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### 植物生长调节剂对甜高粱茎秆贮藏中糖分变化的影响

#### Effects of pretreatment of sweet sorghum stalk with plant growth regulator on its sugar content during storage

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中文关键词: [贮藏](#), [生物质](#), [乙醇](#), [酶活性](#), [甜高粱茎秆](#), [植物生长调节剂](#)

英文关键词: [storage](#) [biomass](#) [ethanol](#) [enzyme activity](#) [sweet sorghum stalk](#) [plant growth regulators](#)

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中文摘要:

为降低甜高粱茎秆采后自然贮藏期内含糖量损失,掌握糖分损失与有关酶活性变化的关系,该文研究了采用植物生长调节剂处理甜高粱植株对其采后贮藏含糖量影响,以及有关酶活性的变化情况。结果表明,用适当种类和剂量的植物生长调节剂处理可以将甜高粱茎秆贮藏期延长到3~4个月,贮藏至112 d,赤霉素(40 mg/L)、马来酰肼钾盐(400 mg/L)、萘乙酸钠(70 mg/L)处理的茎秆干基含糖量分别为初始值的95%、92%和94%,均显著高于对照组。采用适当种类和剂量的植物生长调节剂对调节与甜高粱茎秆采后衰老及糖代谢有关酶的活性具有显著作用,这3种植物生长调节剂对甜高粱茎秆采后糖分损失的抑制与其调节有关酶活性有关。该项研究为解决大规模使用甜高粱茎秆制取燃料乙醇过程中的茎秆贮藏问题提供了参考。

英文摘要:

In order to reduce the sugar loss of sweet sorghum stalk during natural storage and to understand relation between sugar loss and change of enzyme activity, the effects of pretreatment of sweet sorghum stalk with plant growth regulator including gibberellin (GA3), potassium salt of maleic hydrazide (KMH), and Na salt of naphthalene acetic acid (NAA-Na) on its sugar content and change of related enzyme activity during natural storage were investigated. Results showed that the storage period of sweet sorghum stalk can be prolonged to 3-4 months with pretreatment of suitable types and doses of plant growth regulators. The sugar contents of sweet sorghum stalks with pretreatment of GA3 (40 mg/L), KMH (400 mg/L) and NAA-Na (70 mg/L) after 112 d storage were 95%, 92% and 94% of their initial sugar contents, respectively, which were significantly higher than that of the control. In addition, the pretreatments of sweet sorghum stalk with suitable types and doses of plant growth regulators can significantly regulate its biological enzyme activities related to aging and sugar metabolism. Three types of plant growth regulators can slow down the sugar loss of sweet sorghum stalk after harvesting through regulating related enzyme activities. The research can provide a scientific reference for the storage of sweet sorghum stalk for large scale bioethanol production.

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