

吡虫啉拌种对高产夏玉米幼苗生长及其保护酶活性的影响

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Effects of seed dressing with imidacloprid on the seedlings growth and protective enzyme activities of high-yielding summer maize.

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摘要 通过田间小区试验,研究了吡虫啉和种子质量比分别为6:10000、9:10000和12:10000拌种处理对高产夏玉米幼苗生长及其保护酶活性的影响.结果表明:药种比为6:10000处理幼苗株高、初生根长、次生根数、地上和地下部分鲜质量分别比对照增加了2.81 cm、2.31 cm、1.71、0.30 g和8.28 g,并较其他两个处理作用效果显著.与对照相比,药种比为6:10000处理幼苗叶片和根可溶性蛋白含量分别提高了12.6%和27.9%,过氧化氢酶(CAT)活性分别提高了2.5%和11.5%,丙二醛(MDA)含量分别降低了26.3%和60.9%,超氧化物歧化酶(SOD)活性分别提高了19.7%和5.6%,谷胱甘肽转移酶(GSTs)活性分别提高了11.5%和13.2%,根过氧化物酶(POD)活性提高了31.8%.药种比为6:10000处理除对叶片POD活性没有促进作用外,能够显著提高其他相关酶的活性.

关键词: 吡虫啉 高产夏玉米 幼苗生长 保护酶 GSTs MDA

Abstract: A field plot experiment was conducted to study the effects of seed dressing with imidacloprid at the pesticide / seed mass ratios of 6:10000, 9:10000, and 12:10000 on the seedlings growth and protective enzyme activities of high-yielding summer maize. Seed dressing with an imidacloprid / seed mass ratio of 6:10000 increased the seedlings height, primary root length, secondary root number, aboveground fresh mass, and underground fresh mass by 2.81 cm, 2.31 cm, 1.71, 0.30 g, and 8.28 g, respectively, as compared to the control, and had better effect than the treatments 9:10000 and 12:10000. Comparing with the control, treatment 6:10000 increased the leaf- and root soluble protein content by 12.6% and 27.9% and catalase (CAT) activity by 2.5% and 11.5%, decreased malondialdehyde (MDA) content by 26.3% and 60.9%, improved superoxide dismutase (SOD) activity by 19.7% and 5.6%, enhanced glutathione-S-transferase (GSTs) activity by 11.5% and 13.2%, respectively, and increased the root peroxidase (POD) activity by 31.8%. Seed dressing with imidacloprid at the pesticide / seed mass ratio of 6:10000 could markedly improve maize seedlings protective enzyme activities, but had no promotion effect on leaf peroxidase (POD) activity.

Key words: imidacloprid high-yielding summer maize seedling growth protective enzyme GSTs MDA**引用本文:**

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