Fumigating to protect against insects is a vital step in preserving plant specimens. PDB crystals strewn loosely over folders evaporate quickly and are usually spilled when specimens are removed for study. These problems are prevented by placing crystals in cloth bags, but bags are inconvenient to fill and their contents cannot be easily checked.

To make the fumidor, mark a 4½- by 5-inch piece of screen with wax pencil or felt marker, following the pattern (figure 2). Then bend the sides and ends. (A straight-edge helps to make neat bends.) Next fasten the corners by forcing the ends of the side wall wires through the end walls and bending them toward the corners. Bend the tabs on the end walls around the corners to prevent leaks. Bend down the tabs on the side walls 90° and attach bar magnets with plastic cement. The type used for mounting plant specimens is ideal.

This fumidor can be used in a wooden case if small pieces of sheet metal to hold the magnets are tacked where desired.

**Figure 2.** Pattern for aluminum screen. Cut on solid lines, fold on dash lines.

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**MANAGEMENT NOTES**

**BENEFITS FROM GOOD MANAGEMENT ON SOUTHERN FOREST RANGES**

V. L. Duvall

Southern Forest Experiment Station, Forest Service, U.S. Department of Agriculture, Alexandria, Louisiana

The cover photo on this issue depicts a new look in beef production on southern forest ranges. The author's entry, adjudged grand champion of the contest at the Seventeenth Annual Meeting of the Range Society, shows native Brahman-type cows and their Shorthorn-cross offspring on the Palustris Experimental Forest in central Louisiana. In appearance the cows are about par for the area. In earnings, however, they rank almost 300 percent above the average.

The story behind the picture began when range researchers at the Southern Forest Experiment Station started testing management programs aimed at boosting beef yields. Calf crops on forest range were pitifully low, averaging less than 50 percent. Moreover, 7-month weaning weights were below 300 pounds, and mortality was high among both cows and calves.

Several deterrents to efficient production were evident. Foremost among these were nutritional deficiencies. Grass, though usually plentiful, was always low in phosphorus, and protein content was generally insufficient from July to mid-April. Grazing intensity was seldom controlled and unregulated yearlong breeding was common. Also, the toll of diseases and parasites was heavy.

Supplemental feeding during winter was a prominent feature of experimental management programs devised to resolve these problems. Grazing was controlled at moderate intensity, and range units were rotationally burned to improve forage quality. Breeding was regulated so that calves would be born during fall and winter. Cattle were immunized against common diseases, and regular spraying controlled external parasites. Salt and steamed bonemeal, provided free-choice, corrected mineral imbalances.

At first the test programs failed, because supplementation was inadequate. Rations that were theoretically ample did not improve calving percentages or weaning weights. For example, cows receiving 3.3 pounds of cottonseed cake (41 percent crude protein) per head daily from December 15 to March 15 produced 53-percent calf crops, and 6-month weaning weights were 253 pounds.

Although expenditures for feed had returned nothing so far, researchers decided to increase the ration. Of several programs tested, the most profitable fed 375 pounds of cottonseed cake during the period from November 1 to May 5. Because cows in previous studies apparently consumed insufficient forage in late winter when quality was lowest, 4 bales of hay per cow were added.

These changes brought spectacular results. During the first year, the calf crop soared to 73 percent and...
weaning weight to 467 pounds. For a five-year test period, calving percentage averaged 83 percent and 192-day weaning weights were 433 pounds.

Despite its relatively high cost, the program was financially successful. Expenditures for supplements, insecticides, veterinary supplies and services, and National Forest grazing fees averaged about $18 per adult animal annually, or $22.46 per calf marketed. Calves sold for an average of $90.10 each. Thus, return above costs was $67.64 per calf. In commercial operations, this should leave a substantial profit after deducting labor, interest, and other costs. Other winter management programs produced comparable calf crops and weaning weights, but none were equally profitable.¹

The cow and calf featured in the photograph are good examples of how forest range cattle respond to sound management of herds and forage. Though not the best among test cows, this 12-year-old grade Brahman is one of the real money-makers. During 9 years she weaned 7 calves—one died at birth and in May, 1964, she has another at side—averaging 474 pounds at 197 days and grossing $719. Her 1962 steer calf (left foreground), pictured here in June, is typical in quality. He weighed 510 pounds when marketed in August, graded middle Good, and sold for $122.91.

For information of photography buffs, the camera that took the winning photo was a 2 ⅞ x 2 ¼ twin-lens reflex, with a f:2.8 lens. No filter was used.

¹For detailed results of the supplementation trial, see Louisiana Agricultural Experiment Station Bulletin 564, "Supplemental feeding increases beef production on blue-stem-longleaf pine ranges," by V. L. Duvall and L. B. Whitaker; April, 1963.

MULTIPLE USE AT WORK

WAYNE GONDER
President, White Pine County Farm Bureau, Garrison, Utah

Cattle, water, and mountains are tied together to make a well rounded livestock operation near Garrison, Utah, and Baker, Nevada. We live in a dynamic part of the country in eastern Nevada and western Utah where our natural resources sustain many activities with the livestock industry as one of these uses. We enjoy living in an area that has such good hunting, fishing, and numerous recreational facilities within the Wheeler Peak Scenic Area of the Humboldt National Forest. Working together as practical men, we see no serious conflicts between these many uses and we are confident that the livestock industry will remain one of the essential businesses in this part of our country.

It takes hard work, good judgment, modern equipment, well-bred cattle and cooperation with your neighbors, county, state and federal officials, to wrestle an adequate living out of the Nevada and Utah desert lands. Snake, Lehman, and Baker Creeks are our main supply of water which is the life-blood of our livestock operations. But water also ties into many of the other uses of the National Forest and Public Domain such as recreation, fishing, hunting, and scenic enjoyment. We were losing water from these creeks through percolation into underground crevices and channels that was needed for our farming and livestock operations. Relations were strained, but Forest Service and Bureau of Land Management Officials, working in cooperation with the livestock men, Soil Conservation Service, and the Nevada State Fish and Game Department, came up with logical solutions to these thorny problems. Forest Supervisor W. L. Hansen granted a permit to pipe three miles of Snake Creek and District Manager Curtis McVee granted a permit to construct 1 ½ miles of concrete pipe ditch for Lehman and Baker Creeks over that portion of these streams where the greatest loss was occurring.

By installing on Snake Creek two water developments for the livestock and game along the three mile stretch of pipeline and allowing one spring to continue to flow in order to water the vegetation, we were able to increase our flow of water at the ranches and increase the fishing potential on Snake Creek with a minimum of conflict with other uses.

The small but important livestock industry of the Garrison and Baker area has been keyed to the production of about 2,000 fat steers and heifers that are shipped to the slaughter houses each year and about 2,800 calves that will be fed out in subsequent years. An integral part of the over-all operations are the 1,023 cattle premitted on the mountain by the Humboldt National Forest for the summer and the 1,740 cattle permitted on the desert range by the Ely Office of the Bureau of Land Management.

The entire layout is multiple use in operation.