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a weed sprayer Guide

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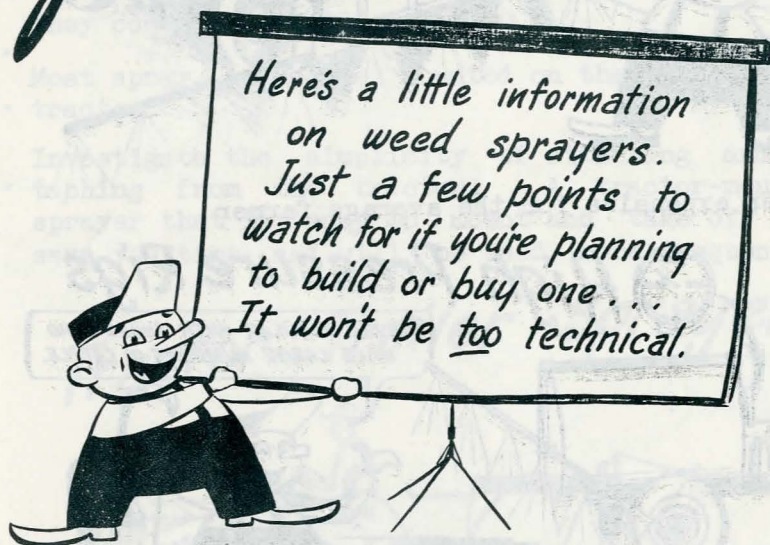


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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE, AND THE UNITED
STATES DEPARTMENT OF AGRICULTURE COOPERATING, H.G. GOULD ASSOCIATE
DIRECTOR, LINCOLN.

a weed sprayer Guide*



Art Work by
Don S. Lodge
State Dept. of Agric. & Inspection

* By J.D.FURRER, ASST. EXTENSION AGRONOMIST—
COOPERATING WITH PAUL SAND AND
LOGAN HEUSEL OF THE STATE DEPARTMENT
OF AGRICULTURE AND INSPECTION, DIVISION
OF NOXIOUS WEEDS.

There are many kinds of Weed Sprayers—

Jeep Sprayers

THESE ARE USED PRIMARILY BY WEED
DISTRICTS AND COMMERCIAL OPERATORS



- Rather expensive for the average farmer



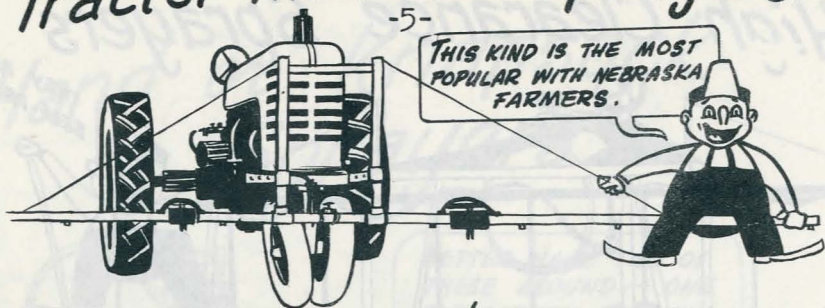
High Pressure Rigs

THEY'RE POPULAR WITH THOSE WHO
HAVE LARGE NUMBERS OF CATTLE.



- Can be used for all types of spraying
- With minor changes they can be adapted to lower pressure spraying
- The price is usually in excess of \$500

Tractor Mounted Sprayers



*Insist on rigid construction!
Some are so flimsy they're likely
to fall apart before you get them
in the field.*

They cost between \$90 and \$350.

- Most spray booms are mounted on the front of the tractor.

