

高压静电场对农作物种子生物学效应原发机制的探讨

Original mechanism of biological effects of electrostatic field on crop seeds

投稿时间: 2002-4-15 最后修改时间: 2002-10-15

稿件编号: 20030210

中文关键词: 静电场; 处理剂量; 自由基; 原发机制

英文关键词: electrostatic fields; treating dose; free radicals; original mechanism

基金项目:

作者	单位
白亚乡	大连水产学院
胡玉才	大连水产学院

摘要点击次数: 12

全文下载次数: 11

中文摘要:

该文选用一些农作物种子为代表,应用高压静电场对其进行处理,然后通过对其处理及对照组进行自由基含量的测定来探讨静电场处理农作物种子的生物效应的原发机制。实验选用大麦、甜菜种子,将种子随机分成2份,其中一份为对照组,另一份为处理组,将处理组置于平行板电极形成的匀强电场中进行处理。电场强度E分别为: E=2.5 kV/cm(大麦)、E=4.5 kV/cm(甜菜),处理时间均为10 min。处理后将这些种子和对照组种子分别去皮研磨,过120目筛得粉末,用电子天平称取等量粉末装入样品细管,放入电子顺磁共振仪中进行自由基含量的测定,实验结果表明:一定强度的静电场能使农作物干种子的自由基含量显著提高。通过对实验结果的分析,该文提出静电场对作物种子的生物学效应的原发机制是:静电场是通过作用于种子内的水分子及一些生物大分子来提高种子内的自由基的含量而影响种子的活力的。

英文摘要:

In this paper, several crop seeds were selected as representatives to be treated by the high voltage electrostatic field. Through determining the content of free radicals, the original mechanism of the biological effects of the electrostatic field on crop seeds was discussed. In this experiment, barley and beet seeds were selected, which were divided into 2 groups at random with similar numbers in each group. One is the control group, the other is the experimental group. The experimental group was put into an even intensity electric field produced by a parallel polar plate. The barley seeds were treated by 4 kV/cm for 10 minutes, while the beet seeds were treated by 4.5 kV/cm for 10 minutes. The seeds (both the control group and experimental group) were milled into flour, then the same amount of flour was put into the sample tube, and was put into the ESR(electronic spins resonance) equipment to determine the content of free radicals. The result of the experiment shows that the electrostatic fields with a certain intensity can increase the content of free radicals in seeds. It is proposed that the original mechanism of the biological effects of the electrostatic fields on crop seeds is that the electrostatic fields affect the activity of seeds through increasing the content of free radicals in seeds by affecting the water molecules inside seeds and some large biological molecules.

[查看全文](#)

[关闭](#)

[下载PDF阅读器](#)

您是第606958位访问者

主办单位: 中国农业工程学会 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100026 Email: tcsae@tcsae.org

本系统由北京勤云科技发展有限公司设计