=大豆产量)

Keywords: Tillage (KeySearch.aspx?type=Keyword&Sel=Tillage); Soil water (KeySearch.aspx?type=Keyword&Sel=Soil water); Soil temperature (KeySearch.aspx?type=Keyword&Sel=Soil temperature); Soil physical properties (KeySearch.aspx?type=Keyword&Sel=Soil physical properties); Soybean yields (KeySearch.aspx?type=Keyword&Sel=Soybean yields)

分类号: S565.1

DOI: 10.11861/j.issn.1000-9841.2010.02.0238 (http://dx.doi.org/10.11861/j.issn.1000-9841.2010.02.0238)

文献标志码: A

摘要: 研究了免耕和少耕对松嫩平原地区农田土壤温度、土壤水分、土壤紧实性等物理特性和大豆产量的影响。结果表明:在春季大豆播种期,免耕处理(NT)土壤含水量高于少耕(RT)和传统耕作(CT)。在大豆生长前期,免耕条件下的土壤平均温度低于传统耕作和少耕,传统耕作和少耕接近,免耕模式的土壤温度日较差低于少耕和传统耕作。5~20 cm深度内,免耕条件下的土壤容重高于传统耕作,在10~20 cm深度内,免耕和少耕接近。不同模式间的土壤机械阻力表现出差异,在0~20 cm深度内,免耕高于少耕和传统耕作。不同耕作模式间的大豆产量差异不显著。短期保护性耕作试验结果表明:在当地气候和土壤条件下应用少免耕模式,能够减少春季播种期间土壤水分损失和沙尘侵袭造成的危害,同时对大豆产量并没有造成不利影响。

Abstract: The great challenge in north Songnen Plain, China is soil degradation and dry period and sandstorm attacking during soybean planting season. The objective of this work is to assess the effects of no-tillage and reduced tillage systems on soil temperature, soil water storage, soil compaction and its effects on soybean yields in a productive soil. The determinations were carried out in 2008. No-tillage (NT) showed higher water storage than both reduced tillage (RT) and conventional tillage (CT) during the soybean planting season. Mean soil temperatures were lower under NT than under both RT and CT, and similar between RT and CT during the initial period. Thermal amplitude was lower under NT than under both RT and CT, and was similar between RT and CT during the first growing stage (June 4 to June 19). Bulk density was higher under NT than under CT at 5-20 cm depth, and no different between RT and NT at 10-20 cm soil depth. Penetration resistance performed differences between tillage systems, being higher under NT than under RT and CT at 0-20 cm depth. Grain yields showed no significant differences between tillage systems. Results suggested that application of NT/RT at local climatic and soil conditions could reduce soil water deficiency/sandstorm-attacking during soybean growing season without affecting soybean grain yields in short terms of conservation tillage.

参考文献/References:

- [1]Nyborg M, Malhi S S. Effect of zero and conventional tillage on barley yield and nitrate nitrogen content, moisture and temperature of soil in north-central Alberta[J]. Soil & Tillage Research, 1990, 15: 1-9.
- [2]Malhi S S, O' Sullivan P A. Soil temperature, moisture and penetrometer resistance under zero and conventional tillage in central Alberta[J]. Soil & Tillage Research, 1990, 17: 167-172.
- [3]Li L L, Huang G B, Zhang R Z, et al. Effects of conservation tillage on soil water regimes in rainfed areas[J].

