

论文

两份大麦品种单倍体细胞与植株水平耐盐性的关系

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摘要:

为了确定盐胁迫下大麦籽粒产量和萌发期生长指标与小孢子培养阶段盐胁迫下愈伤组织产量之间是否存在一致性, 以2份大麦品种为供试材料, 进行了以下3项研究: (1) 诱导培养基中NaCl含量对小孢子培养愈伤组织产量的影响; (2) 萌发液中NaCl含量对大麦种子萌发期生长指标的影响; (3) NaCl胁迫处理对大麦单株产量的影响。结果表明, 诱导培养基中NaCl含量提高可降低小孢子培养愈伤组织产量, 但2份品种的降幅存在明显的差异; 萌发液中NaCl含量提高可降低种子发芽率、主根长度和胚芽鞘长度, 2份品种间降幅上也存在明显的差异; 盆栽条件下NaCl胁迫处理的大麦单株产量明显低于无NaCl的对照, 2份品种间有差异。NaCl胁迫下, 2份供试材料小孢子培养愈伤组织产量的相对值与种子萌发期的发芽率、主根长度和胚芽鞘长度的相对值以及单株产量的相对值存在着一定的相关, 说明供试品种的耐盐性在小孢子水平与植株水平上是一致的。

关键词: 大麦 NaCl胁迫 小孢子培养 萌发期 单株籽粒产量

RELATIONSHIP OF NaCl TOLERANCE BETWEEN HAPLOID CELL LEVEL AND PLANT LEVEL IN TWO BARELY CULTIVARS

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Abstract:

Three independent experiments were carried out using 2 barley cultivars in order to determine whether there is a consistency in salt tolerance between plant level in terms of grain yield and seed germination and microspore level in terms of callus production, i.e. (1) effects of NaCl concentration on callus production in microspore culture; (2) effects of NaCl concentration on the traits related to seed germination at germination stage; (3) effects of NaCl stress on grain yield per plant. The results showed that the callus production was reduced with increased NaCl concentration in the medium, and there was significant difference between the two barley cultivars in the reduced extent. Germination rate, radicle and coleoptile length were also reduced with increased NaCl concentration at germination stage, and the two barley cultivars showed the difference in these parameters. In a pot experiment, it was found that the grain yield per plant was obviously reduced under salt stress relative to the control. Similarly difference could be found also between the two barley cultivars. In addition, the results showed that the relative callus production was closely associated with relative germination rate, relative radicle length, coleoptile length and relative grain yield per plant. Therefore, it may be concluded that there is a consistency in salt tolerance for barley between microspore and plant levels.

Keywords: *Hordeum vulgare* L. NaCl stress microspore culture germination stage grain yield per plant

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