then he should buy a small stationary engine. If he wants an engine that will do heavy work, such as threshing wheat, shredding corn, or filling the silo, then by all means he should add a few dollars to the purchase price and get a tractor. In this way he will double the utility of his engine by being able to plow and haul with it as well as use it for stationary power.

Personally, I believe every farmer should have two engines. The small jobs, such as churning, washing, shelling corn, grinding feed, etc., cannot be done economically with the large engine, and for this purpose every farmer should have a small stationary engine with a line shaft overhead, and then have his different machines placed so as to be operated from this shaft. It is as equally evident that the small engine will not do the heavy jobs, so the large engine fills another place. Engines of both kinds will pay for themselves on the average farm if properly handled.

The number of cylinders an engine should have depends on the horsepower. Instead of having one big cylinder on a twenty horsepower engine, two ten horsepower cylinders are used. In this way the engine is more easily balanced and the small cylinders are more easily cooled than a large one would be. This is also why the forty or eighty horsepower tractor has four cylinders instead of two.

My advice to the farmer is: Pick out an engine for which you have the greatest number of uses, buy it, and then use it. An engine will pay for itself in a comparatively few weeks of actual operation, so the wise farmer will make it work full time when it will save expensive human labor. If he does this he will get his money back all the earlier—and not only his first investment with cost of operation, but also a profit in dollars and cents and satisfaction.

SPRAYING APPARATUS AND HOW TO USE IT

Do You Plant for Your Family, or for the Bugs and Worms?—"No Spray, No Pay," an Accepted Truth

A GOOD spraying machine of some sort should have its place on every farm. As a matter of fact, large numbers of these machines are purchased each year by Southern farmers, and with the increasing diversification of crops the number of spraying machines is rapidly increasing. Many of our best farmers look upon spraying as a regular farm practice, and spraying is done as a matter of course as regularly each year as the plowing, planting, cultivating, and harvesting of the various crops.

There are many crops, such as apples, peaches, oranges, potatoes and tomatoes, that must be sprayed regularly each year if profitable crops are to be expected. There are other crops such as pecans, pears, corn, melons, and strawberries, that may require spraying only occasionally in order to produce profitable crops, but in some sections some of these crops must be sprayed every year. In fact, there is probably not a crop that grows that is not greatly benefited at times by intelligent spraying, as there is not any crop that is entirely free from the attacks of insect pests and plant diseases.

There are many types of spray pumps and dozens of manufacturers of these machines. The prospective purchaser should take time to investigate and select the particular type of machine best suited to his needs. It is false economy to buy a spraying outfit that is too small, or to buy a cheap, poorly constructed machine that will soon get out of order when a few extra dollars will purchase a machine that will last a life-time if given proper care.

For the average farm a barrel pump is the most serviceable. One hundred and fifty full-grown orchard trees may be sprayed in a day with a good barrel pump. By merely attaching a row-spraying attachment, several acres of potatoes or other row crops may be sprayed in one day. The row-spraying attachment should be one that can be adjusted for rows of different widths. A good barrel pump will cost $25. When selecting a barrel spray pump it is well to consider a number of points that should be combined in the spray pump purchased.

1. There should be a good agitator that can be easily worked. An agitator is necessary to keep the spray mixture in suspension. There is always danger that the mixture at the bottom of the barrel will be too thick and that at the top of the barrel too thin if the agitator is not frequently used.

2. The pump should be attached to the barrel in such a manner that it can be easily removed for repairs.

3. It is desirable to have the working parts of the pump within the barrel. This reduces the chances of breaking the various parts and also prevents the barrel from being top-heavy, as is the case when most of the pump is on the top of the barrel. The large air chamber should be within the barrel and not above it.

4. It is usually desirable to have the working parts of brass, as the brass parts are better made than is usually the case with iron parts. If the same care was given to iron parts as to brass parts they would probably do just as well. The handles and other pieces are more durable if made of malleable or galvanized iron than when made of cast iron.

5. The pump should be guaranteed to furnish four nozzles at a pressure of 80 pounds with ordinary pumping.

6 All valves and other parts should be easily taken apart for cleaning.

Like all other farm machinery, the spraying outfit should be kept under shelter when not in use. After being used, all parts should be carefully cleaned. It is well to remember that lime-sulphur solution will attack brass, and Bordeaux mixture will attack iron. Water left in the hose will assist in its decay. Each lead of hose should be carefully drained after each spraying.

For orchards of more than five or six acres a gasoline power sprayer is to be recommended.

R. W. HARNED.