

Rope Wick Applicators

Construction and Use

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With rope wick applicators, you can control weeds growing above desirable crops by using herbicides that might otherwise kill or severely injure the crop. The applicator consists of:

- Tubing for holding the herbicide.
- Soft, synthetic*, braided rope for drawing the herbicide from the tubing to the plant.

By using a wiping action, the rope acts much like a wick in a coal oil lamp. It draws the herbicide out of the tubing and transfers it to the target plants.

The applicator can control weeds such as *volunteer corn* in soybeans (see figure 1), *johnsongrass* in cotton or soybeans, or numerous weeds in pastures. It can be easily constructed and, if well cared for, will last for many years. This Guide gives construction methods, parts, and uses of the rope wick applicator.

Construction

You can adapt the parts of the rope wick applicator to meet your needs. An applicator 10 feet wide may work well in small fields. But for larger acreages of row-crops, you may want to build a wider model. The applicator should be made about 18 inches wider than the row width it is made to cover. This will prevent skips. For example, build an applicator 16.5 feet wide to cover six 30-inch rows.

Parts

Tubing. Use PVC (polyvinyl chloride) thickwall pipe for rigid models, or thin wall pipe can be used with a support from angle iron. The diameter and length are determined by the size of the job to be done. Lengths greater than 10 feet should be designed as separate sections. A 4-inch tubing applicator can be built for larger fields. However, the larger

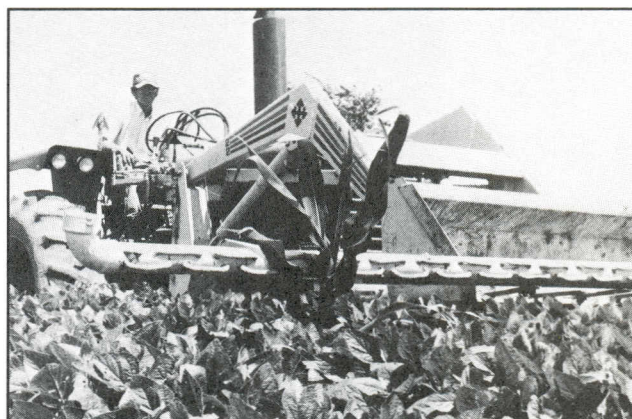


Figure 1. The rope wick applicator can control volunteer corn in soybeans.

tubing will require 80 percent more chemical than will the 3-inch tubing to fill it to the recommended $\frac{2}{3}$ -full level.