- Acta Ecologica Sinica, 2005, 25 (9) :2326-2332.
- [4]Logsdon S D, Jordah J L, Karlen D L. Tillage and crop effects on ponded and tension infiltration rates[J]. Soil & Tillage Research, 1993, 28: 179-189.
- [5]Shukla M K, Lal R, Ebinger M. Tillage effects on physical and hydrological properties of a Typic Argiaquoll in central Ohio[J]. Soil Science, 2003, 168 (11): 802-811.
- [6]Shinners K J, Nelson W S, Wang R. Effects of residue-free band width on soil temperature and water content[J]. Trans. ASAE, 1993, 37: 39-49.
- [7] [JP2] Van Wijk, W R, Larson W E, Burrows W C. Soil temperature and the early growth of corn from mulched and unmulched soil[J]. Soil Science Society of America Journal, 1959, 23: 428-434. [JP]
- [8]Ma C M, Ji C W, Tang Y Z, et al. The study of the dynamics of soil fertilizer in conservation tillage: the effect of covering straw on soil temperature[J]. Journal of Agricultural Mechanization Research, 2006, 4: 137-139.
- [9]Munawar A, Blevins R L, Frye W W, et al. Tillage and cover crop management for soil water conservation[J]. Agronomy Journal, 1990, 82: 773-777.
- [10] Dam R F, Mehdi B B, Burgess M S E, et al. Soil bulk density and crop yield under eleven consecutive years of corn with different tillage and residue practices in a sandy loam soil in central Canada[J]. Soil & Tillage Research, 2005: 84, 41-53.
- [11] Blevins R L, Smith M S, Thomas GW. Changes in soil properties under no-tillage.// In: Philips R E, Philips S H. No Tillage Agriculture. Principles and Practices. Van Nostrand Reinhold Co., New York, NY, USA, 1984: 190-230.
- [12] Hamme J E. Long-term tillage and crop rotation effects on bulk density and soil impedance in northern Idaho [J]. Soil Science Society of America Journal, 1989, 53: 1515-1519.
- [13] Osunbitan J A, Oyedele D J, Adekalu K O. Tillage effects on bulk density, hydraulic conductivity and strength of a loamy sand soil in southwestern Nigeria[J]. Soil & Tillage Research, 2005, 82: 57-64.
- [14] Blevins R L, Frye WW, Ismail I. Long-term no-tillage effects on soil properties and continuous corn yields [J]. Soil Science Society of America Journal, 1994, 58: 193-198.
- [15] Taboada M A, Micucci F G, Cosentino, D J, et al. Comparison of compaction induced by conventional and zero tillage in two soils of the Rolling Pampa of Argentina[J]. Soil & Tillage Research, 1998, 49:57-63.
- [16] Ferreras L A, Costa J L, Garcia F O, et al. Effect of no-tillage on some soil physical properties of a structural degraded Petrocalcic Paleudoll of the southern " Pampa" of Argentina[J]. Soil & Tillage Research, 2000, 54: 31-39.
- [17] Bauder J W, Randall GW, Swan J B. Effect of four continuous tillage systems on mechanical impedance of a clay loam soil[J]. Soil Science Society of America Journal, 1981, 45:802-806.
- [18] Hill R L, Cruse R M. Tillage effects on bulk density and soil strength of two Mollisols[J]. Soil Science Society of America Journal, 1985, 49:1270-1273.
- [19] User' s Manual, Field ScoutMTDR100/200 Soil Moisture Meter (Page: 16). Spectrum, Inc. www. specmeters.com.
- [20] Fabrizio K P, Garcia F O, Costa J L, et al. Soil water dynamics, physical properties and corn and wheat responses to minimum and no-tillage systems in the southern Pampas of Argentina[J]. Soil & Tillage Research, 2005, 81: 57-69.
- [21] Al-Darby A M, Lowery B. Seed zone soil temperature and early corn growth with three conservation tillage systems[J]. Soil Science Society of America, 1987, 51: 768-774.
- [22] Teasdale J R, Mohler C L. Light transmittance, soil temperature, and soil moisture under residue of hairy vetch and rye[J]. Agronomy Journal, 1993, 85: 673-680.
- [23] Laboski C A M, Dowdy R H, Allmaras R R, et al. Soil strength and water content influences on corn root distribution in a sandy soil[J]. Plant and Soil, 1998, 203:239-247.
- [24] Taylor H M, Robertson G M, Parker J J. Soil strength-root penetration relations for medium, to coarse-textured soil materials[J]. Soil Science, 1966, 102: 18-22.
- [25] Baldev S, Malhi S S. Response of soil physical properties to tillage and residue management on two soils in a cool temperate environment[J]. Soil & Tillage Research, 2006, 85:143-153.
- [26] USDA-NRCS, Soil Quality Resource Concerns: Compaction. USDA-NRCS Soil Quality Inst., Ames, IA. <http://www.statlab.iastate.edu/survey/SQI/sqhome.shtml>. 1996.
- [27] Raji I Y, John C S, Donald G B. Growth analysis of soybean under no-tillage and conventional tillage systems [J]. Agronomy Journal, 1999, 91: 928-933.