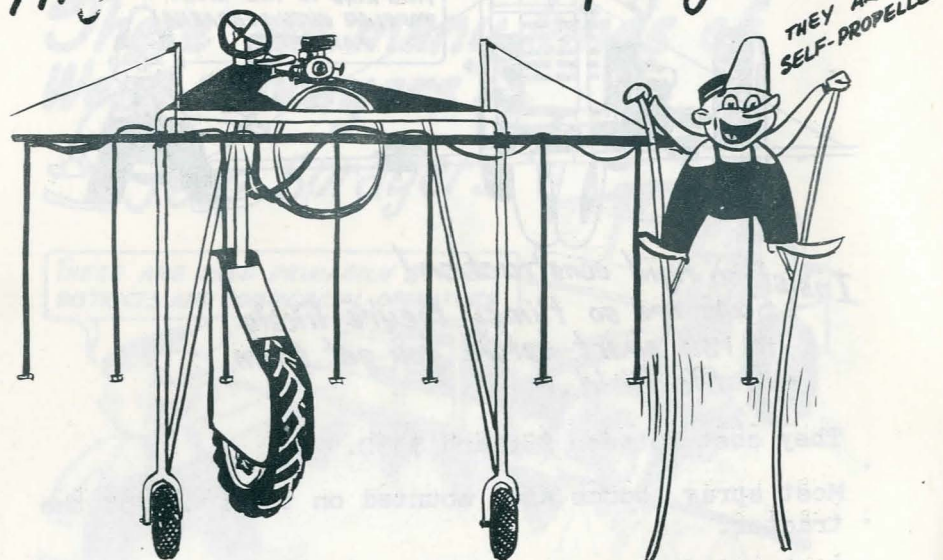
- Investigate the simplicity of attaching and detaching from the tractor. A tractor-mounted sprayer that is easy to mount and take off will save you time and will be used more frequently.

Tractor Trailer Sprayers



- Cost a little more than mounted sprayers.
- They are not quite so handy for contoured rows and tight corners.
- They spray behind the tractor.

High Clearance Sprayers



- Are used for late applications of herbicides and insecticides to corn
- Many hybrid corn companies use this type machine
- Can be converted to detasseling machines

Airplane Sprayers



- They do the job in a hurry and get it done at the right time
- Ideal for mature crops or where the ground is too wet for ground rigs
- Efficient for large acreages

Hand or Knapsack Sprayers



BETTER HAVE TWO OF
THESE AROUND — ONE
FOR GARDEN SPRAYING
WITH INSECTICIDES AND
THE OTHER FOR 2,4-D

- Work well on lawns and other small areas
- A boom with two or three nozzles may be desirable for more uniform coverage and increased efficiency

Here is a
little dope
on some of
these weed
sprayers....



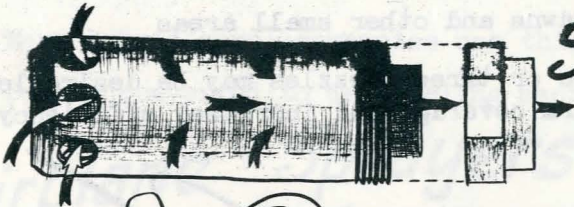
Supply Tanks

- A clean, 55-gallon drum is satisfactory as a container for the spray material
- Can be mounted on either the rear or the sides of the tractor, but locate it as near the rear axel as possible
- Sometimes they are mounted on trailers



Suction

Strainers



- It is used to keep abrasive material and other foreign material out of the pump and nozzles
- Be sure it is small enough to fit in the 2-inch bung of the barrel
- 100 mesh screen is fine enough