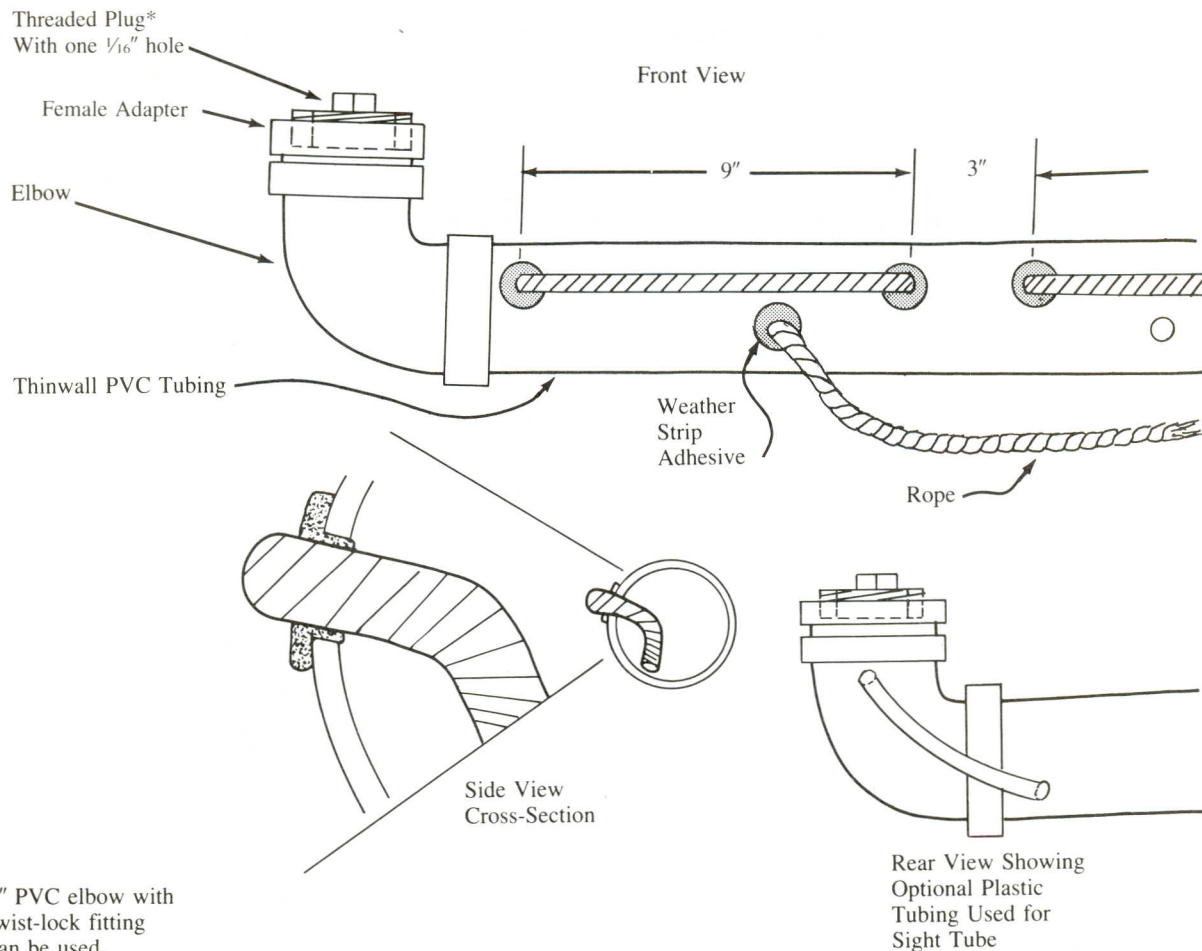
Elbow. Use a PVC 90-degree elbow with a female adapter and threaded plug on at least one end of the tube to make filling and cleaning easier. For easy filling, a PVC elbow and a twist-lock fitting and twist-lock cap provides easy opening without wrenches. Install an end plug to allow flushing out when application is completed or when changing chemicals. Drill $\frac{1}{16}$ -inch hole in the filler cap to prevent a vacuum from forming in the tube. When this occurs, a stoppage exists, and the chemical will not move into the rope.

Some units incorporate the use of a stopcock instead of a hole to vent the pipe. The stopcock regulates the flow except when applying material to heavy weed stands. This method reduces dripping.

Rope. The rope should be resistant to water and herbicides. A soft, braided, nylon, marine rope is effective. Polyester rope with an acrylic core is one other type that is available. As a rule, those rope materials that conduct chemicals freely will dispense effective amounts in heavy weed stands.

*Some synthetics (such as polypropylene) lack wicking properties.

Figure 2. Diagrams of the Rope Wick Applicator.



Rope-tubing connector and fittings. Many rope wicks have been constructed by gluing the rope into the holes with a good quality weather strip adhesive. Weather strip sealer should be avoided because it does not harden. Test the adhesive to make sure that it does not soak into the rope and restrict wicking. PVC elbows and rubber grommets can be used; however, they require gluing, and they then become difficult to remove when changing worn ropes. Gluing the rope into the pipe is satisfactory, and the ropes can be easily removed. Compression fittings also have been used; however, if turned too tightly, they will restrict flow.

You can use *off-the-shelf* materials to build an applicator (Figure 2).

- A length of 3-inch PVC pipe 10 feet long
- A 3-inch PVC elbow
- A 3-inch PVC straight female adapter
- A 3-inch PVC threaded plug
- A PVC 3-inch cap
- PVC cement
- Pipe cleaner
- One half-inch soft, braided, nylon, marine rope sealed with weather strip adhesive.

To assemble the applicator, glue the PVC parts together. Across the length of the pipe, drill 1/2-inch holes in two rows spaced 1 inch apart. For the first row, make the space between the first and second holes 9 inches apart and the space between the second and third holes 3 inches apart. Repeat this pattern across the length of the pipe. Begin the second row one inch below the middle of the first 9-inch space. Drill across, spacing as for first row. Six-inch spacings may give better wicking action than wider spacings. Shrink the rope before assembly by washing and drying thoroughly. Cut the rope into 20-inch segments, and thread one end of each segment into a hole, glue and dry for 24 hours. Glue the other ends into the holes allowing a little slack for shrinkage.

