ONION DEHYDRATION

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GENERAL DESCRIPTION

All onions for processing are grown from specific varieties best suited for dehydration. Specific strains of the Creole Onion, Southport Globe Onion, and the Hybrid Southport Globe were developed by the dehydration industry. They are white in color and process a higher solid content which yields a more flavorful and pungent onion.

Onion dehydration involves the use of a continuous operation, belt conveyor using fairly low-temperature hot air from 38 - 104°C. The heat originally was generated from steam coils, but now natural gas is more popular. Typical processing plants will handle 4500 kg of raw product per hour (single line), reducing the moisture from around 83 percent to 4 percent (680 - 820 kg finished product). These plants produce 2.25 million kg of dry product per year using from 35 - 46 MJ/dry kg produced (+14 MJ/kg of electrical energy), or 9.3 MJ/kg of water evaporated.

An example of one type of processing equipment, the Proctor dehydrator, is a single-line unit 64.5 x 3.8 m wide, requiring 2450 m^3 of air per minute and up to 42 million kJ per hour. Due to the moisture removal, the air can, in some cases, only be used once, and thus, is exhausted. Special silica gel–Bryair, desiccations units are required in the final stage. Approximately $200,000 in fuel are, thus, used in a single-line dryer in a year's operation (180 days).

PROCESSING STEPS

Onion dehydration using a continuous conveyor dryer involves the following basic steps: a) harvesting, b) transporting to the plant, c) curing, d) washing, e) slicing, f) dehydration in three to four stages, g) milling, and h) packaging. Each of these steps is discussed in detail for a Proctor (Proctor and Schwartz, Inc. of Horsham, PA) dehydrator. A diagram of a typical dryer is shown in Fig. 1.

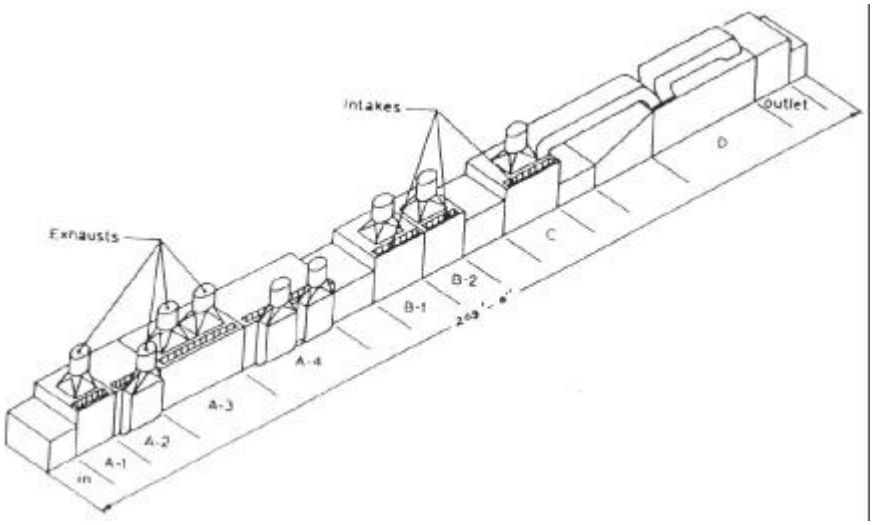

Figure 1. Single-line onion dehydrator.