How to manage safety risks, maintain cold chain

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From the time fresh produce is harvested until it is consumed, it loses nutritive value. This loss is often slowed by maintaining a cold chain, or keeping the produce held at a given temperature from the time of harvest to the time of consumption. Maintaining this cold chain is not only important from a produce quality perspective, but also from a food safety perspective.

After harvest, the speed with which field heat is removed is the first step in this process. From the standpoint of food safety, though, how field heat is removed can affect risk. Using water as the mechanism to remove field heat, such as hydrocooling, if done too quickly can cause water to be drawn into fleshy produce (like tomatoes and cantaloupes) and increase food safety risk. When cooling fleshy produce with water, it is recommended that the water temperature not be more than 10 degrees cooler than the base pulp temperature of the produce. This ensures that no water is drawn into plant tissues.

From the standpoint of risk in cross contamination of produce, using air to cool harvested product poses a lower risk. Forced air or vacuum cooling systems, though not suitable for all produce, can reduce risk of cross contamination.

Most foodborne illness bacteria do not grow as well in temperatures that are common under refrigeration. Keeping things cool helps make sure that any potential bacterial contaminants are kept in check. If refrigeration is not maintained or is not working properly, this check doesn't happen and can increase the risk of foodborne illness. For this reason, it is important to make sure that refrigeration is maintained.

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Routine monitoring and documentation of the temperature of refrigerated areas is the only way to make sure that the cold chain has been maintained. Try to develop a habit of checking the temperatures at certain points in the day, like at the beginning of work, lunchtime and at the end of the day, or after every shift. Keeping a log of the temperature is important in order to provide proof that the cold chain has been maintained, both to your buyer and to any auditing agency, if it is requested.

An auditing agency is looking for due diligence with regards to minimizing incidence of foodborne illness, visual evidence that it is taking place and documentation that it has been observed in the past. Assessing the risk is the first step. Implementing changes or developing monitoring protocols to reduce risk on your farm is the next step. Documenting temperatures in cold storage is the last.

If you have specific questions about on-farm produce storage or difficulty tailoring GAPs to your farm, email the Agrifood Safety Work Group at gaps@msu.edu, or call 517-788-4292. To obtain a copy of a temperature log, ask for Guidance Document AFSM039-02. VGN