Dry Material Equipment
(For Pelleted or Granular Formulations)

A. Determine Dry Material Spreader Swath Width:
- Prior to using a dry material spreader, one should determine the equipment’s application pattern over its effective swath width.
- Operate the spreader and measure the effective swath width of the dry material as it is applied.

B. Determine Spreader Output in Pounds per Minute:
- Use one of the following methods to measure the output of a dry material spreader in pounds per minute:
  - Catch the spreader output for a known amount of time and weigh the dry material caught.
  - Place a known weight of dry material in the spreader hopper; operate the spreader and measure the time required to empty the hopper.
  - Fill the dry material hopper; operate the spreader while timing, and then weigh the dry material required to fill the hopper to the original fill level.

C. Determine Spreader Output in Pounds per Acre:

\[
\text{LBS. PER ACRE} = \frac{\text{LBS. PER MIN.}}{\text{ACRES PER MIN.}}
\]

D. Calculate Acres Treated per Hopper:

\[
\text{ACRES PER HOPPER} = \frac{\text{HOPPER CAPACITY, LBS.}}{\text{LBS. PER ACRE}}
\]

“Broadcast” Application Calibration for Handguns

A. Determine Handgun Swath Width:
- Treat under operational conditions.
- Measure effective swath of spray pattern.

B. Determine Handgun Spray Mixture Output in Gallons per Minute:
- Make a timed catch of handgun spray mixture output.
- Calculate Gallons Per Minute.

(Note: All other handgun procedures and calibration calculations are the same as for the boom sprayer)
**Introduction:** Herbicide equipment calibration is a critical part of any herbicide application process. The following is a step-by-step procedure that one can use to calibrate any aquatic or terrestrial herbicide application equipment. Certain application equipment such as aerial may require slightly modified procedures.

**Boom Sprayers**

**A. Determine Application Equipment Speed:**
- Lay out a straight course of reasonable length. For ground application equipment, use a minimum length of approximately 200 feet.
- Operate equipment over the course under operational conditions. Make at least two runs. If wind is a factor in the groundspeed, run both upwind and downwind.
- Use a reliable stopwatch. Stopwatch should be calibrated in minutes, 0.1s and 0.01s of a minute if possible.
- Time the equipment over the course in at least two runs and average the values.
- The application equipment speed is calculated by the relationship below:

\[
\text{SPEED, FEET PER MIN.} = \frac{\text{LENGTH OF COURSE, FT.}}{\text{TIME OVER COURSE, MIN.}}
\]

**B. Determine Boom Swath Width:**
- If using a boom sprayer, one may determine the swath width of the boom as shown below:

\[
\text{SWATH, FT.} = (# \text{ OF NOZZLES}) \times (\text{NOZZLE SPACING, FT.})
\]

**C. Determine Acres per Minute:**
- To calculate the acres per minute treated by your application, one may use the relationship below:

\[
\text{ACRES PER MINUTE} = \frac{\text{SWATH, FT.} \times \text{SPEED, FT. PER MIN.}}{43,560 \text{ FT}^2 \text{ PER ACRE}}
\]

**D. Determine Sprayer Output in Gallons per Minute:**
- For a boom sprayer or a handgun application, perform a catch of the spray mixture from each nozzle to find sprayer output.

**E. Nozzle Uniformity Check:**
- For a boom sprayer, always perform a nozzle uniformity check:
  - Catch output separately from each nozzle for a known amount of time.
  - Compare each nozzle’s output to the average output of all nozzles on the boom.
  - Each nozzle’s output value should be within the desired tolerance (usually 10%).
  - Check and clean or replace any nozzles not within the desired tolerance.
  - Calculate the total boom output in gallons per minute.

**F. Calculate Gallons per Acre of Spray Mixture Applied:**
- One may calculate the gallons per acre of spray mixture a piece of equipment will apply using the following relationship:

\[
\text{GAL. PER ACRE} = \frac{\text{GAL. PER MIN.}}{\text{ACRES PER MIN.}}
\]

**G. Calculate Acres Treated per Tank:**
- To determine the number of acres one tank load of spray mixture will treat, one may use the following relationship:

\[
\text{ACRES PER TANK} = \frac{\text{TANK VOLUME, GAL.}}{\text{GAL. PER ACRE}}
\]

**H. Calculate Amount of Product (Formulation) Required per Tank of Spray Mixture:**

\[
\text{HERBICIDE PRODUCT} = (\text{ACRES PER TANK}) \times (\text{RATE, GAL. PER ACRE}) \text{ PER TANK}
\]