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论文

理化诱变小豆京农6号突变体的鉴定

佟星[1],赵波[1],金文林[1],曾潮武[1,2],刘红霞[1,2],吴宝美[1],濮绍京[1],陈学珍[1],潘金豹[1],万平[1,*]

[1] 北京农学院植物科学技术系，北京102206；[2] 甘肃农业大学农学院，甘肃兰州 730070

摘要：

选用小豆品种京农6号种子，分别采用甲基磺酸乙酯(EMS) (0.5%、0.9%和1.4%处理12 h和24 h)、电子束(100、300、600 Gy)、^{60}Co-γ (400 Gy)诱变处理，将处理后的种子种于大田，鉴定后代植株性状的变异。观察表明, EMS诱变的变异类型最丰富、^{60}Co-γ射线次之、电子束产生的变异类型较单一。EMS处理小豆以浓度0.5%和0.9%处理24 h为宜；0.5%EMS处理的粒色和荚色变异突出，有鲜红、黄白、绿白粒色和黑荚、褐荚、黑褐荚变异；0.9%处理的叶形变异突出，有鸡爪叶、剑叶、肾形叶、小密叶等突变类型；电子束诱变后，M_2变异率分别为4.09%、3.64%和2.22%。400 Gy ^{60}Co-γ射线处理种子，后代变异率为7.23%。通过两年的鉴定筛选，获得937个EMS诱变M_3代株系，934个^{60}Co-γ射线和电子束诱变M_2代株系，已得到株高、叶形、叶色、粒形、粒色、荚色、无分枝、多分枝、叶簇生、分枝簇生、光叶、蔓生、有限结荚习性、株型松散、育性、成熟特性等突变体材料1 490份。本研究为小豆基因遗传分析、基因定位与克隆及其进一步的基因功能分析奠定了基础，为小豆育种提供了重要的材料。

关键词： 小豆 理化诱变 突变体 突变体鉴定

Identification of Mutants from Adzuki Bean (*Vigna angularis*i) Jingnong 6 seed Induced by Physical and Chemical Agents

[1] College of Plant Science and Technology, Beijing University of Agriculture, Beijing 102206, China; [2] College of Agronomy, Gansu Agricultural University, Lanzhou 730070, China

[1] College of Plant Science and Technology, Beijing University of Agriculture, Beijing 102206, China; [2] College of Agronomy, Gansu Agricultural University, Lanzhou 730070, China

Abstract:

Mutational approaches have been widely exploited in breeding, genetics and gene function researches. We firstly developed a large collection of mutants from adzuki bean (*Vigna angularisi*) cultivar Jingnong 6 treated by 0.5%, 0.9%, and 1.4% EMS for 12 h and 24 h, 400 Gy ^{60}Co-γ ray and 100 Gy, 300 Gy, and 600 Gy electron beam. The results indicated that the maximum mutantions were induced by 0.5% or 0.9% EMS for 24 h. More seed color mutants including cream-colored and light red seeds, pod color mutants such as brown, dark brown and black pods were produced by o.5% EMS. Needle leaf, sword, kidney-shaped and small heart-shaped leaf mutants were obtained by 0.9% EMS treatment. The percentage of mutants with 100, 300, and 600 Gy electron beam treatment were 4.09%, 3.64%, and 2.22% respectively. The percentage of mutants treated by 400 Gy ^{60}Co-γ ray was 7.23%. Nine hundred thirty-seven EMS-induced M_3 lines and nine hundred thirty-four M_2 lines radiated by ^{60}Co-γ ray and electron beam were generated. A total of 1 490 mutants were collected. Mutations included in plant height, plant architecture, leaf shape and color, leaf size, seed shape and color, seed size, pod color, branching type and number, bushy leaf or branch, sprawl, definite growth, sterile, early and late mature, flowering time. The mutant populations are very useful to genetic analysis of gene, gene mapping and cloning, and further the research on functional genomics. These mutants will be useful to serve the adzuki bean improvement.

Keywords: Adzuki bean(Vigna angularisi) EMS and irradiation mutagenesis Mutants Mutant identification

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通讯作者: 万平, E-mail: pingwan3@yahoo.com.cn

作者简介:

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