The next few
pages will deal
with **PUMPS**
they're the "HEART" of the sprayer



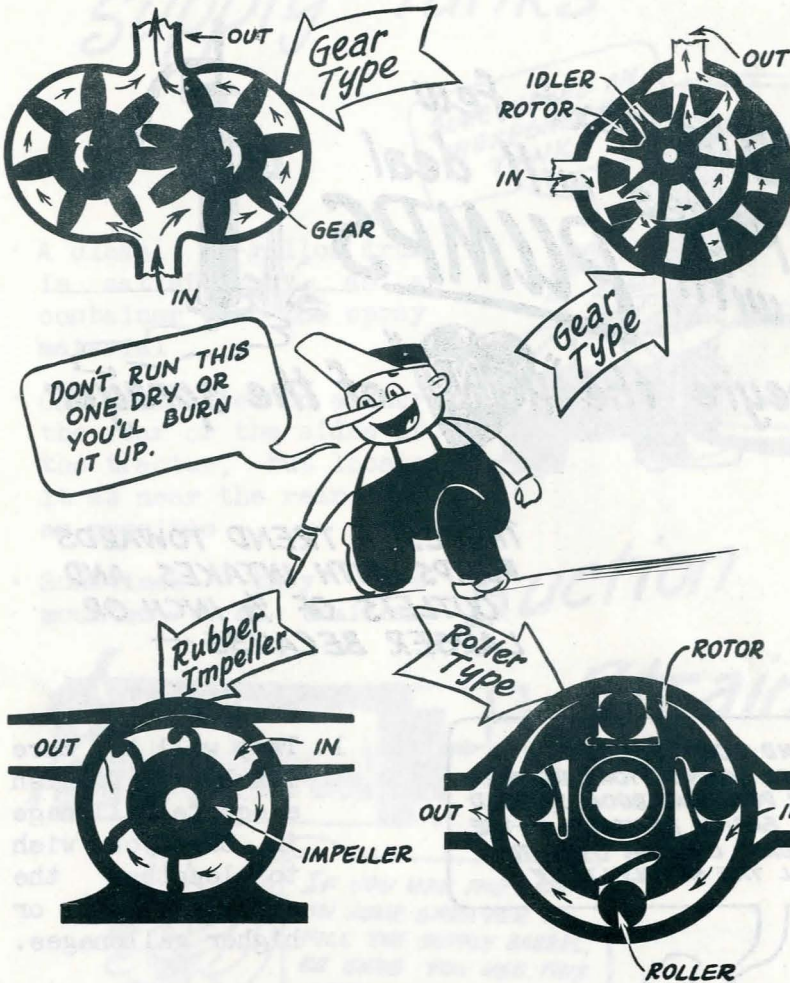
THERE'S A TREND TOWARDS
PUMPS WITH INTAKES AND
OUTLETS OF $\frac{1}{2}$ INCH OR
LARGER BECAUSE —

AND DON'T FORGET —
HOSE CONNECTIONS BETWEEN
THE PUMP AND BOOM SHOULD
BE EASILY REMOVED SO THE
PUMP CAN BE USED TO
FILL THE SUPPLY TANK.



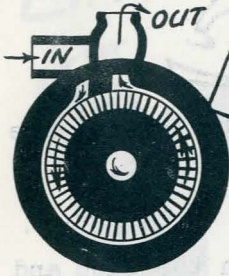
4. For utility jobs around the farm, a little larger pump may be desirable.

1. They will be more likely to furnish adequate gallonage in case you wish to lengthen the spray boom or higher gallonages.
2. The supply tank can be filled more quickly.
3. They will furnish greater agitation in case it is needed.

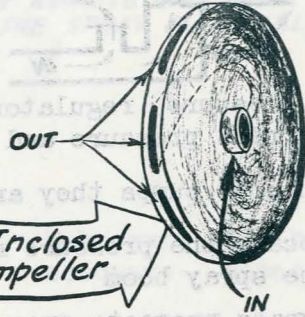


- Low in cost
- They can be operated at low RPM (600 or less)
- Can be connected directly to the power take-off or belt pulley
- Abrasive materials are rather rough on the metallic gears
- Some of these pumps have greaseless bearings

Centrifugal Pumps



Open Impeller

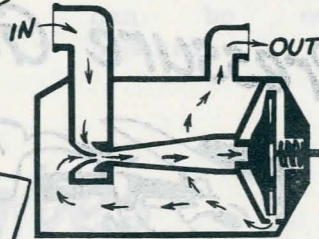


Enclosed Impeller

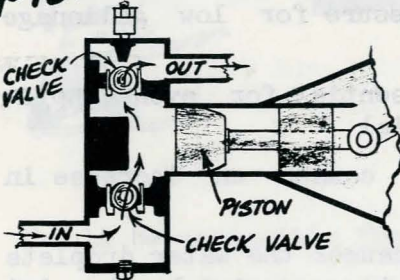
SOMETIMES CENTRIFUGAL PUMPS ARE REFERRED TO AS TURBINE PUMPS



Centrifugal Jet



Piston Pump

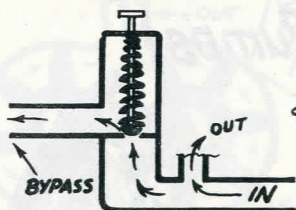


- Enclosed impeller types with added stages can be used for high pressure spraying
- Piston pumps can be used for high or low pressure spraying

- Abrasive material is rough on the open impeller types

Pressure Regulators

-12-



LIQUID THAT
BYPASSES CAN BE
DIRECTED BACK TO
THE SUPPLY TANK
FOR AGITATION.

