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Potato Storage Management

Principles of Potato Storage Management

1. Run ventilating fans only to cool potatoes.
2. Run ventilating fans only when ventilating air is cooler than bottom tubers in pile.
3. Run ventilating fans only long enough to provide and maintain correct temperature throughout pile of tubers.
4. Run humidifier whenever ventilating fan runs.
5. Ventilating air should have at least 95% relative humidity.
6. Establish proper storage environment in storage structure before the first potato is put into storage.
7. Maintain proper storage environment until after last potato tuber has been removed from storage.
8. Air used to ventilate tubers should be no colder than the minimum allowable temperature for the tubers (so won't build up sugars in bottom layer of tubers).

Biological and Ventilation Principles of Potato Storage Management

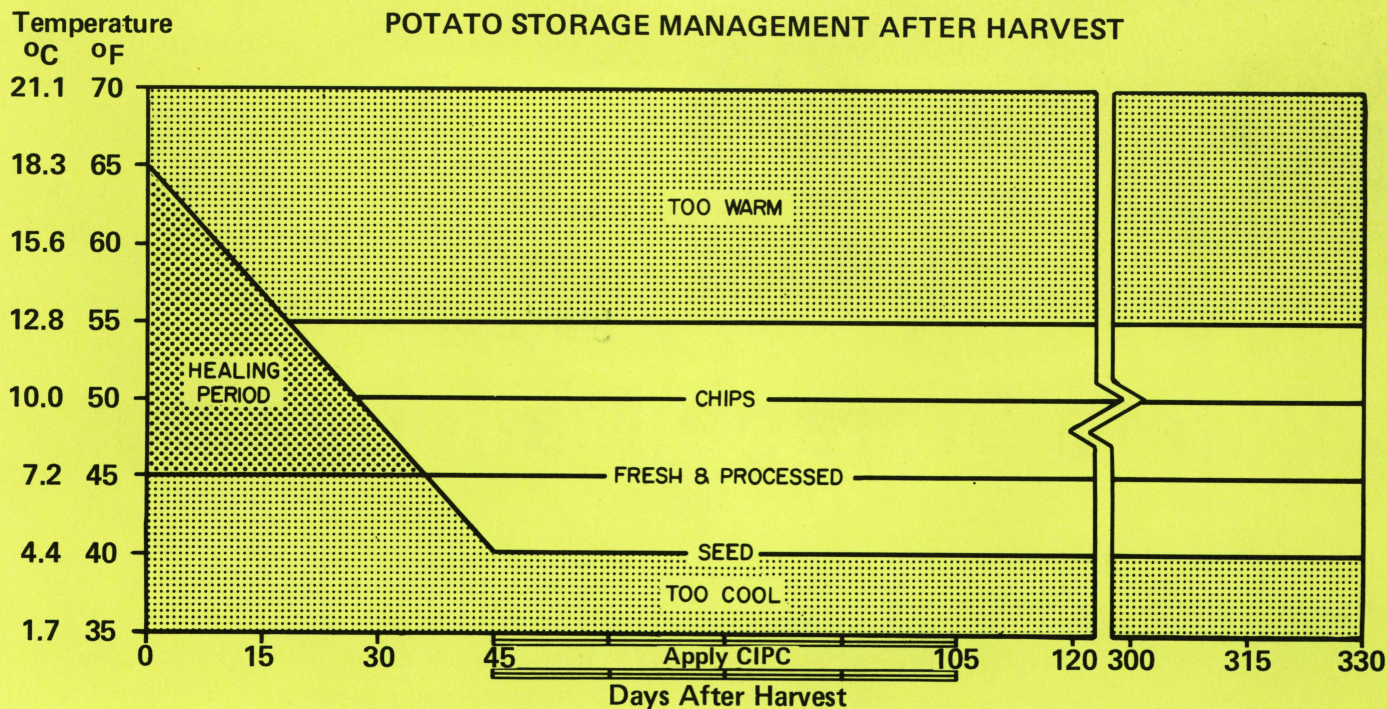
1. Potato tubers are living, respiring organisms — giving off carbon dioxide (CO_2), moisture (H_2O), and heat.
2. Ventilation with the proper amount and proper distribution of air can prevent build up of CO_2 , H_2O , and heat and at the same time maintain the proper environment for the living potato tubers.
3. Oxygen is necessary for the healing of wounds and the maintenance of normal respiration and dormancy.
4. Temperatures above 45F (7.2C) cause an increase in the respiration rate.
5. Temperatures below 45F (7.2C), depending upon variety, allow sugars to accumulate and cause an increase in the respiration rate.

