

Manure Calculations Instructions

(Ag Nutrient Management Grant Program)

This Guide is intended for small animal farmers with 1 to 15 animal units. One animal unit is equivalent to 1 – 1000 pound animal. (Four 250 pound goats equals one animal unit). This guide is also intended for use on farms where the manure has considerable bedding and is fairly dry and stackable.

1. Column (1) and (2) - Use the form with animal type and weight closest to average weight of your animals. If the actual average weight is greatly different, contact your local NRCS office for more information.
2. Column (3) – Enter number of each type of animal next to appropriate weight class in Column (2).
3. Column (6) – Enter the number of days each animal type is confined between storage clean-out periods (typically 180 to 365 days). If animals are allowed outside part of the day, then multiply the confinement days by the decimal percent of time the animal is confined. (Example – Horse is outside in paddock 6 hours per day and storage is cleaned out every 6 months. Then confinement period = $180 \text{ days} \times (18/24) = 135 \text{ days}$).
4. Column (7) – Enter the product of column (3) x column (4) x column (6) to get the total quantity of manure produced in pounds between clean-out periods.
5. Column (8) – Enter the product of column (3) x column (5) x column (6) to get total volume of manure produced in cubic feet (Cu. Ft.) between each clean-out period.
6. Column (9) – Enter type of bedding used.
7. Column (10) – Enter the estimated quantity of bedding used per day per animal. Either weigh what you are using each day, take the amount used each week (pounds) and divide by 7 and then divide by the number of animals, or take the monthly amount used (pounds) and divide by 30 and then divide by the number of animals.
8. Column (11) – Enter the density value from Table at bottom of sheet.
9. Column (12) – Enter the product of column (3) x column (6) x column (10) all divided by column (11) to get the total volume of bedding used in cubic feet
10. Column (13) – Enter the sum of column (12) plus (+) column (8) in cubic feet.
11. Add up all the numbers in column (13) and put the total in the box at the bottom of the form. This is the total volume of manure and bedding that must be stored between clean-outs.

12. To compute the size of the storage facility, divide the computed Total Volume by the depth of the structure (4 feet maximum) => Total Volume _____ / 4 = _____ Square Feet. This is the bottom area needed for the facility. Divide this value by 8, 12, or 16 feet to get the length in feet => Bottom Area _____ divided by 8, 12, or 16 = _____ feet of length.
13. Now you can design the Storage Facility using the Standard Design Drawing with design tables for a “Post and Plank” type of structure with compacted mix of soil and rock dust or cement in the bottom. Concrete can be placed in the bottom if the manure is more semi-solid with less bedding. The “Post and Plank” design is the preferred design, however, concrete “Waste Blocks” can be substituted for the “Post and Plank” design if desired and you have the equipment capable to handle them. *A 2' x 2' x 6' block weighs 3600 pounds – almost 2 tons and requires a large tractor and loader to move them.* The blocks can only be stacked two rows high and the bottom row must have soil backfilled against it to the middle of the block. Also alternate the placement of the second row so it covers half of two separate bottom blocks to help stabilize them.
14. If a Roof is planned to cover the storage facility, then follow the Standard Design Drawing (2 sheets) for standard 12' long by variable widths with 12' being the maximum width before a center support post is needed. Standard Design is for a 12'x12' structure. Any wider structures will require center post(s) not to exceed a 12' span distance. Discuss with NRCS if a different design than the standard is needed.