pressure drop for a given airflow rate, the more resistance the grain offers to airflow. Notice that the pressure drop per foot of depth of grain for corn at 10 cfm/sf is 0.07 inches water column; for the same airflow rate (10 cfm/sf) the pressure drop per foot depth for grain sorghum is 0.18 inches water column. This is approximately 2½ times the amount indicated for corn.

The resistance to airflow through grain sorghum is about 2½ times greater than that for corn, which means more static pressure is needed (from the fan) to dry sorghum than to dry corn. In practice, you can use the same fan; however, sorghum will dry more slowly than corn.

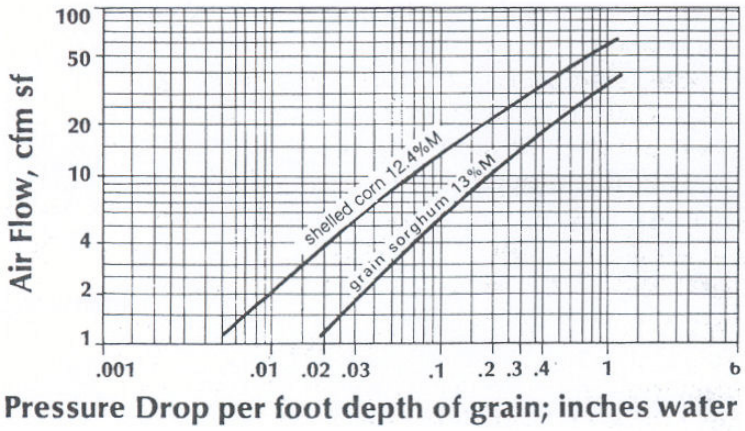

Figure 1. Air flow in cfm/square feet (cfm/sf) versus pressure drop (inches of water) for shelled corn and grain sorghum.

If you have in-bin corn drying equipment, you must decrease the grain depths to handle grain sorghum. Unfortunately, in-bin corn drying equipment is not adequately designed to handle corn on many Southeastern farms. Ideally, any method used for drying shelled corn should also work for sorghum; however, if equipment can't handle corn, it can't handle grain sorghum either. Check airflow capacities and fan sizes before you commit to drying your crop. Remember, the drying time for sorghum and corn should be the same if the capacity or volume of grain is reduced 25 to 40 percent.

Limit the drying temperature to 110°F if grain sorghum is to be used for seed. If used for feed grain, you can dry sorghum at 140°F or less for batch-in-bin systems using air flows of 10 to 25 cubic feet of air per minute per bushel (cfm/bu). Batch or continuous flow dryers using air flows of 100 to 200 cfm/bu can successfully dry sorghum at temperatures up to 200°F. Avoid drying sorghum in deep layers since the top layers may mold. Sorghum that is to be held in storage for 12 months should be dried below 12 percent moisture.

Storing

Sorghum placed into dry storage should be cleaned and spread mechanically to distribute the dust and fines as well as any remaining trash. Aeration in storage is essential for safe storage, and the aeration rate should be a minimum of 1/10 cfm/bu. Airflow through sorghum will be less than through corn or soybeans because of greater airflow resistance. Airflow for aeration is not as critical as airflow for drying. Since air does not flow as well through sorghum, check the grain more often when you aerate.

Grain stored in metal tanks can spoil in storage even if the grain was originally dried to the recommended level. Spoilage may be caused by moisture migration, fine material, and insects and molds, all of which are directly affected by moisture.

Grain harvested in the summer or fall and placed in storage produces air currents within the tank that produce moisture condensation. This process can occur within a completely enclosed and sealed tank and is caused by temperature differences within the grain. As the outside air temperature decreases, the bin walls cool and, as a result, cool the grain layer near the walls and roof. Air next to the walls cools, becomes dense and settles. As this occurs, the central bin air becomes light and rises. As this warm moist air continues to rise, it comes in contact with the cold roof and condenses. This condition (called "moisture migration") creates a wet zone in the top of the tank (Figure 2). Mold and insects thrive in these warm, moist areas.

Moisture migration can be prevented in grain tanks by forcing low volumes of air (1/10 to 1/4 cubic foot of air per minute per bushel of contents) through the tank contents. This process, called aeration, produces uniform temperatures throughout the mass.

Install aeration fans to draw the cold air down through the grain, reversing the natural trend of the warm air to rise. Drawing the cold air down discharges the warm, moist air to the outside and prevents condensation on the top surface of the grain.

Begin fan operation as soon as grain is placed in storage and operate it whenever the relative humidity is below 60 percent and the warmest grain is 10°F warmer than the outside air. Do not operate fans when fog, rain and high humidity exist. In late fall and winter, use the fans during daylight hours when the humidity is near or below 60 percent. A grain temperature of 50°F is generally satisfactory. Grain stored for more than one year should be cooled below 50°F if possible to provide better insect and mold control.

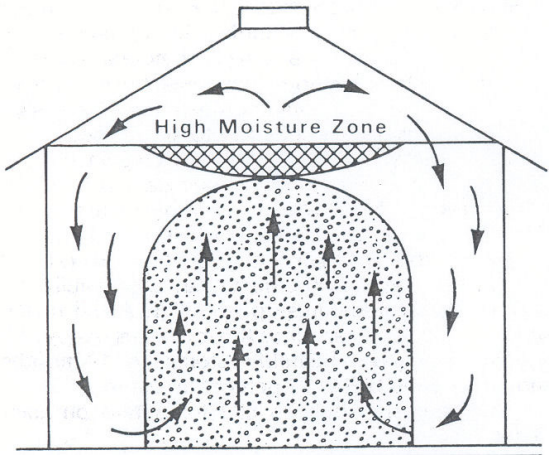

Figure 2. Convection air currents caused by differences in temperature produce moisture condensation in the top layers of grain.

You can use high-volume drying fans operating two to three hours several times a week when the relative humidity is near or below 60 percent to aerate grain. Air forced upward through grain in high volumes usually does not cause moisture to accumulate in the top layers. Do not use heat when aerating -- the objective is to cool the grain.

Regular inspection of grain tank contents is a must for successful management. Inspect the grain for moisture, insects and spoilage at least every 30 days.

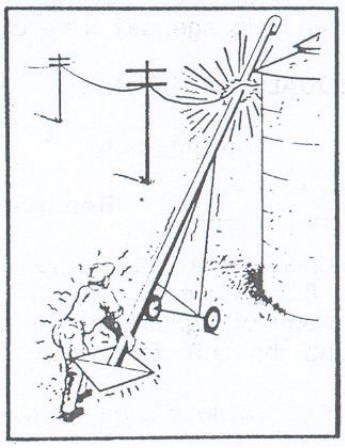

Figure 3. Keep grain augers away from power lines.

Electrocution from Grain Augers

Many Georgia farmers use grain augers that are 40 to 60 feet long to place grain in metal bins from the top. Many accidents occur when these long augers are being moved from one bin to another without lowering the upper end. Generally, two people hold the auger while moving it. If the upper end touches an overhead power line, both people can be electrocuted. To avoid possible electrocution, consider installing underground electrical service or work with your local utility to move electrical wires that are dangerously close to metal grain bins.

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