Swale and Berm Systems

Rainwater Harvesting Systems in Conjunction with Perennial Polycultures

The establishment of perennial polycultures in conjunction with rainwater harvesting systems eliminates the need for supplemental irrigation, provides topography to flat areas and prevents erosion. Swale and berm systems also provide onsite nutrient cycling and integrated pest management related to intensive agriculture and along developed margins. They can be placed on-contour to facilitate the even distribution of stormwater throughout the entire system or off-contour to mitigate stormwater from one area to another.

The Process

- Mark the swale with landscape flags.
- The excavated material becomes the berm on the downslope side. Always work downhill. If it is flat ground the swale is adjacent to developed sites (driveways).
- Break up soil clods and sculpt the berm material with tapered sides to meet the angle of repose.
- Use and A-Frame to monitor the swale belly. On-contour swales are level and off-contour swales are at a 2% slope (1/4-inch drop per linear foot).
- The terminal ends of swales must be connected to a secondary swale downslope or an infiltration basin. Always plan for overflow and armor the discharge point.
- Cover berms with rice straw, compost or manure and a final layer of straw or wood chips.
- Fill off-contour swales with wash-rock and on-contour swales with wood chips.
- Wait to plant SBSs until after a few autumn rains.

Things to keep in mind

- SBSs should not be implemented on slopes greater than 10% without proper planning and design by a professional.
- Gather materials prior to implementing an SBS. Soil should never be left exposed to sun, wind or rain.
- Start small. Swales dug with a standard shovel, about one cubic foot, are sufficient for capturing and infiltrating stormwater.
- Implement SBSs after a few autumn rains to soften the soil.