



No modifications to the store are needed to use the Janny system [Janny MT].

promote positive airflow through the crop; choosing which one to adopt is dependent on a number of factors.

"If your throughput is not too high (say up to 20 pallets/hour) then a batch system can be used whereby pallets or boxes of crop can be stacked against an air plenum. This plenum can be designed to either blow air through the crop via the forklift slots of the boxes (often referred to as a letterbox system) using a positive displacement air delivery system, or alternatively to suck air from the chilled room via the pallets/trays of produce (suction system).

"The suction system is widely used in the leafy crop industry as it offers greater flexibility in terms of containers used for the crops. By adding "cold fog" to the chilled air using ultrasonic humidifiers, it is possible to rapidly cool the crop post-harvest without causing any measurable dehydration, thereby maximising the positive effects of the rapid removal of the field heat.

"If volumes exceed 20 pallets per hour, a cooling tunnel can offer attractive pay-backs in the

form of reduced handling. Cooling tunnels can use either just chilled air or chilled, wet air to rapidly cool crop post-harvest. A cooling tunnel would typically bridge the gap between crop intake/arrival at the site and the Packhouse. An efficient cooling tunnel can be loaded with a pallet of warm crop straight off the trailer/rig at 25°C on the outside of the Packhouse whilst allowing the same operator to unload a pallet of chilled crop at 5°C at the output end of the tunnel straight into the packhouse or holding chill."

For most storage, whether short, medium or long term, humidity, temperature and atmospheric control are the key to increasing shelf life. Janny MT, a Burgundy, France based storage technology company, specialises in controlled atmosphere storage units. They are best known for their low oxygen boxes and storage installations, which allow growers to utilise controlled atmosphere (CA) storage in regular non-CA facilities. Janny says its storage boxes can naturally extend the preservation time of a range of fruits and

vegetables, helping growers and packers to control their distribution and sales.

According to the company's Benoît Janny, examples of extended shelf life using their storage boxes include Swiss chard rising to up to 25 days storage life from 10 at 2 deg. C.; lettuce can be increased from 5 days up to 21 and baby leaf, such as lamb's lettuce and spinach from 4-5 days under normal cold storage conditions to up to 14-days using the Janny MT system.

"Our CA installation allows the product to reach the three parameters necessary for its optimum preservation, by reducing the respiration rate," explains Benoît. "These include temperature (from 0 to 2°C in a cold store); Hygrometry, humidity, oxygen and carbon dioxide levels. Because the boxes are gastight, we are able to reach 100% hygrometry which results in less than 1 per cent weight loss, while the gas selective membranes used on the lid allow you to stabilize the O2 and CO2 below 3 per cent. Consequently fruits and vegetables keep their freshness, colour and taste, while the equipment does not need any maintenance costs or chemical additives."

"Most leafy crops benefit from using humidified air in post-harvest cooling and storage, with or without controlled atmosphere," adds John. "Baby leaf, whole head lettuce and broccoli will all offer longer shelf life if kept at close to zero temperatures and close to 100% relative humidity levels. The exception is white cabbage which tends to like 90% RH levels and close to zero holding



Ziegler Ice machines offer a rental option for growers looking for seasonal ice production [Ziegler Ice Machines].

temperatures for long term storage."

Ice is also increasingly being used for cooling at key parts of the supply chain, and Stockport based Ziegler Ice Machines offer a range of machinery suitable for vegetable producers with capacities of 375kg to 10 tonnes of ice flake per day. The company has also responded to growers' requests for short-term access to ice machines by offering a number of machines for rental.

Ziegler managing director Patrick Gallagher points out; "Because the growing season is usually only 5 or 6 months of the year, outright purchase of an ice machine in many cases doesn't make sense. We recognised the need for a rental fleet and have now built up a pool of machines to service the market."

"More and more growers are recognising the benefits of building bespoke cooling and storage facilities for leafy crops and in turn are seeing their businesses flourish through the flexibility good storage offers between growing 'flushes' and variations in market demand and price," concludes John Dye.

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