

**EFFECT OF TEMPERATURE AND DURATION OF POLLEN STORAGE ON SEED
YIELD AND QUALITY OF HYBRID CHILLI (*Capsicum annuum* L.) UNDER
POLYTUNNEL IN DRY ZONE**

By

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ABSTRACT

An experiment was undertaken to study the effect of temperature and duration of pollen storage on seed yield and quality of hybrid chilli (*Capsicum annuum* L.) under polytunnel in the Dry zone during the period June 2017 to November 2017.

Galkiriyagama inbred line as male parent and MI Waraniya inbred line as female parent from Department of Agriculture, in Sri Lanka were used as parental materials. Pollen viability is the main factor which influences the quality and quantity of hybrid chilli seed. In this investigation, five characters viz., Fruit set %, Fruit length (cm), Fruit girth (cm), Number of seeds per fruit and percentage of germination of hybrid seeds were studied after five days of pollination by storing the pollens under different temperature conditions (0⁰C, 4⁰C, 17⁰C, Ambient condition-27⁰C-31⁰C) in polytunnel and pollen viability was tested using acetocarmine after storing the pollens under different temperature conditions (0⁰C, 4⁰C, 17⁰C and Ambient condition-27⁰C-31⁰C) in the laboratory.

The results showed that, the highest pollen viability (87.30%), fruit set% (67.96%), fruit length (10.8cm), fruit girth (3.61cm), number of seeds per fruit (51) and germination percentage (90%) were recorded when pollination is carried out by fresh pollen. Furthermore, highest pollen viability (78%), fruit set (65.96%), fruit length (9.83 cm), fruit girth (3.46 cm), number of seeds per fruit (50), and germination percentage (83.93%) were observed even after the fifth day of pollen storage at 0⁰C temperature condition when compared to pollen stored at other storage temperature conditions.

This result suggests that either fresh pollen or pollen stored under 0⁰C conditions up to 5 days can be used successfully for hybrid seed production of MICH HY 01. In this experiment, fresh pollen was used to compare the pollen which is stored under different temperature condition. Fresh pollen which is just after dehiscence was reported highest pollen viability and other tested characters. According to literature, viability of pollens do not remain long time and reduce the vigor of pollen with time of the day due to high temperature and also lot of pollens will be

wasted in regular hand collection and also time is wasted in commercial pollination procedure due to flower anthesis will occur after 9.30 am that is depend on the day of temperature.

Therefore, this result suggests that under the conditions in the experiment 0⁰C temperature is the most optimum pollen storage temperature. This finding may be helpful for the farmers who prefer to produce hybrid seeds in commercially to obtain quality and quantity of hybrid seeds by avoiding above adverse factors.

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