

同位素示踪·资源环境·动植物生理

不同生长素类型及ABA搭配对小麦幼胚再生效果的影响

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摘要:

生长素是小麦幼胚产生胚性愈伤组织的关键成分,培养基中适宜的生长素种类、浓度和组合决定着小麦幼胚再生效果。本研究以小麦基因型CB037幼胚为材料,在分别确定dicamba、2, 4, 5-T和picloram的适宜用量的基础上,比较了2, 4-D、dicamba、2, 4, 5-T、picloram在适宜浓度下诱导再生的效果,筛选出ABA搭配2, 4-D的最佳浓度组合。结果表明,dicamba、2, 4, 5-T和picloram的适宜用量分别为2.5mg/L、3.0mg/L和3.0mg/L, 2, 4-D诱导小麦幼胚再生效果最好,其次为dicamba,picloram和2, 4, 5-T诱导效果较差;在含有2, 4-D 2.0mg/L的培养基中加入ABA 0.3mg/L能明显抑制幼胚直接萌发,显著提高胚性愈伤组织诱导率和再生率。

关键词: 小麦 幼胚 生长素 胚性愈伤组织诱导率 植株再生率

EFFECTS OF DIFFERENT AUXINS AND COMBINING APPLICATION WITH ABA ON REGENERATION OF IMMATURE EMBRYOS OF WHEAT

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Abstract:

It is necessary to improve plant regeneration efficiency for cell and genetic engineering breeding of wheat. To investigate appropriate type and concentration of auxins (dicamba, 2, 4, 5-T, picloram) and combination of 2, 4-D and ABA for wheat immature embryo culture, a new wheat line CB037 was applied to investigate the influence of three auxins and combination effect of 2, 4-D and ABA. Results showed that the optimal concentrations of dicamba, 2, 4, 5-T, picloram when used alone were 2.5mg/L, 3.0mg/L and 3.0mg/L, respectively. Compared to 2, 4-D with the highest efficiencies in both of callus differentiation and green shoots induction, dicamba was the most suitable auxin to induce embryogenic callus other than to induce regeneration shoots, and 2, 4, 5-T and picloram followed the above two auxins either in embryogenic callus induction or green shoots induction. In the presence of 2.0mg/L 2, 4-D and 0.3mg/L ABA in the callus induction medium, the best regeneration efficiency from the immature appeared, improving the callus quality and the green seedling numbers dramatically.

Keywords: wheat immature embryos auxins embryogenic callus plant regeneration

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