

Darakorn Powchoo 2009: Breeding of Pungency and Non-pungency Male Sterile Ornamental Pepper. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Associate Professor Thunya Taychasinpitak, M.S. 87 pages.

Breeding of male sterility ornamental pepper to get compact plant, cluster fruit setting and bright yellow immature fruit in the fifth generation was attempted. Nineteen cross combinations of sterile male with S msms genotype and fertile male containing S Msms genotypes was conducted. The crosses were done among selected siblings with closed characteristics and similar phenotype. The F<sub>5</sub> progenies of 18 cross combinations (590 plants) from 19 crosses combinations (612 plants) produced male fertility and sterility corresponded to 1:1 Mendelian ratio which indicated the genotype of pollen parents as S Msms. The F<sub>6</sub> progenies of 22 cross combinations (565 plants) showed that 21 cross combinations (542 plants) had 1:1 Mendelian ratio of male fertility to male sterility which could confirm S Msms genotype of their pollen parents 13 cross combinations (452 plants) from 15 crosses combinations (469 plants) of F<sub>7</sub> progenies gave male fertility and sterility corresponded to 1:1 Mendelian ratio which indicated the genotype of parental pollen as S Msms. Flowering periods of F<sub>5</sub> and F<sub>6</sub> were later than those of the parental line but F<sub>7</sub> was shorter. In ease of plant sizes F<sub>5</sub> were considered mid-parents but F<sub>6</sub> and F<sub>7</sub> was more compact than parental line. Both single and cluster fruit types were obtained from F<sub>5</sub>, F<sub>6</sub> and F<sub>7</sub> progenies. From the hybrids number 7-6-26(9), 14-12-1(2), 14-12-1(9), 14-12-1(10) and 18-8-25(5) were selected in F<sub>7</sub> generation.

Breeding of non-pungent fruit and male sterile characters of ornamental pepper were conducted. Non-pungent fruit pepper and male sterile pepper were selfed pollinated. Ten cross combinations of sterile male with S msms genotype and fertile male containing S Msms genotypes was conducted. The ten cross combinations (374 plants) produced male fertility and sterility corresponded to 3:1 Mendelian ratio and non-pungent fruit. Back crosses of the two characteristics were conducted S msms genotype 12 cross combinations (323 plants) gave male fertility and sterility corresponded to 1:1 Mendelian ratio and non-pungent fruits. Both pungent and non-pungent fruits had complete sterility. The observation under microscope found only few normal pollen grains.

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Student's signature

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Thesis Advisor's signature