

Sulfur House Operation

simple procedure requires good materials and exacting care

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Successful sulfuring of sun-dried or dehydrated fruits—a simple operation—depends in large measure upon careful following of recommended procedure using good quality, high-grade sulfur.

Poor results often may be attributed to impure sulfur, a burner foul with slag, a leaky house, poor circulation within the house, or even paper when used to light the burner.

It is cheaper in the long run to use quality sulfur rather than a poorer grade. Good sulfur—burned in a properly constructed house—will consume from 95% to 100% of its weight in burning.

A complete burn will leave little residue in the pan, while poorer sulfur will leave a high percentage of dark residual slag. The presence of clean, yellow slag left in the burner indicates an insufficient fresh air supply in the house to keep the sulfur burning.

When recommended sulfuring-times are followed, the sulfur should be completely burned when the house is opened.

Most recommended sulfuring-times call for the fruit to remain in the house well after the burn is complete in order that all remaining sulfur dioxide may be absorbed.

Seven pounds of sulfur will burn out in three hours under normal conditions in a 10- to 12-inch diameter pan burner.

Presence of impurities—small amounts of straw, matches, paper, oil, sacking material—prevent proper burning of the sulfur. The impure material burns first, to leave an ash residue which smothers the burning sulfur and produces a black slag.

Pure sulfur should be bought and stored carefully, kept dry, clean and away from oil, which contaminates it readily. Even kerosene fumes will enter stored sulfur and help destroy its efficiency by decreasing the amount which will burn.

Types of Burners

Clean containers, such as tin pans 10 to 12 inches in diameter and three to five inches deep, or metal water buckets 10 to 12 inches deep make the best sulfur burners.

Buckets are most satisfactory for fruits such as pears which require long periods of sulfuring. Black iron buckets are more durable than regular buckets. All buckets should be carefully examined for leaks

because molten sulfur can be lost through small holes.

Earthen pits should never be used because much of the sulfur will not burn. Shallow concrete hearths are satisfactory if their construction makes them easy to clean.

It is imperative to keep all burners clean. When new containers are purchased they should be washed carefully with soap and water to remove any oily coating.

All burners should be cleaned several times during the season to get rid of adhering powder, black material and slag.

Lighting the Sulfur

Sulfur in the burner should be lighted by touching it in a few spots with a lighted match which is then discarded.

Such materials as straw, burlap, or excelsior should not be used to light the sulfur for they will form a carbonaceous layer on the melted sulfur and smother the flame.

The doors of the sulfur house should be closed tightly after the sulfur begins to burn.

Fast burning, which may occur when burners have unusually large surfaces, may deposit particles of unburned sulfur on the fruit. The air intake and outlet may be adjusted to avoid drafts within the house on windy days.

Installation of forced-draft sulfuring is expensive and if not properly conducted will not justify the additional cost. Forced

draft may carry unburned sulfur particles to the fruit, or may force the gas out of the sulfur house before it can be absorbed by the fruit.

A low sulfur dioxide content in the finished product—either sun-dried or dehydrated—may be due to faulty sulfuring methods, poor drying conditions or a combination of both factors. Sulfur dioxide absorption depends on the variety of the fruit, its maturity or sugar content, the length of time in the sulfur house, the quality and amount of sulfur burned, the temperature within the house and the house construction.

Fruit can be oversulfured. There is no simple way to tell when fruit is properly sulfured. But, if directions are followed carefully and in all respects, sulfuring will be adequate.

If the dried product is unsatisfactory, both sulfuring and dehydrating methods should be checked. Operators who deal with packers often can have sulfur analyses run—1,500 to 2,500 parts per million is the proper range.

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A detailed report on this subject is in the recently published Agricultural Experiment Station Circular 382 "Sulfur House Operation" which is available without cost at the local office of the Farm Advisor or by addressing the Publications Office, College of Agriculture, Berkeley 4, California.

Slag left after incomplete burning: A, light-colored slag shows that the fire was smothered by lack of fresh air; B, dark-surface slag shows that the fire was smothered by carbon or other impurities which floated to the surface of the burning sulfur.

