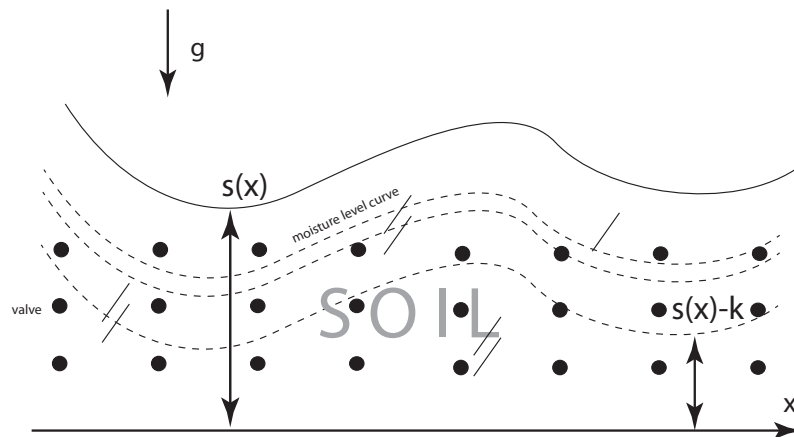


DLF-Trifolium

Dynamic control of water levels in a root screening facility

Basic Idea

How can one, by controlled supply of water at various points, create level surfaces of constant moisture that do not coincide with the horizontal equi-gravitational surfaces, but rather reflect some given shape $s(x)$ of the top soil surface ?



Questions

1. Timescales: How long should water be on at selected points to maintain to within 2% some specified level set distribution ?
2. What are the decisive parameters in this control ? Is it the water pressure at the watering points/pipes ? or the hydraulic capacity of the soil ?
3. If it is the water pressure (or rate) , what is the optimal pressure for a given volume?
4. Is there any interaction between water valves ?
5. If so, what is the optimal density of points over a given volume ?
6. What is the role of gravity on the diffusion of water in the soil ? To what extent should higher water points deliver before lower ones ?