

## Swales in Western NC

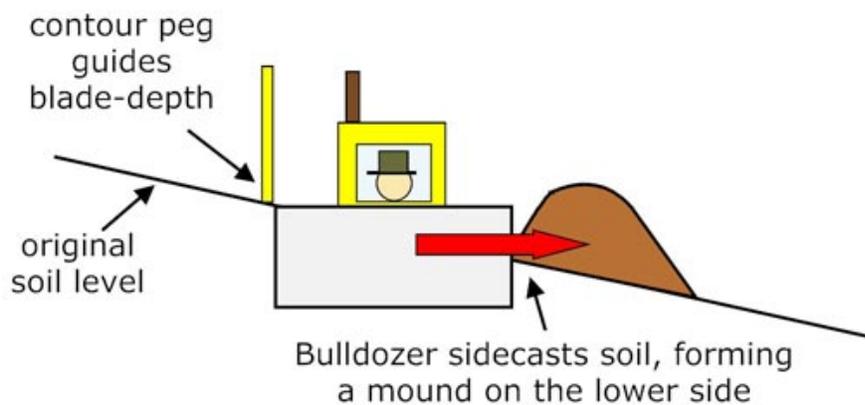
Handout Compiled by Kristen Travis of Old Season farm for a BRWIA Program on 2/17/14

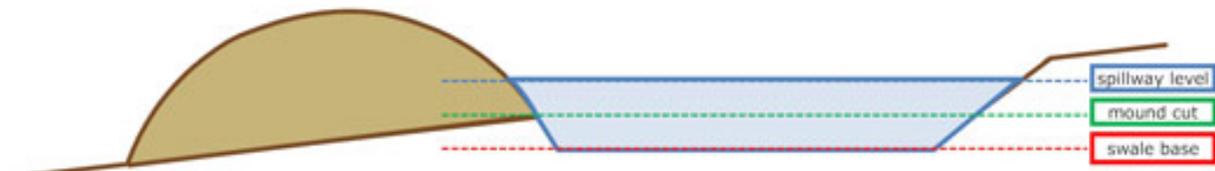
SWALES (permaculture definition: ditches on contour)

- Slow runoff during rain events
- Increase available soil moisture
- Increase groundwater infiltration
- Decrease erosion of soils and improve soil structure
- Increase biological activity in soils and thus fertility

In an orchard system, swales can potentially...

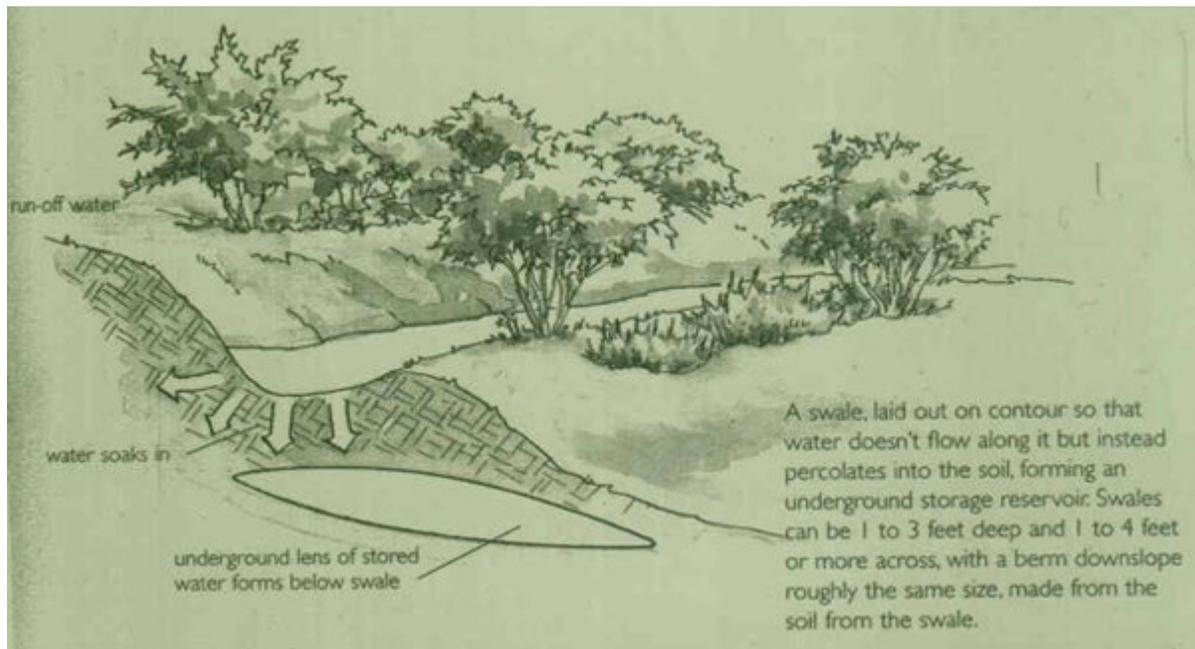
- Increase survival rate of new plantings (compared to no irrigation)
- Reduce establishment cost of new plantings (compared to installing drip irrigation)
- Increase drought resistance across the orchard
- Increase productivity across the orchard