Mounting and Operation

The rope wick applicator can be mounted to a tractor or other vehicle in a number of ways (Figures 3, 4 and 5). The PVC tubing is often clamped to a piece of angle iron to provide support. The angle iron can then be fastened to the front of the tractor on a rigid frame. The frame adjusts with a small hydraulic cylinder or is attached to a front-end loader.

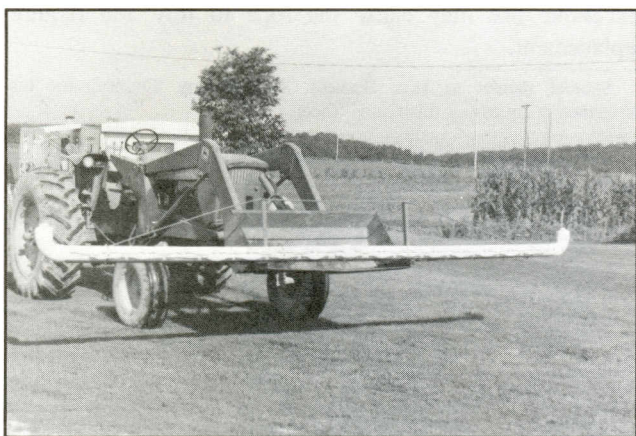


Figure 3. Front-mounted applicators may have a divider in the middle of the tube to reduce hydrostatic pressure on slopes.

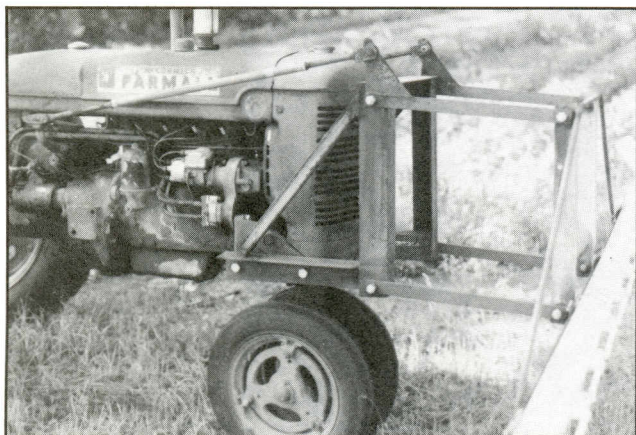


Figure 4. This tractor uses the lift system from a row crop cultivator for the applicator.

Some applicators can be attached to the two- or three-point hitch on the rear of the tractor. Rear-mounted wicks are inferior for a number of reasons:

- They pick up soil more readily than front mounted wicks.
- If Roundup is used, it is deactivated by dust and soil particles.
- Weeds knocked down by the tractor wheel may not spring back in time to be wiped by the applicator.

The most common herbicide used in rope wick applicators is **Roundup**; however, other labeled products may also be used. One pass with the applicator can control **volunteer corn** and **annual weeds**. **Biennial** and **perennial weeds** are more difficult to control and may require a second or third trip across the field from another direction to get more herbicide on the plants.

The objective in perennial weed control is to apply enough herbicide to the vegetation to kill the root system. Since plants do not grow well during drought periods, control will be poor if target plants are under stress.

The most commonly recommended mixture used in a rope wick applicator is one part herbicide plus two parts



Figure 5. Use a high carbon steel tube (drill stem) frame to eliminate twisting. The cable and pulley double the 8-inch cylinder stroke for 16 inches of boom height movement.



Figure 6. Hand-held applicators are useful for spot treatments around the farm.

water. Other ratios such as 1:1, 1:3, and 1:4 have been used in various situations.

A slow speed (less than 5 mph) must be maintained to keep target plants from being whipped away from the applicator. Heavier infestations or uneven terrain may require even slower movement to maintain good weed contact.

Cleaning. The applicator tube should be flushed with water daily, after use. The ropes should be cleaned with water, under pressure, if available. More frequent cleaning will be required to remove milkweed latex from ropes.

Excessive use may cause the rope to fray and require replacement.

Special thanks to Eric Harness, Montgomery County, for his assistance in preparing this Guide Sheet.