SOIL FUMIGATION EQUIPMENT

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Growers facing a high potential for nematode damage in tobacco should consider using fumigants. There are two application methods for soil fumigants: (1) broadcast application, where chisel shanks are spaced every 12 inches and the point of injection 12 to 30 inches below the soil surface. (2) row application (the most commonly used method) where the placement of the fumigant is the same depth as for broadcast application but only one or two outlets are used per row.

EQUIPMENT

Application systems can be either PTO or electric pumps. A PTO or electric pump draws fumigant from the tank and pumps it into the distribution manifold. Excess fumigant is diverted back to the tank through a by-pass valve. Flow rate is regulated by metering discs located at each shank outlet and by the line pressure, (Do not exceed 25 psi) which is regulated by the bypass valve adjustment. When the flow to the shanks is stopped, all of the chemical is bypassed to the tank. A check ball screen should be placed between the hose and the metal tube to the injection shank. This will minimize end row drips and prevent clogging of the orifice plate.

COMPATIBLE MATERIALS

Some materials may have a violent reaction when coming in contact with a particular soil fumigant. Listed are some materials compatible and not compatible with fumigants.

COMPATIBLE: HD polyethylene**,** nylon, Teflon**,** Viton**,** stainless steel, mild steel, brass, copper, black iron and cross-linked polyethylene.

NOT COMPATIBLE: polypropylene, rubber, plastic, aluminum**,** magnesium**,** zinc, cadmium, galvanized steel, fiberglass, EPDM, Nuna-N, neoprene and PVC.

SUPPLIERS OF EQUIPMENT

Pearman Engineering Company
Chula, Ga. 31733
912-382-9947

Harrell Equipment Co.
Pelham, Ga. 31779
1-800-673-6369

Reddick Equipment Co., Inc.
Williamston, NC 27892
919-792-1191

Van's Equipment Co.,Inc.
Moultrie, Ga. 31768
912-985-1101

CALIBRATION

Applicators should always be calibrated. Use the Georgia Extension Service Circular 683 titled, Calibration Method for Hydraulic Boom and Band Sprayers and Other Liquid Applicators, to calibrate these units.

Always calibrate with clean water because fumigants are very corrosive. Fumigant applicators can be calibrated using the procedure for a conventional sprayer (previous section). Make certain to covert fumigant rates to water rates prior to the calibration. The conversion factor for Telone II is 1.1. Telone C-17 has a conversion factor of 1.13. Water rate = Fumigant rate multiplied by conversion factor.

If application rates are given in rate per 100 feet of row, simply mark off 100 feet and measure the time to travel with equipment in operation that distance. Next, with equipment in a stationary position collect in ounces flow from the outlet(s) for each row for the time to travel the 100 feet. Adjust the desired rate per 100 feet

of row by multiplying by the conversion factor. If the amount collected is different from the desired rate, either change orifice plate or pressure setting.

When selecting shank or row spacing, care should be taken not to apply more fumigant than the recommended broadcast rate. Table 1 lists calculated broadcast rate based on row spacing with flow rate per 100 ft of row held constant.

Orifice disc selection for PTO and ground driven models can be determined from regular spray nozzle manuals such as Spraying Systems or Delevan. The pressure ratings are listed for 5 psi or higher.

Telone II is a fumigant that requires the use of PPE when loading and applying this product. Therefore it is recommended when calibrating Telone II application equipment water should be used. Water is less dense than Telone II. To correct for Telone II when using water to calibrate a conversion factor of 1.1 should be used.

Table 1. Broadcast Rate of Telone II Based on 184 cc or 6.2 fl. ozs. per 100 ft. of Row at Various Row Spacings. The Water Rate is 202.4 cc or 6.8 fl. ozs. per 100 ft. of Row.

Row Spacing (inches)	Telone II (GPA)	Water (GPA)*
20	12.6	13.9
22	11.4	12.6
26	9.7	10.7
30	8.4	9.2
36	7.0	7.7
38	6.6	7.3
40	6.3	6.9
42	6.0	6.6
44	5.7	6.3
46	5.5	6.0
48	5.3	5.8

*Water rates obtained by multiplying Telone II rate by 1.1.

MAINTAINING EQUIPMENT

Always conduct periodic checks of the systems for leaks. Each year make a practice to replace hose lines and tanks seals. Check valves, strainers, orifices and pressure regulators should be cleaned and in working order.

Cleanup and maintenance programs are much more important when fumigants are used than when less corrosive chemicals are used, even when sprayer components are made of the more corrosive resistant material. Diesel fuel or kerosene is a good material to use for cleaning machinery after applying fumigants. After fumigant applications, always flush your system with diesel fuel and fill pump with new motor oil.