- A pressure regulator enables you to select the correct pressure and maintain it
- On some pumps they are built in
- Locate the pressure regulator between the pump and the spray boom
- Bypass prevents excessive pressure when the liquid flow to the boom is stopped

Pressure Gauges



MOUNT IT WHERE
IT CAN BE SEEN!



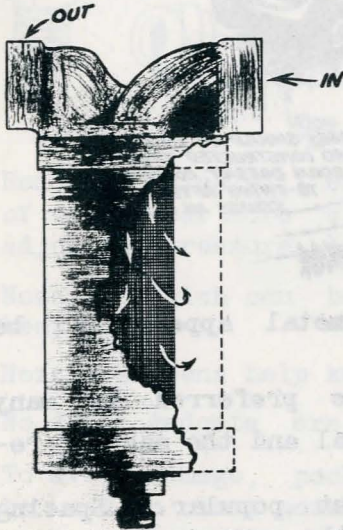
- Insist on a pressure gauge
- Use 30 to 40 pounds pressure for low gallonage spraying
- A steady pressure is essential for even application of the spray material
- An increase in pressure causes an increase in gallonage

An increase in pressure causes the water droplets to be smaller and more easily carried by the wind

- Gauges should be equipped with snubbers (check screws) to avoid pulsation of the gauge needle
- Pressure fluctuations may be due to dirt in the pressure regulator or suction strainer

Line Strainers

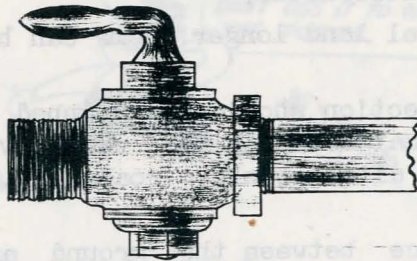
(THEY REMOVE DIRT FROM
THE SPRAY MATERIAL)



- Make sure they have adequate capacity
- They should be constructed so they can be easily cleaned

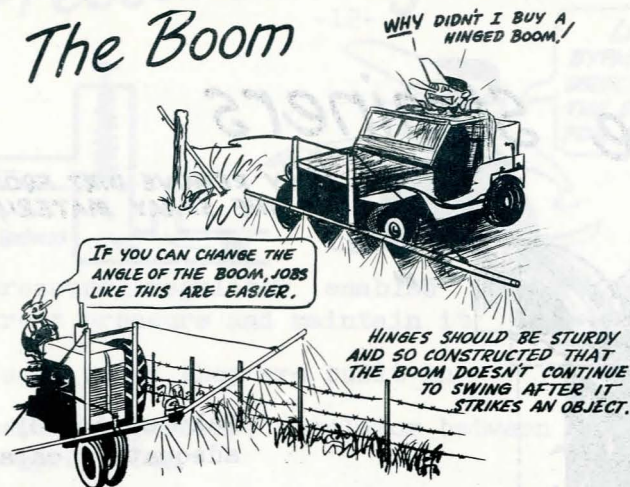
Cut-off Valves

THEY ARE USED TO
STOP THE FLOW OF
SPRAY MATERIAL TO
THE SPRAY BOOM.



- Should be accessible from the tractor seat
- Should be located between the pressure regulator and the boom
- Quarter-turn type valves permit a quicker shutoff

The Boom

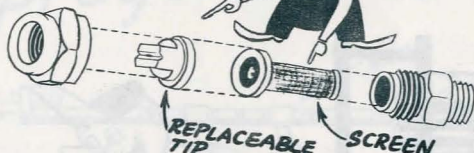


- Almost any kind of common metal appears to be satisfactory
- Non-corrosive materials are preferred by many
- Consider strength of the metal and the ease of repair
- 20" nozzle spacing is the most popular. Spacing may be governed by width of the corn rows
- On rough land short booms of a rod or less are most satisfactory
- On level land longer booms can be used successfully
- Each section should be equipped with a cut-off so spray material is not wasted when spraying fence rows, ditch banks, roadsides, and other narrow strips
- Distance between the ground and boom should be adjustable so both big and small weeds can be sprayed
- Proper adjustment of the height of the boom is necessary to get uniform coverage
- Generally, the spray boom should be set at least 15" above the tallest weeds

DROPS ON A BOOM MAY BE NECESSARY IF THE CORN IS MUCH TALLER THAN THE WEEDS.



