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摘要： 以前期获得的转抗虫基因cry6Aa2m大豆T_1代植株4个株系为材料，采用PCR及RT-PCR检测方法进行了外源基因遗传稳定性及表达情况分析。并以受体品种(东农50）为对照，进行了产量性状、形态性状、品质性状及环境适应能力等农艺性状的调查。结果表明：cry6Aa2m基因能够在T_4代转基因植株中遗传并表达；在产量性状上，除转基因株系DpC6b7单株结荚数显著低于对照外，其余3个株系的百粒重和单株结荚数与对照相比无显著差异；在形态性状上，除转基因株系DpC6b37株高显著低于对照外，其余株系的生育期、结荚习性、花色、叶形与对照也均无显著差异；在品质性状上，与对照相比，DpC6b37粗蛋白含量高2%，粗脂肪含量高5%。株系DpC6b7则粗蛋白含量高4%，粗脂肪含量低1%；在环境适应能力方面，转基因株系种子萌发率、落粒率、种子休眠期、杂草竞争性与对照均无显著差异。综合结果表明cry6Aa2m基因能够稳定遗传并表达，其中株系DpC6b4和DpC6b8所调查的农艺性状均不劣于受体品种。

Abstract: In our previous studies,we had transformed the insect-resistant gene cry6Aa2m into Glycine max and obtained the T4 generation of the cry6Aa2m transgenic lines.In order to screen the transgenic soybean lines not only with stable expression of the cry6Aa2m gene but also sharing good agronomic traits,in the current study,we analyzed the genetic stability and investigated the agronomic traits of the transgenic soybean lines with gene cry6Aa2m.By using PCR and RT-PCR analysis,we verified the heredity and expression of the cry6Aa2m gene in the T_4generation transgenic plants,which were investigated in this study.As expected,we showed over 85% PCR-positive plants of all the T_4transgenic lines,and demonstrated the constitutive expression of the cry6Aa2m gene in the transgenic lines by using the semi-quantitative RT-PCR assays.In this aspect,we investigated and analyzed the agronomic traits of four transgenic lines(DpC6b4,DpC6b7,DpC6b8 and DpC6b37),including yield traits,morphological traits,quality traits and adaptive capacity to environment.Results of plant yield traits showed that all transgenic lines displayed no significant differences in the 100-seed weight and pods per plant,except for the significantly less pods per plant for line DpC6b7.As to the morphological trails,no significant differences were observed in growth period,pod bearing habit,flower color and leaf shape,except that the plant height of line DpC6b37 was significantly shorter than the non-transgenic soybean.Furthermore,we also found that the transgenic line DpC6b7 exhibited 4% higher in the protein content and 1% lower in the oil content than non-transgenic soybean,while line

DpC6b37 displayed 2% and 5% higher, respectively. In addition, we also observed no obvious differences in germination rates, period of dormancy, weed species and quantity between transgenic and non-transgenic plants. Taken together, our results presented in this study suggested that the cry6Aa2m gene could be stably inherited and expressed in the transgenic Glycine max lines, and its overexpression did not affect plant agronomic traits. Among the four transgenic lines, DpC6b4 and DpC6b8, with relatively higher expression levels of the cry6Aa2m gene, displayed better agronomic traits than the non-transgenic plants, which made them as optimal candidates for further application in fields.

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