

Athiwat Songpinich 2011: Maize Breeding for Increasing Tryptophan Content in Endosperm. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Choosak Jompuk, Dr.sc.nat. 66 pages.

The protein quality of maize (*Zea mays* L.) can be improved by replacing normal *opaque-2* alleles with recessive alleles (o_2o_2). The tryptophan and lysine contents of *opaque-2* kernels (o_2o_2) are increased. The objectives of this study were; 1) to improve the normal inbred lines to QPM inbred lines by backcross method and marker-assisted selection (MAS). The crosses were made between field corn inbred lines and quality protein maize as female and male, respectively. Then, two times of backcross to recurrent parent and following three times of selfing were made to obtain BC_2S_3 . In BC_2S_3 by marker assisted selection, *phi057*, two lines of homozygous recessive (o_2o_2) of *opaque-2* gene were obtained from the cross of Agron20 x Pop65 C₆-46 and two lines were obtained from the cross of Agron29 x Pop65 C₆-55. These lines were Agron20-1, Agron20-2, Agron29-1 and Agron29-2 and they had tryptophan content in endosperm about 1.17, 0.88, 1.84 and 1.46%, respectively. Then, eight hybrids were crossed among these lines. The yield trial results showed that tryptophan in protein content in endosperm of QPM hybrid was higher and its range from 1.04 – 1.41 % while variety without *opaque-2* gene was about 0.67%. The best yield of QPM hybrid was QPM 1 (1,172 kg/rai) and was not different from SW4452 (1,171 kg/rai).

Student's signature

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