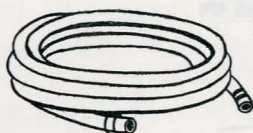
Nozzles



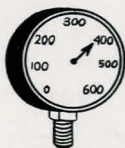
USE AN OLD TOOTHBRUSH
TO KEEP THE SCREEN
AND TIP CLEAN.

- Removable tips will enable you to vary the volume of water per acre simply by changing tips and adjusting pressure
- Nozzles which can be taken apart are easier to keep clean
- Nozzle screens help keep nozzle tips from plugging
- No drip gadgets are available for some nozzles
- To avoid damage, pocket knives or wire should not be used to clean nozzles

Hose

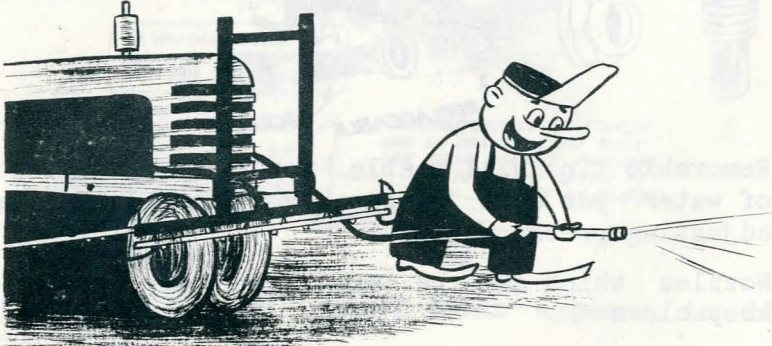


AFTER YOU USE IT ON
THE WEED SPRAYER,
DON'T USE IT TO WATER
THE POSIES.



- Garden hose can be used satisfactorily on low pressure weed sprayers
- Chemical resistant hose is preferred by some
- On high pressure rigs use special high pressure hose

Hand Gun Attachments



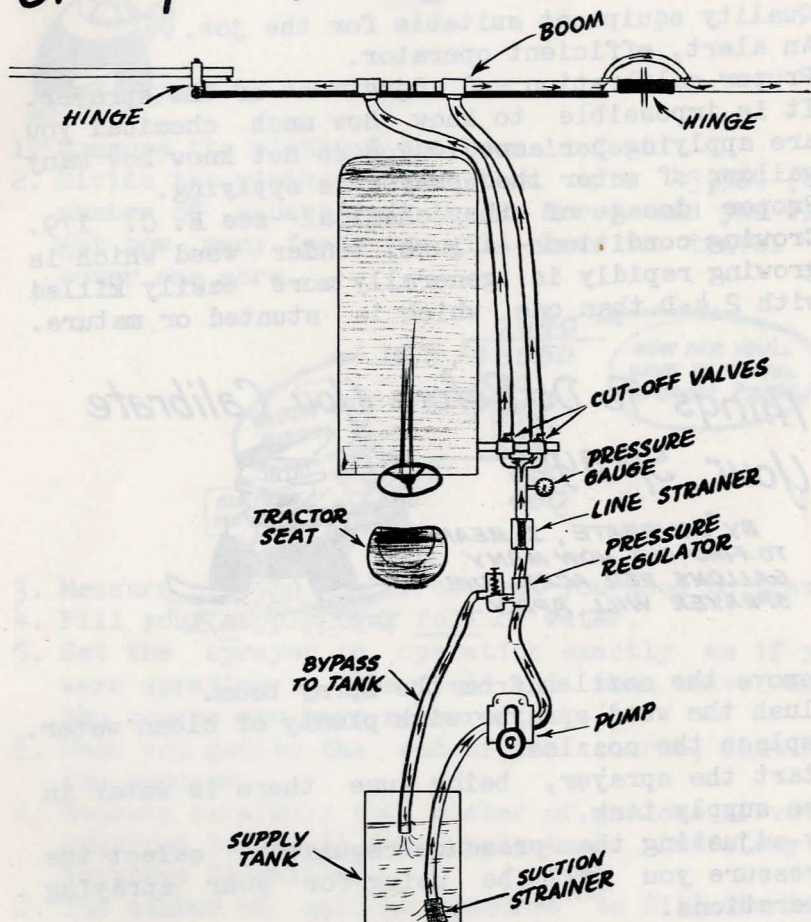
- A hand gun is for weeds in "hard to get at places" and for small patches on the other side of the fence
- Several types of hand guns are available
- A garden hose nozzle is an inexpensive substitute

