

**EFFECT OF ULTRA DRYING AND DIFFERENT STORAGE
TEMPERATURE AND PACKING MATERIALS ON THE
GERMINATION AND VIGOUR OF CHILLI
(*Capsicum annuum* L SEEDS)**

I.K. WASALA¹, I.P.WICKRAMASINGHE² R.M.T.RAJAPAKSE³.
S.P.BANDARA³

1. Seed certification Service, Gannoruwa, Peradeniya
2. Faculty of Agriculture, University of Peradeniya
3. Plant Genetic Resources Centre, Gannoruwa, Peradeniya

ABSTRACT

Chilli (*Capsicum annuum*. L) which belongs to the family Solanaceae consists of five domestic species *C. Annum*, *C. Frutescens*, *C. Baccatum*, *C. Chinensis* and *C. Pubesence* and 25 wild species. Seed conservation is the easiest method of genetic conservation. However, orthodox seeds which are tolerate to drying at lower moisture levels without reducing their viability; only can be stored under low temperature for long term conservation. This study was carried out to investigate the storage behavior and effect of temperature and seed moisture content for long term storage of Chilli seeds. Seeds taken from the dry Chilli pods were dried gradually to reduce the seed moisture content about 9.0%, 7.7%, 6.0%, 5.5%, 4.0% and 3.2%. First stage, drying room was maintained at 16⁰C-20⁰C temperature and 25-30 % Relative Humidity (RH). Under these conditions, seed can be dried up to 7.7% moisture content. Then the second stage, seeds dried to below 7.7% moisture content at 10⁰C -15⁰C temperature and 5%-10% RH, respectively by using ultra dryer. Dried seeds were packed in polythene (300 gauge) and Aluminium foil bags and stored at Plant Genetic Resources Centre (PGRC), Gannoruwa, at different temperature levels such as room temperature (about 26 + 4⁰ C), 16⁰ C , 12⁰ C, 5⁰ C , 1⁰ C and -18⁰ C. Germination percentages and seed moisture content were recorded at two months intervals. Results revealed that Chilli seed is possible to be dried without losing viability even at 3.2%

seed moisture content. Over 85% of germination was observed in all temperature levels, including room temperature (about $26 \pm 4^\circ \text{C}$) condition with seed packed in Aluminium foil packing materials in above moisture levels after 480 days storage period. Over 85% germination was observed in seeds which were having 4.0% and 3.2% seed moisture under room temperature (about $26 \pm 4^\circ \text{C}$) condition in the polythene packing material after 480 days. Over 85% germination was maintained till 420 days period at 5.5%, 360 days period at 6.0%, 300 days at 7.7 % and 240 days at 9.0% seed moisture levels, respectively in polythene packing materials. Seed moisture and seed colour was not significantly changed (<0.05) in seeds packed in aluminum foil during storage period. Thus, low cost 300 gauge polythene can be used as a packing material for short term chilli seed storage without reducing their germination below 85% for 240 days period under above all moisture levels even under room temperature (about $26 \pm 4^\circ \text{C}$). Chilli seeds dried up to ultra low moisture content (5.51%, 4.04% and 3.2%) remain over 85% germination even at higher temperature (about $26 \pm 4^\circ \text{C}$) about 480 days under the Aluminium foil packing material which indicated that no cold storage is needed if chilli seeds are dried to lower moisture levels and packed in Aluminium foil packing material.

Key words: Chilli seed, ultra drying, Seed germination, seed moisture