

Getting Ready to Store Root Crops: What You Need to Know

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To store or not to store, that is the question. Stored crops must start with minimal problems. Marketing can affect the length of storage as well as other issues. Storage can range from days to months. Root cellars, cool bots, and refrigerated rooms are different approaches to crop storage. Each has increasing cost inputs but result in increased storage length.

Refrigeration lowers the temperature of harvested crops and extends storage life. The amount of refrigeration required is a function of crop type and quantity, the difference in temperature from the harvested crop and the target temperature, cooling rate, among others.

For example, cooling potatoes from 70°F to 40°F in 15 days is a 30°F temperature difference with a cooling rate of 2°F per day. Using the specific heat of potato as 0.84 BTU/lb./hour. Cooling 20 hundredweight or 2,000 pounds of potatoes 2°F per day requires 3,360 BTU/day or 140 BTU/hour. Potatoes respire and give off heat which also must be taken into account. Using the heat of respiration as 0.42 BTU/lb./hour, 2,000 pounds of potatoes require 84 BTU/hour to cool the heat from respiration or a total of 224 BTU/hour to cool 2,000 lbs. of potatoes 2°F per day. Adding 20% for defrost cycles and a 10% overload brings the total to 296 BTU/hour. This does not take into account cooling efficiency or cooling loss.