Risks Presented in Pecans

Rancidity

Rancidity can be defined as an unpleasant taste and smell of foods containing fats or oils. This occurs when the oils present in the nuts oxidize (oxygen attack triglycerides) or hydrolyze (addition of water) releasing components as peroxides, hydrocarbons, aldehydes, ketones, and free fatty acids. These reactions are triggered by heat, light, metals, enzymes or oxygen.

The most commonly measured compounds to indicate Lipid oxidation and hydrolysis are peroxides and free fatty acids respectively. Peroxide value will give an indication of early oxidation as it will decline as the oxidation progresses.

The control of temperature, moisture and oxygen are then essential to prevent quality deterioration and rancidity. Ideal storage conditions for the nuts are 6-10°C and Relative Humidity of 65-70%. Higher temperature values can increase the oxidative reaction on lipids as well as the exposure to oxygen. High relative humidity will produce adsorption of moisture by the nuts, activating lipases enzymes.

Infestation

In the orchard there are several pests that can attack the trees. However, not all of them will reflect their damage on the nut husks. The following larvae of examples that do damage the nut meat: Pecan nut casebearer, Hickory shuckworm, Hickory nut curculio, and general kernel-feeding bugs. These insects can cause damage to the fruit as well as cause increased nut drop.

Good hygienic conditions in the orchard, and during collection, handling and storage are crucial in avoiding post-harvest contamination.

It has to be considered that infestation can not only occur while the nuts are in the orchards but also during transportation and storage if proper conditions are not maintained. It is important to have a good inspection procedure in place upon reception of the product. Good hygienic conditions and pest control programme at the warehouses also play an important role in keeping up the quality of the nut kernels.

Microbiological Contamination

Microbiological contamination is a potential risk with nuts. Some microorganisms can simply cause spoilage, however, others can cause pathogens. Pasteurization is now a practice used to control microbiological load. This is done while the nuts are

in-shell and the water temperature is held at a controlled temperature for at least seven minutes.

Physical Contaminants

Shells: once the shell has separated from the kernel using hard shell crackers, some pieces of shell can continue through the process. Although there is a risk of pieces of shell continuing along the process, aspirators, gravity separator, laser sorters and visual inspection will help to remove this from the finished product.

Others: Nuts coming in contact with the orchard floor are subject to physical contamination – foreign materials that can cause illness or injury, such as stones, glass and metal in food products. These can be removed at the processing site by laser sorters, x-ray machines, metal detector and visual inspection.

References:

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