Proposed Onion Processing Plant for CBI/Du Toit

Potion 26 of FARM 817 Malmesbury

The proposed onion processing facility is design to dehydrate 15 000 tons of fresh onions per annum. This translates to 3 000 kg of fresh onions per hour. Incoming onions have a moisture content of approximately 80 to 85%% and final dehydrated product will have a moisture content of 5%. The intent is to process 100% of the incoming onions. The factory will produce dehydrated onion in three formats – granulated, minced and powdered.

The raw materials consist of onions only. The onions will be delivered in wooded crates containing about 420kg of onions. The onions will be delivered by truck which are offloaded by forklifts.

The onions will be dumped from the bins into a receiving hopper where they will be elevated into a cleaning and washing process. The cleaning process will remove stones, sticks and other debris that was collected during harvesting. The washing process will remove other items that might cling to the onions.

After washing the onions are inspected from quality – poor quality onions are manually removed and collected in waste bins for disposal. After inspection the onions are conveyed to the top and tail section where the root and stem sections of the onions are removed. The tops and tails are collected for further processing later in the plant.

The rest of the onion is then conveyed to the peeler. Peels are also collected for further processing. The peeled onions pass through a slicer to reduce the overall particle size to facilitate the drying process.

The drying process consists of heated air being passed through a layer of sliced onions – the heat removing the moisture by evaporation. The dryer comprises three stages; each subsequent stage having a lower temperature to prevent damage to the onions as the moisture content decreases. Three metal conveyor belts slowly transport the onion layer through the length of the dryer The air is heated by passing steam though a heat exchanger on the air circulation loop. The air temperature, the belt speed, the layer thickness and other factors can be controlled to provide optimum drying to achieve the desired final moisture content.

Fresh air is continuously feed into the dryer and an equal amount of air is discharged through a filtration system to remove any dust particles.

After dehydration, the onion particles are conveyed to size reduction machines to produce three products. The size reduction machines use either a method of automated cutting or milling to achieve the required particle sizes. The particles are sieved to remove oversized or undersized particles. Both under- and oversized particles are reused. When a particular product is produced, the tops and tails and the skins which were previously collected are introduced to the dryer.

The final particles of correct dimension are packed into either 1 ton bulk bags or 25 kg bags. Final products are stored in the finished goods store. Due to the loss of water, final plant output is approximately 500 kg per hour.

Waste water is directed to a water treatment plant where any solids are removed, pH is corrected and any other contaminants are removed.

The plant is designed to operate on three shifts over 24 hours per day.

The factory will be designed to meet food production GMP standards and all building finishes and materials of construction are selected to be compliant with good food production standards.