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光敏感雄性不育水稻的体细胞与花药培养及再生植株性状表现研究*

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摘要 对8个光敏感性不育籼稻杂种一代及其亲本花药培养的研究发现，光敏不育粳稻虽然为雄性不育，但其愈伤组织诱导率与植株再生能力不在一般正常粳稻品种之下，为籼稻“新会粘” 的28倍。绝大多数光敏不育之籼粳杂种的花药培养能力也是十分高的。在起源于体细胞及花药的光敏不育水稻之再生植株共1146株试管苗中，发现少数在5月下旬及6月上旬抽穗的已表现为完全雄性不育。这些材料之幼穗的第二枝梗分化时(4月下旬至5月上旬)之日长尚不足13 小时，远在农垦58S的临界日长14小时之下。在8个组合的籼粳光敏杂种一代花粉植株中，有的组合完全表现为粳型(组合4及7，表2)，有的完全表现为籼型(组合2及6)，多数则两者兼 有。在全部80个愈伤无性系中，单倍体20个二倍体58个，多倍体2个。58个二倍体无性系中 不育的为20个，占34.5%。其中在晚造短日照条件下能转变为可育的有11个，占二倍体的19% ，占二倍体不育的55%。所有光敏不育花粉植株，在早造条件下I-KI之花粉染色率与结实率 均为0%，在晚造(9月份之后)条件下，能转换为可育。但不同组合、不同无性系之间育性转 换的频率与稳定性差异颇大。

关键词

分类号

Sonatic Cell and Anther Culture of Photosensitive Male Sterile Rice and the Expr ession of Soma/gameto-clones*

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Abstract

The anthers ofhybrid F₁ between Indica rice and photosensitive male sterile (IJ ps-ms hybrid F₁)Japonica rice were cultured.Although photosensitive male sterile Japonica rice (psms) was male sterile,the frequency of callus induction was high as 28 times as the indica parent Xin-hui zhan. Out of the 1146 plants regenerated from anther culture (A₁) and somatic cell cultrue (R1) of pa-ms hybrid F₁,some expressed complete male sterile even they headed as early as May 20 to June 10.They were W6154 (a indica ps-ms from Hubei Agricultural Academy),T334-3(Japonica ps-ms ×87R141) F1A1,T336-2(ps-ms/Zhenshang 97) F₁ A₁;T33910(ps-ms/Min R)F1 A1 etc.The critical day length was not long eno ugh as 14 hr,when the secondary branches of these ps-ms rice initiated on 20 Apr il to 10 May in Guangzhou (24No).This result showed that the ps-ms variety,in wh ich the critical photosensitive period was not as long as the Japonica ps-ms ric e,might be possible to be induced by tissue culture. Among the pollen plants of eight combinations of IJ ps-ms,hybrid F1,two comb inations (combination 2 and 6,Table 2) expressed as Indica rice;Two (combination 4 and 7,Table 2) as Japonica rice and the other both Indica and Japonica.Out of 80 callus clones,20 were haploid,58 were diploid and 2 were polyploid.Among the 58 diploid somaclones,20 were sterile,making up 34.5%.Among the 20 sterile line s,Ⅱ could be transformed into fertile in the condition of autumn day-length (af ter Sept.10).The pollen grains in all of the ps-ms-pollen plants were not stained completely by I-KI and no seeds were set in the spring season condition.

Key words Photosesitive male sterile rice Indica-Japonica hybrid Anther culture Somaclonal variation

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