

a more identifiable point in the flowing water. This will also eliminate the need to tap into the pump discharge pipe. The obvious shortcoming of this placement is that some of the sediment passing through the pump will not be picked up in the sample.

Each of the three location arrangements has advantages and disadvantages. The important thing to remember is to be consistent and straightforward in reporting results. In other words, once a monitoring strategy is set up, it should be clearly reported and remain in place for the duration of sampling activities.

Strainers should be located at the point in the canal cross section representative of the maximum water velocity in the channel. The flow velocity profile approximates a paraboloid, with zero flow velocity occurring at the channel sides and bottom and maximum velocity in the center of the canal slightly below the water surface. However, strainers should be placed deep enough below the water surface to avoid interference from floating plants and debris. They should also be maintained far enough above the channel bottom to prevent sediment from being sucked up into the sample. Ideal placement is, therefore, in the middle of the channel, 20 to 40 percent of the depth below the surface.

Note that the channel depth lowers during pumping, sometimes dramatically. Hence, locating the strainer as suggested will avoid detrimental water surface and channel bottom conditions during the majority of events.

Nutrient budgets

Water quality monitoring can proceed along one of two lines: 1) nutrient concentrations or 2) nutrient loading. Both are important in determining the effects of agricultural production on the environment as well as determining the effects of BMPs on phosphorus reductions in drainage water. Calculating nutrient loading is, however, dependent on having nutrient concentration data. The end product of a nutrient loading determination strategy is the development of a nutrient budget.

Nutrient budgets require that flow volumes into and out of the farm be measured during irrigation and drainage, respectively. These flow volumes, when multiplied by flow-weighted nutrient concentrations, will yield the mass of nutrients entering or leaving a farm in water.

Water serves as the primary pathway of nutrients into or out of a farm, other than fertilization

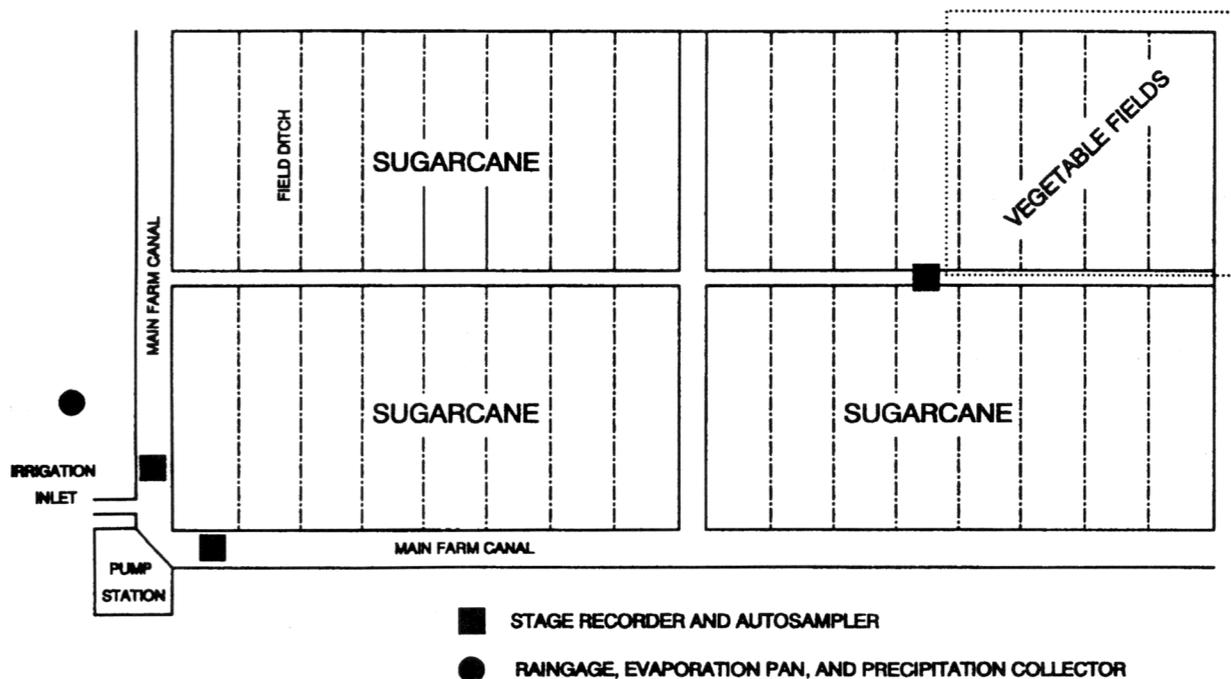


Figure 3: A suggested water sampling scheme for a hypothetical farm.