Road Side Booms



- Many weed districts and commercial operators are finding roadside booms cut spraying costs along irrigation ditches and roadsides

Suggested Arrangement of Sprayer Parts



Good Spraying Results are Dependent Upon—

1. Quality equipment suitable for the job.
2. An alert, efficient operator.
3. Proper calibration and adjustment of the sprayer.
It is impossible to know how much chemical you are applying per acre if you do not know how many gallons of water the sprayer is applying.
4. Proper dosage of the chemical--see E. C. 179.
5. Growing conditions--a lush, tender weed which is growing rapidly is generally more easily killed with 2,4-D than one which is stunted or mature.

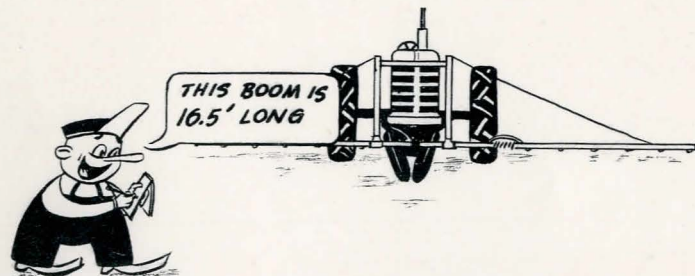
Things To Do Before You Calibrate Your Sprayer—

**BY "CALIBRATE", I MEAN
TO FIND OUT HOW MANY
GALLONS PER ACRE THE
SPRAYER WILL APPLY.**



1. Remove the nozzles from the spray boom.
2. Flush the weed sprayer with plenty of clean water.
3. Replace the nozzles.
4. Start the sprayer, being sure there is water in the supply tank.
5. By adjusting the pressure regulator, select the pressure you will be using for your spraying operations.
6. Make sure all nozzles are spraying.
7. Check all connections for leaks.
8. Decide in what gear and at what speed you are going to be operating your tractor during the spraying operations. Drive the sprayer around the yard to make sure everything is working. If everything is in proper working order, you are ready to calibrate the machine.

Steps in Calibrating a Sprayer



1. Measure the width of the boom in feet.
2. Divide the width of the boom into 43,560 (the number of square feet in an acre) and you will get how many feet you will have to travel to cover one acre.

16.5

WIDTH OF BOOM

SIMPLE ISN'T IT?

| | |
|-------|------|
| | 2640 |
| 43560 | |
| 330 | |
| 1056 | |
| 990 | |
| 660 | |
| 660 | |

HOW FAR YOU'LL HAVE TO TRAVEL TO COVER 1 ACRE

3. Measure off the number of feet you need to travel.
4. Fill your supply tank full of water.
5. Set the sprayer in operation exactly as if you were spraying in the field and then travel down the course you have measured.
6. When you get to the end of the course, shut off the sprayer.
7. Measure carefully the number of gallons of water required to refill the supply tank. Let's say it requires $7\frac{1}{2}$ gallons.
8. The number of gallons required to fill the tank (in this case, $7\frac{1}{2}$) is the number of gallons this particular sprayer is applying per acre.
9. Now, for every $7\frac{1}{2}$ gallons this supply tank holds, add the number of pints of chemical recommended per acre. (See E. C. 179 for the recommended amounts.)

