



Answers to questions about structures, ventilation, soil, water, waste, energy, machinery and safety.

So you need an irrigation system?

Early-season dry weather always prompts a lot of calls on selecting irrigation systems to water everything from a few hundred square feet of garden to many acres of hay, pasture and row crops. Let's discuss some of the basic rules for designing any irrigation system.

First, irrigation is not always profitable. It's unlikely you'll get back your equipment costs from increased yields on just 15-30 acres of pasture or hayland, unless you find a bargain in used equipment and you get several dry years in a row. Type of crop and number of acres are important. So check the economics first.

To select equipment, you must know three things:

1. The pumping rate in gallons per minute
2. The pumping head in feet
3. How much time you have to spend with the equipment

The pumping rate is determined by the area you want to cover at once, how often and in what amounts you need to irrigate the crop being grown, and how many hours per day the system will operate. The pumping head is determined by adding:

- a. The vertical elevation from the pump to the highest point in the field
- b. The friction loss in pipes, hoses and fittings
- c. The discharge pressure at the sprinkler head

Multiply pressure (psi) by 2.31 to convert to feet of head. Once you know the pumping rate and head, you can select a pump with the best efficiency for your situation using pump curve graphs available from pump suppliers.

Larger (more expensive) pipes and lower operating pressures mean less total head and less horsepower (and usually less expensive) pumps. Your available time and depth of your pocketbook will determine your choice of pipe (above vs. below ground) and the degree of automation. The idea is to find the best balance between component costs, system efficiency, and your labor resources. So check the economics last.