

复硝酚钠及其组分对大豆种子萌发的影响

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摘 要:采用复硝酚钠及其有效组分邻硝基苯酚钠、对硝基苯酚钠和 5-硝基愈创木酚钠对大豆浸种, 通过研究发芽第 1、3、5、7 天的大豆种子蛋白质含量、脂肪含量、可溶性糖含量和种子发芽情况, 探讨复硝酚钠及其组分对大豆种子萌发的影响。结果表明: 5 mg · L⁻¹ 的 5-硝基愈创木酚钠和 10 mg · L⁻¹ 复硝酚钠浸种均使大豆的芽重、发芽势、发芽率、发芽指数和种子活力增加, 达到了 5% 的显著水平。同时使种子中的储藏蛋白质从第 3 天分解加速, 脂肪的转化速率从第 5 天明显加快, 可溶性糖含量始终低于其它处理。以上结果表明, 5-硝基愈创木酚钠在大豆种子萌发中起主要作用。

关键词:大豆; 复硝酚钠; 种子萌发

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Effects of Sodium Nitrophenolate and its Composition on Germination of Soybean Seed

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Abstract: The effects of sodium nitrophenolate and its composition on germination of soybean seed were studied by soaking soybean seeds with sodium nitrophenolate, sodium ortho-nitrophenol, sodium para-nitrophenol and sodium 5-nitroguaiacolate. Seeds germinating situation, the content of protein, fat and soluble sugar of soybean seed were determined to find the key component of sodium nitrophenolate which affects the germination greatly when soybean seed germinated at 1, 3, 5 and 7 days, respectively. The results showed that after seeds soaked with 10 mg · L⁻¹ sodium nitrophenolate or 5 mg · L⁻¹ sodium 5-nitroguaiacolate the weight of sprout, germination energy, germination rate, germination index and vigor index significantly increased ($P < 0.05$). Furthermore, transformation of protein was accelerated from the third day; the fat in seed became decreased obviously, and the soluble sugar always was lower than other treatments from the fifth day. These results proved that sodium 5-nitroguaiacolate played an important role in the course of germination of soybean seed.

Key words: Soybean; Sodium Nitrophenolate; Seed Germination; Composition

复硝酚钠是 20 世纪 60 年代日本旭化学工业株式会社最先发现的一种高效植物生长调节剂, 其有效成分为邻硝基苯酚钠、对硝基苯酚钠和 5-硝基愈创木酚钠。1997 年经美国环保局批准进入美国绿色食品工程, 并且被联合国粮农组织 (FAO) 指定为绿色食品工程推荐的植物生长调节剂^[1]。

大豆是我国重要的粮、油兼用作物, 具有较高的经济价值和保健价值, 然而我国大豆单位面积产量较低, 种植面积逐年下降。随着化学调控技术研究的深入和应用, 已显示了其在大豆生产上的巨大优势和发展潜力^[2]。合理使用生长调节剂可以促进大

豆种子萌发、根系生长、培育壮苗^[3-4], 提高产量构成因子水平, 增加大豆产量, 控制徒长、防止倒伏, 防止花荚脱落、促进结实, 提高大豆抗逆性。复硝酚钠被广泛地应用在包括大豆在内的多种作物上。施用后能够迅速渗透到植物体内, 对植物发根、生长、生殖及结果等发育阶段均有不同程度的促进作用^[5]。然而关于复硝酚钠究竟何种成分对大豆种子萌发起关键作用尚无报道。为此, 采用培养皿试验方法, 研究复硝酚钠及其 3 种组成成份对大豆种子萌发的影响, 以确定其影响种子萌发的关键因子。

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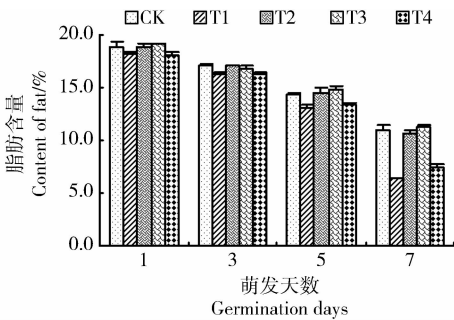
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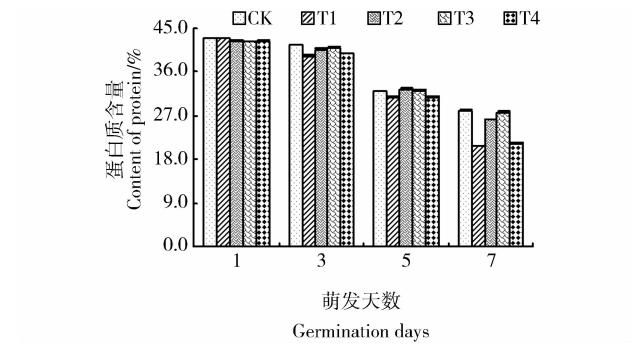
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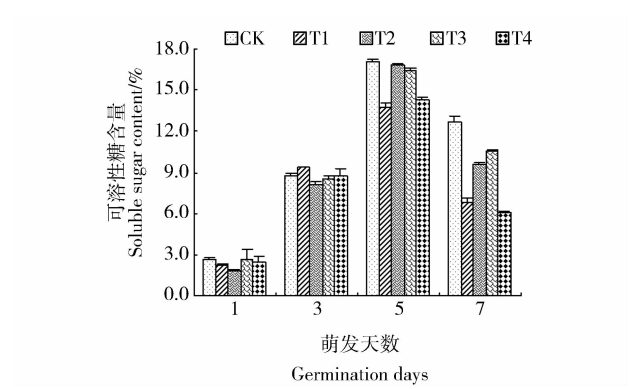


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