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秸秆覆盖对冻融期土壤墒情影响试验

Experimental study on effect of corn residue management on soil water content during freezing-thawing period

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中文关键词：土壤,水分,秸秆,冻融期

英文关键词:soil moisture straw period of freezing and thawing

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中文摘要:

为了研究秸秆覆盖对冻融期土壤墒情的影响，该文设置裸地、玉米秸秆覆盖厚度为5、10和15 cm的4种地表处理，进行了冻融期的土壤水分迁移试验。结果表明，冻融期秸秆覆盖的保温效应改变了土壤冻结状，使覆盖厚度15 cm田块未出现冻层，覆盖厚度5和10 cm地块的土壤初冻时间比裸地分别滞后16和25 d，且冻层厚度较裸地减小了29和42 cm。受冻融作用的影响，裸地在40 cm处出现聚墒区，秸秆覆盖田块在地表处和30～50 cm处出现聚墒区。冻融期内玉米秸秆覆盖厚度为5、10和15 cm田块地表水分波动幅度分别比裸地减小了1.12、6.46和8.7百分点；土壤融化后其地表0-10cm土壤平均含水率分别比裸地高9.45、9.04和8.99百分点。研究成果可为季节性冻土分布区实施秸秆覆盖措施提供参考依据。

英文摘要:

In order to study the influences of corn residue management on soil water content during freezing-thawing period, water transfer experiment was conducted in a freezing-thawing period under four surface treatments of bare land, corn residue mulching lands with the thickness of 5, 10 and 15 cm. The results showed that the corn residue cover altered the soils frozen states. The land mulched by 15cm thickness straw did not freeze; the initial frozen time of the lands mulched by 5 and 10cm thickness straw were 16d and 25d later than that of bare land, and the frozen depths of the lands decreased by 29cm and 42cm than that of the bare land. Affected by the processes of freezing and thawing, the higher moisture content area occurred at 40cm depth in the bare land and occurred at top soil and 30-50cm depth in the straw mulch lands. During the freezing-thawing period the water content fluctuation of 5, 10 and 15 cm straw mulched lands were lower than bare land by 1.12、6.46 and 8.7 percent respectively, and the average water content at 0-10cm soil of the straw mulched lands were higher than that of bare land by 9.45、9.04 and 8.99 percent respectively when soil thawed entirely. The results will provide a basis for taking measure of corn residue cover in seasonal freezing-thawing regions.

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