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On behalf of: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany

CCL Cold Chain Logistics Resource Centre

CII Confederation of Indian Industry

Post-Harvest Management Protocols

POTATO

The northern and central states constitute much of India's potato production. **Total production for the year 2019-20 was 48662 ('000 MT)** and major potato producing states are Uttar Pradesh, Bihar, Gujarat, Madhya Pradesh, Punjab, Assam, and West Bengal. These states have consistently featured as the top potato producing states in the last three years. They contribute approximately 90.2% of the total potato produced from the country.

Within the top potato producing states, Gujarat and Punjab have shown growth rate of 0.24% and 5.76% respectively. The production volume has decreased substantially in Assam by -7.89%. While in West Bengal, Uttar Pradesh, and Bihar the increase in volume is 13.53%, 0.08% and 17.61% respectively.

The major potato varieties cultivated in India are

Kufri Sindhuri	Kufri Ashoka
Kufri Chandramukhi	Kufri Pukhraj
Kufri Jyoti	Kufri Chipsona-1
Kufri Lauvkar	Kufri Chipsona-2
Kufri Badshah	Kufri Anand
Kufri Bahar	Kufri Khyati
Kufri Lalima	Kufri Mohan
Kufri Jawahar	Kufri Girdhari
Kufri Sutlej	Kufri Himsona

MATURITY INDICES OF POTATO

Potato crops need to be dehaulmed [cutting of haulms / aerial parts by sickle or killing by chemicals (e.g. Gramoxone) or destroying by machines] when the crop attains 80-90 days and when the aerial part of the plant turns yellow. The crop should be harvested after 10-15 days of haulm cutting. Harvesting can be done by tractor drawn potato digger or manually with help of spade or khurpi.

GRADING

Post harvest, potato should be sorted to for separating the diseased and cut tubers. Sorting out diseased tubers should be carried out as quickly as possible, as the longer they are mixed with healthy tubers, the higher the chance of disease spread.

Thereafter, the crop should be cured in the field. For optimum suberisation, curing is essential for healing the wounds of tubers resulted from cutting and bruising during harvesting. During the curing period, tubers should be stored at about 10-15°C at high relative humidity (95%) for 10-14 days to allow wounds to heal before placing potatoes into colder storage. Lower RH results in poor suberization.

Grading plays an important role in marketing of potato. The potato should be packed in different bags as per recommended grades before marketing.

PACKING

The sound tubers are packed in hessian cloth bags or nettlon bags. The Ordinary hessian bags are used for packing potatoes with a capacity of 80 kgs, 50 kgs and 20kgs. The nettlon bags made of plastic net are used to pack 25 kgs potato and preferred for export purpose.

STORAGE

After curing, potatoes need to be cooled gradually and steadily to the holding temperature suited to the goals: 3-5°C for tablestock, and seed potatoes; 10-12°C for processing stock as well as for low sugar table stock.

When loading potatoes into bulk storage, even distribution of the produce is important for proper ventilation. Uneven loads will inhibit air movement and result in storage losses due to inadequate ventilation.

STORAGE PROTOCOLS

Recommended Temperature
(degree Celcius)

3-5 & 10-12

Recommended Relative
Humidity (%)

90-95

Shelf Life

5-8 Months

Product Loading Density (in Pound/cu.ft)	-
Initial Freezing Point (in degree Celsius)	**-0.7**
Specific Heat Above Freezing Point in (kJ/Kg.K)	**3.45**
Specific Heat Below Freezing Point (in kJ/Kg.K)	**1.81**
Latent Heat of Fusion (in kJ/Kg)	**260**
Thermal properties of Potato	
Initial Freezing Point (in degree celcius)	**-1.1**
Specific Heat Above Freezing Point in (kJ/Kg.K)	**3.65**
Specific Heat Below Freezing Point (in kJ/Kg.K)	**1.89**
Latent Heat of Fusion (in kJ/Kg)	**278**