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POTATO STORAGE MANAGEMENT FOR DISEASE CONTROL

1. TEMPERATURE

- **Wound Healing and Curing Period:**

Healthy Potatoes: (1) Cool, or warm, the pile to 13-15.5°C and maintain for 10-14 days along with a humidity of 92-97% RH; (2) Processing potatoes may need to be extended to 4-5 weeks to improve color. Color samples should be taken weekly during curing of processing potatoes; (3) Ventilate for 1-2 hours per day.

Problem Potatoes: Potatoes brought in very warm (greater than 20.0°C) or very cold (less than 7°C) should be cooled or warmed at a rate of 2-3°C per day until the curing temperature is reached.

Seed: Cool gradually at the rate of 1°C every 1-2 days to a holding temperature of 3-4°C.

Table Stock: Cool at a rate of 1°C every 3-4 days to a holding temperature of 4.5-5.5°C.

Processing Stock: (1) Cool slowly at approximately 1°C per week; (2) for short to intermediate holding of processing potatoes, the holding temperature should not be below 7.2°C; (3) Potatoes to be processed into French fries before Christmas can be held at 10°C; (4) Chip stock can be held at slightly higher temperatures, 10-12°C; (5) storage after Christmas, and up until the early part of May, both chip and French fry stock can be held at 8-10°C. If a loss of color is experienced, a 4-6 week reconditioning period at 13-15.5°C will help restore color; (6) summer processing (May-July) should not be stored at temperatures above 10°C. To maintain tubers in the best possible condition, it may be beneficial to cool to 4-5°C, hold at that temperature until early May and then allow the bins to warm gradually to 13.0-15.5°C, 4-6 weeks prior to shipping.

- **Grading and Handling Period:** Potatoes should be warmed to at least 7.2°C before handling.

2. VENTILATION

Air Movement: This includes both through-the-pile ventilation and over-the-pile ventilation (= recirculation). Through-the-pile ventilation is necessary to dry and cool the potatoes, supply fresh air, and remove carbon dioxide, volatiles and excess heat and moisture from the storage. Recirculation aids in maintaining uniform temperature conditions throughout the storage and sweeps moisture from the walls and ceiling.

Relative Humidity (RH): RH in storage should be high to aid in prevention of shrinkage losses and pressure bruising. In general, a RH of 92-97% for **dry, healthy potatoes** and 85-90% for **wet, leaky potatoes** is recommended. A humidifier is an absolute must for ventilated storages, especially those with automatic systems. Moving air is required for this to take place. Storages with inadequate insulation or poor air circulation may experience excess moisture buildup. This can lead to water dripping on the pile which must be avoided at all costs in order to minimize the danger of rot. Adding extra insulation and placing fans above or on top of the potato pile will improve air circulation and help eliminate condensation.

Storage Monitoring: A good storage management program should include: (1) check storage daily; (2) place a thermometer or temperature probe located 50-100 cm below top of surface of the pile to measure temperature in storage; (3) check relative humidity a humidity gauge or psychrometer; (4) detect soft rot early using infra-red thermometer. Areas of breakdown will show up as *hot spots* as often as 3 weeks before other symptoms are noticeable; (5) keep a detailed daily record of all storage conditions so that if problems arise there is some way of determining the cause.