OBJECTIVE: Describe chop length, dry matter (DM) and density of corn and wheat silage structures in California Dairies to identify opportunities to improve silage management.

MATERIALS AND METHODS

A total of 25 corn silage structures (22 piles, 2 drive over piles, 1 bunker) and 16 wheat silage structures (15 piles, 1 bunker) were evaluated. Height of corn silage structures ranged from 14 to 30 ft (4 to 9 m) and wheat silage structures ranged from 10 to 30 ft (3 to 9 m).

Density samples were collected from three different locations (right, center, and left) at 6 ft (2 m) from the bottom (B) of the silage structure, and at in between B samples at 6 ft from the top (T) of the silage structure. Density was expressed as DM and AF. Bottom and top densities were compared with paired t-test. The sampling location (B or T) should be taken into consideration when interpreting density results.

Dry matter from the density core samples was determined using a microwave oven. Chop length of forage was visually determined using a measuring tape.

RESULTS: Density

The density of corn silage structures was higher at the bottom than at the top (47.6 vs. 36.6 lb AF/ft³, P < 0.001). A total of 88.0% of the corn silage structures had at least one density sample below 44 lb AF/ft³, and 60.0% below 35 lb AF/ft³. There were numerical differences, but not significant (P = 0.44) in the proportion of wheat silage structures meeting the desired density benchmark when expressed as DM (68.0%; 15 lb DM/ft³) than AF (44.0%; 44 lb AF/ft³).

The density of wheat silage structures was higher at the bottom than at the top (40.0 vs. 29.1 lb AF/ft³, P < 0.001). A total of 97.5% of the wheat silage structures met the desired density benchmark when expressed as AF (41.5%; 40 lb AF/ft³) or as DM (31.2%; 14 lb DM/ft³).

SUMMARY

The units used to express silage density (DM or AF) and the sampling location (B or T) should be taken into consideration when interpreting density results. There is an opportunity to improve packing density. Only 44.0% of the corn and 31.2% of the wheat silage structures met the desired benchmarks recommended by the San Joaquin Valley Air Pollution District.