

**THESIS TITLE : CUCUMBER (*Cucumis sativus* L.) SEED PRODUCTION  
TECHNOLOGY**

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#### **ABSTRACT**

Seed yield depends on many factors such as number of plants per unit area, fruit per plant, seed per fruit and seed weight. The aim of this research was involved the studies of the method and technique to increase the quality of seed yield. The experiments were conducted at the experimental field, Faculty of Agriculture Khon Kaen University during April 1995 to October 1996 and divided in to 6 experiments as followed:

Experiment 1 was to study the effect of growing method on seed yield, Split Plot Design with 3 replications were employed. The two factors were planting method: unstaked and staked, and mulching system: no mulch, straw mulch and plastic film mulch. The result of planting method had no statistical difference on seed yield, but slightly higher yield was observed from the staked. Mulching treatment gave significantly higher seed yield per plant than those of no mulch. Straw and plastic film mulch gave similar seed yield of 23.86 and 22.63 g. per plant respectively. These were significantly higher than those of 17.26 g. from control. The interaction of these factors on seed yield was not found.

Experiment 2 studies on physiological maturity of cucumber seed, Completely Randomized Design with 4 replications and 17 fruit ages was used. Fruit ages between 8 to 40 days after anthesis were harvesting. The results of physiological maturity of cucumber seed Variety KKU-391 was at 26 days after anthesis, with the highest 100 seed dry weight of 2.367 g. seed moisture content of 30.48% and germination percentage of 48.5%.

Experiment 3 was to study the effect of fruit age, time of fruit storage and seed fermentation on quality of cucumber seed. Factorial experiments in Completely Randomized Design with 3 factors of 3x5x4 treatments were used. The first factor involved 3 fruit ages: 25, 30 and 35 day old, the second factor involved 5 levels of fruit storage period: 0, 1, 3, 5 and 7 days before seed extraction and the third factor involved 4 levels of seed fermentation period: 0, 24, 48 and 72 hours. The interaction results of these factors on seed dry weight was noted. Seed dry weight was increased with the increment of fruit age, period of fruit storage and seed fermentation period. A significantly higher 100 seed dry weight of 2.604 g. obtained from 30 day old with 1 day fruit storage and 24 hours of seed fermentation treatment was recorded than those of 2.058 g. obtained from 25 day old with no fruit storage and seed fermentation treatment.

Experiment 4 was to study the effect of number of plants per unit area on yield and quality of cucumber seed. Factorial experiments in Randomized Complete Block Design with 2x2 treatments and 3 replication were employed. The first factor was the number of plants/hill: 1 and 2 plants, and the second one was the plant spacing: 25 and 50 cm. The results indicated that 2 plants per/hill gave a significantly higher seed yield of 103.51 kg./rai than those of 94.32 kg./rai from 1 plant/hill. Plant spacing treatment also showed a significantly difference of seed yield per unit area. Close spacing of 25 cm. gave a significantly higher seed yield (106.15 kg/rai) than the wide spacing of 50 cm.(91.69 kg/rai). The interaction of these two factors on seed yield was not found.

Experiment 5 was to study the effect of number of fruit per plant on seed yield. A Randomized Complete Block Design with 4 replications and 4 treatments was employed. Treatments were comprised of natural bear fruit, 3, 4 and 5 fruits per plant. The highest seed yield of 105.54 kg./rai was recorded from 5 fruits per plant while the lowest seed yield of 61.69 kg./rai was recorded from 3 fruits per plant.

Experiment 6 was to study the effect of fruit order in each plant on seed yield. This experiment consisted of 5 sub experiments: the fruit order on plants were 4, 5, 6, 7 and 8 fruits. Each experiment was carried out by using Completely Randomized Design with 7 replications. The results showed that the fruit order at the middle of plant (third and fourth order) produced the highest number of good seed and seed weight per fruit. The best fruit order which gave the highest yields of good seed and seed weight per fruit also gave the lowest number of defected seed. Nevertheless, the fruit bearing the last yielded the lowest number of good seed and seed weight per fruit but the highest number of defected seed.