



APPLICATION UPDATE

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Revision 1

ACE PUMPS FOR SPRAYING FUNGICIDES & INSECTICIDES

The arrival of Soybean Rust on the North American continent brought with it a host of questions concerning proper spraying procedures for fungicides. The most common question is “Will my current sprayer meet the requirements for applying fungicides or insecticides?” We will look at two typical sprayer configurations to determine if existing pumps will support these applications.

We are using general application information acquired from several sources including chemical companies and university researchers for the analysis. The application rates and procedures vary so you must consult the chemical label, a local extension agent, or university researcher prior to application.

It is important for the spray to penetrate the plant canopy since most of these problems start in the lower part of the plant. A droplet size of medium or medium-fine is typically recommended with spraying pressures of 80 to 120 psi to provide this penetration. The pump should be capable of operating at a minimum of 20 PSI above the



Soybean Rust Photos
courtesy of Mississippi State University Plant & Soil Sciences

recommended pressure to overcome friction losses between the pump and spray boom.

Proper nozzle selection is also important since these high spraying pressures are not normally used with conventional nozzles. Spray drift should also be reduced since some of the chemicals are fairly toxic to humans and animals. Consult your spray nozzle supplier for current recommendations.

Typical Sprayer #1:

Boom width: 60 feet
Nozzle spacing: 20 inches
Tank capacity: 750 gallons
Application rate: 20 GPA
Ground speed: 8 MPH

Total pump flow: 56 GPM

Recommended Pumps:



FMC-150-HYD SERIES

Spraying pressures
up to 90 psi.



FMC-650-HYD SERIES

Spraying pressures
from 90 to 130 psi.

Typical Sprayer #2:

Boom width: 120 feet
Nozzle spacing: 20 inches
Tank capacity: 1500 gallons
Application rate: 20 GPA
Ground speed: 10 MPH

Total pump flow: 123 GPM

Recommended Pumps:

FMC-200-HYD-304 SERIES
Spraying pressures
up to 70 psi.



FMC-750F-HYD SERIES
Spraying pressures
from 70 to 130 psi.

If you are unable to achieve the desired flow and pressure, here are some additional ways to boost performance.

- ♦ Verify that the pump shut-off pressure is set at the recommended maximum. This will ensure that the pump is performing at its maximum flow and pressure capability. Consult our online Hydraulic Selection Guide at AcePumps.com for specific setup instructions for your tractor or call 800-843-2293 for technical assistance.
- ♦ Reduce the amount of flow supplied to the tank for agitation. A pressure gauge in the agitation line after the regulating valve helps determine the flow to the agitator.
 - 1) The first option is to partially close the agitation valve, thus limiting the amount of liquid going to the agitator. The agitation pressure should be set at 20 to 40 PSI, significantly less than the spraying pressure.
 - 2) Another option is the use of jet agitators which require less flow to agitate the tank. The jet agitators use an entrainment principle that draws in surrounding liquid. A typical jet agitator can move five additional gallons of liquid for every one gallon through the agitator. This will provide a reduction of required flow for sprayer #1 of 30 gpm and a 60 gpm reduction for sprayer #2. The jet agitator manufacturer can supply a chart showing how much water is circulated based on the pressure provided at the agitator.
- ♦ Reduce the pressure drop between the boom and pump by removing restrictions. This may include replacing hoses and valves with larger components to reduce friction losses. The pressure drop is easily measured by placing a gauge at the pump discharge and a gauge at the boom control valve.
- ♦ Reducing ground speed will reduce the amount of liquid required for the boom. For sprayer #1 the flow requirement decreases by 5 gpm for each 2 mph decrease. For sprayer #2 the flow requirement decreases by 10 gpm for every 2 mph decrease. Slower speeds may also be an advantage by improving coverage and canopy penetration.