

大同盆地金沙滩盐碱地综合治理技术开发研究

Combined methods for comprehensive improvement of saline-alkali soil in Datong Basin

投稿时间: 2003-6-21 最后修改时间: 2004-3-30

稿件编号: 20051334

中文关键词: 盐碱地综合治理; 改良剂; 碱化度; 脱盐率

英文关键词: comprehensive improvement of saline-alkali soil; amendment; degree of alkalization; desalinization ratio

基金项目: 山西省科技厅资助项目(983188)

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中文摘要:

大同盆地苏打型盐碱地, 治理难度较大, 通过4年来的综合治理试验研究表明: 水利措施采用井灌井排、井渠结合, 明沟、暗沟、深沟、浅沟密集相结合, 地下水位可由改良前的1.63 m下降到2.05 m; 化学改良剂(SN-01)连续施用3年后耕作层土壤pH由原来的9.76下降到8.16, EC值由原来的0.54下降到0.22 ms/cm, CO_3^{2-} 消失, HCO_3^- 下降89.7%, Na^+ 下降76.4%。国产材料石膏、风化煤、黑矾、糠醛渣施用后表层土pH、碱化度都有明显的下降趋势; 农业措施采取平整土地, 耕作层脱盐率可达55%, 深翻后耕作层土壤密度降低11.6%~13.7%; 孔隙度提高12.2%~13.7%。增施有机肥后耕作层土壤碱化度可下降69.7%~76%; 合理的耕作技术和耕作管理方法具有保墒、抑盐、驱盐的作用, 为作物生长创造了良好的环境条件。

英文摘要:

The research conducted for four years demonstrated that only the combination of several methods was able to improve saline-alkali soil. Hydrotechnics (e.g. well water for irrigation, combined utilization of well and drainage canal, open drainage together with underdrainage) lowered the ground water level from 2.05 m to 1.45 m. Employing chemical amendment (SN-01) for three years neutralized pH value from 8.43 to 10.2 in the tillage layer of soil. Also chemical amendment diminished salt content, expressed as electrical conductivity (EC). As a result, CO_3^{2-} was disappeared; HCO_3^- and Na^+ contents in the soil were only 89.7% and 85.9% of original contents, respectively. Other amendments, such as sulfur-free gypsum, lignite, compost of furfural etc., had effective functions on saline-alkali soil. Salt content decreased 40% by means of suitable agricultural ways. Soil bulk density diminished and porosity increased. Organic fertilizer enhanced 21.8% organic matter. Total N was 1.5 times higher than that before its application. Suitable agricultural techniques and management played significant roles in keeping soil moisture, diminishing and avoiding salt damage to plants.

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