6. Temperatures above 40F (4.4C), depending upon variety, allow sprouting to occur after a few months in storage.
7. Temperature at the top of the pile will be warmer than temperature of ventilating air, depending on the depth of the pile of tubers. Allow for 1 to 3F (1 to 2C) increase in temperature from the bottom to the top of the pile of tubers —
10 feet deep increase 1F (0.6C)
15 feet deep increase 2F (1.1C)
20 feet deep increase 3F (1.7C)
8. If tubers at the top of the pile are the same temperature as the cooling air, **too much air is being used.**
9. Air should be properly distributed through ducts not over 10 feet (3 meters) apart, and should flow up through the tubers.
10. Ventilation need only to be intermittent, need not be continuous.
11. Ventilating air should always be humidified (special cases of field frost, water rot, jelly end, etc.). High humidities (95% or higher) and oxygen are necessary for the rapid healing of bruises and injuries and are also necessary to prevent excessive weight loss.

Storage Management After Harvest

1. If tuber temperature at harvest is over 55F (12.8C), lower tuber temperature to 55F as soon as possible.
2. Maintain a temperature of 45F (7.2C) to 55F (12.8C) and a minimum of 95% relative humidity for 2 to 4 weeks after harvest (encourage rapid healing of bruises).
3. Run ventilation fans only to **COOL** potatoes (exceptions field frost, water rot, etc.). If potato tubers are **UNIFORMLY** cool enough — **DON'T RUN FANS.**
4. Ventilation should be used **only** to prevent excessive heat buildup in the pile. Temperature should not be more than 60F (15.6C).

POTATO STORAGE MANAGEMENT AFTER HARVEST



5. After healing, lower temperature about $\frac{1}{2}$ F (0.3C) per day to obtain the holding temperature – usually 48 to 50F (8.9 to 10C) for chips, 45F (7.2C) for fresh market and processing, and 40F (4.4C) for seed.
6. Maintain uniform temperature throughout storage period. Fluctuating temperatures are undesirable – can cause early sprouting and reduced quality.
7. CIPC should **not** be applied before healing is complete or after sprouting has started.

Proper Potato Storage Environment

A. What it should accomplish:

1. Stimulate healing of bruises, cuts, and other injuries.
2. Maintain appearance – external quality of the tubers.
3. Maintain internal quality of the tubers (food value, processability, etc.).
4. Keep rot development to a minimum.
5. Keep weight loss to a minimum.
6. Keep quality changes (internal and external) to a minimum.
7. Retard the growth of sprouts.
8. Maintain seed potatoes in a healthy, vigorous, and productive condition.

9. Provide the oxygen necessary for healing of wounds and the maintenance of normal respiration and dormancy.
10. Prevent greening.

B. What it consists of:

1. Proper temperature.
2. Proper humidity.

C. How it is provided and controlled:

1. Proper ventilation and management.
2. Correct and adequate distribution of airflow.
3. Adequate humidification system.

D. How it is evaluated:

1. Weight loss.
2. Rot loss.
3. Quality change.

E. When it should be established:

Before the first tuber is put into storage.

F. How long it should be maintained:

Throughout the entire storage period, until the last tuber is removed.

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