### Design considerations

- Swale spacing – we couldn't find recommendations for this. We spaced ours based on our budget – they are about 30 ft apart at the closest (steepest part of the hill).
- Swale width and depth – couldn't find recommendations for this either; however, a range of sizes would probably work, as long as a large rain event doesn't overflow the berm. We aimed for about 3 ft wide and 1 ft deep at the deepest point, based on what was easy for a dozer to do.
- Whether to add biomass to swale (mulch, rotting wood, etc.) – we added bark mulch and wood chips. This is nice for soil improvement but not necessary for water retention.
- Method of construction – we hired a guy skilled in installing septic systems. He used a laser level to mark the swale location, and a bulldozer to make the cut and compact the berm. The critical thing is to ensure that the bottom of the swale is completely level.
- Placement of spillways – at the end(s) of each swale should be a way for extra water to exit the swale in a very heavy rain instead of breaking over the berm. Should have established sod or other vegetation so it doesn't erode into a channel.
- Initial cover crop seeded to prevent erosion after construction.
- Planting. It will probably be too wet for most plants in the swale itself. The sweet spot for new trees to have access to plentiful soil moisture is just below the berm.



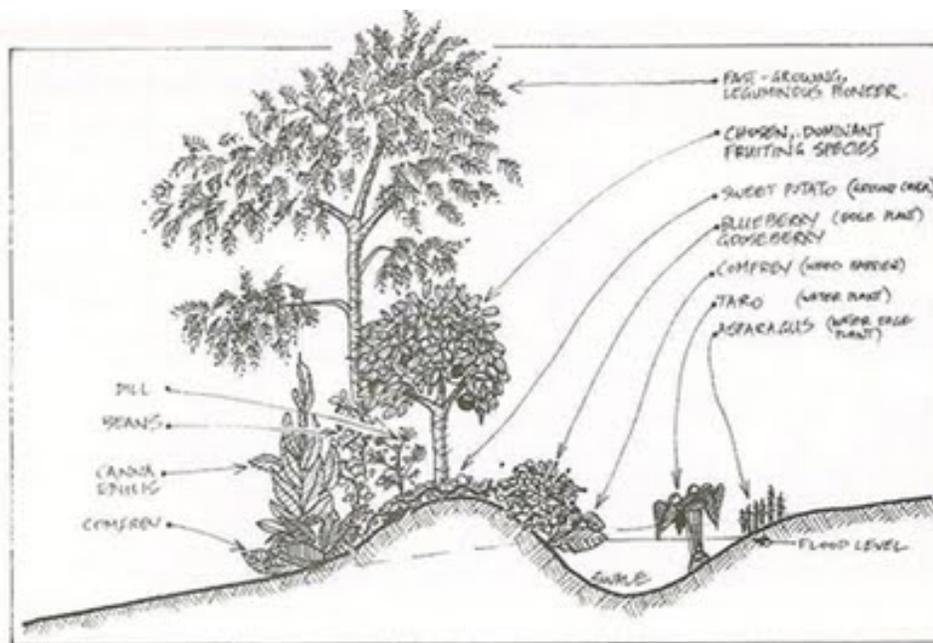
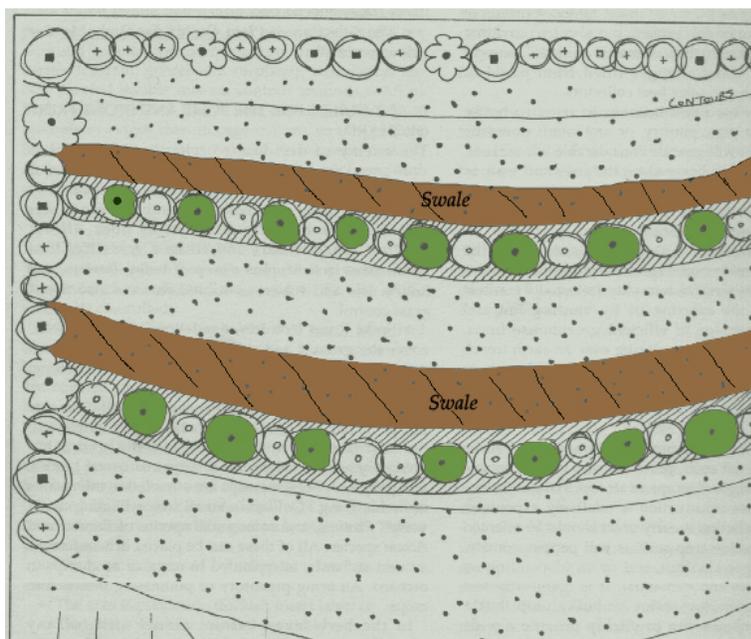


FIGURE 6.4 Trees planted off swale bank to take advantage of wet-season water.



More information

<http://tpermaculture.blogspot.com/2011/06/permaculture-projects-swales.html>

<http://permaculturenews.org/2012/05/16/swales-the-permaculture-element-that-really-holds-water/>