相似文献/References:

- [1]石绍河, 肖佳雷, 刘宝海, 等. 不同栽培技术对大豆土壤水分、容重及产量的影响[J]. (article.aspx?type=view&id=201105014) 大豆科学, 2011, 30(05):781. [doi:10.11861/j.issn.1000-9841.2011.05.0781]
- SHI Shao-he, XIAO Jia-lei, LIU Bao-hai, et al. Effects of Different Cultivation Technique on Soil Moisture, Unit Capacity Weight and Yield of Soybean[J]. Soybean Science, 2011, 30(02):781. [doi:10.11861/j.issn.1000-9841.2011.05.0781]
- [2]刘爽, 张兴义. 保护性耕作对黑土农田土壤水热及作物产量的影响[J]. (article.aspx?type=view&id=201101012) 大豆科学, 2011, 30(01):56. [doi:10.11861/j.issn.1000-9841.2011.01.0056]
- LIU Shuang, ZHANG Xing-yi. Effect of Conservation Tillage on Soil Temperature, Water Content and Yield in Arable Black Soil[J]. Soybean Science, 2011, 30(02):56. [doi:10.11861/j.issn.1000-9841.2011.01.0056]
- [3]周勋波, 孙淑娟, 陈雨海, 等. 夏大豆不同种植方式对土壤水分及水分利用效率的影响[J]. (article.aspx?type=view&id=200802015) 大豆科学, 2008, 27(02):247. [doi:10.11861/j.issn.1000-9841.2008.02.0247]
- ZHOU Xun-bo, SUN Shu-juan, CHEN Yu-hai, et al. Planting Patterns Affects Soil Water and Water Use Efficiency of Summer Soybean[J]. Soybean Science, 2008, 27(02):247. [doi:10.11861/j.issn.1000-9841.2008.02.0247]
- [4]陈其鲜, 王本辉, 刘路平, 等. 西北旱作大豆田不同地膜覆盖模式保墒增温增产效应研究[J]. (article.aspx?type=view&id=201601009) 大豆科学, 2016, 35(01):58. [doi:10.11861/j.issn.1000-9841.2016.01.0058]
- CHEN Qi-xian, WANG Ben-hui, LIU Lu-ping, et al. Effects of Plastic Mulching on Soil Moisture Conservation, Temperature Improvement and Soybean Yield Increase in Dryland of Northwest China[J]. Soybean Science, 2016, 35(02):58. [doi:10.11861/j.issn.1000-9841.2016.01.0058]
- [5]向春阳 田秀萍. 耕作、培肥措施对大豆产量的影响[J]. (article.aspx?type=view&id=200102009) 大豆科学, 2001, 20(02):116. [doi:10.11861/j.issn.1000-9841.2001.02.0116]
- Xiang Chunyang Tian Xiuping. EFFECT OF CULTURE AND FERTILIZATION PRACTICES ON YIELD OF SOYBEAN[J]. Soybean Science, 2001, 20(02):116. [doi:10.11861/j.issn.1000-9841.2001.02.0116]
- [6]计钟程, 许文芝. 重茬大豆减产与土壤环境变化[J]. (article.aspx?type=view&id=199504007) 大豆科学, 1995, 14(04):321. [doi:10.11861/j.issn.1000-9841.1995.04.0321]
- [J]. Soybean Science, 1995, 14(02):321. [doi:10.11861/j.issn.1000-9841.1995.04.0321]
- [7]郭金瑞, 宋振伟, 高洪军, 等. 玉米大豆长期轮作对土壤物理特性与水热特征的影响[J]. (article.aspx?type=view&id=201702010) 大豆科学, 2017, 36(02):226. [doi:10.11861/j.issn.1000-9841.2017.02-0226]
- GUO Jinrui, SONG Zhenwei, GAO Hongjun, et al. Effects of Long Term Rotation of Maize and Soybean on Soil Physical Properties and Water and Heat Characteristics[J]. Soybean Science, 2017, 36(02):226. [doi:10.11861/j.issn.1000-9841.2017.02-0226]

备注/Memo

Foundation item:The study was supported by 948 Program of Agricultural Ministry of China in the 11th Five Year Plan (G05-6), National Key Technology R&D Program of China (2007BAD89B05-9; 2009BADA8B02) and Natural Science Foundation of Heilongjiang Province of China (C200 7-13).

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更新日期/Last Update: 2014-09-13

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