

## Gardening on Steep Slopes



Steep slopes can be found in many landscapes, from urban lots that slope from the house to the sidewalk to large rural properties with natural hills and valleys. Steep slopes present many challenges to homeowners and gardeners. They often are difficult and dangerous to mow, contain poor soil, and suffer from soil erosion. Erosion is likely to occur on any slope that is not covered by vegetation or structures. Indications of erosion include exposed tree roots, gullies, sediment accumulation in low areas, and small stones or rocks on the surface. Even if you are able to get plants to grow and stay in place, you are still faced with irrigation problems and dry soil, as water will tend to run off instead of soaking into the soil.

Overcoming the problems that steep slopes create usually involves construction and earthmoving. Retaining walls, terraces, paths, stairs, and plants are the most common solutions. The first step is to take a good look at your property to define the problem. To what extent does the slope need to be modified? How much level space do you need for recreational

activities, entertaining, storage, or other uses? Do you want to include areas for plants, such as a vegetable garden or container garden? The ideal design will consider design principles as well as engineering requirements. For example, think about the orientation of the slope (is it a sunny spot?), the point of view (will you be looking up at the slope or down on it?), and the style of your home (will a rock wall look better than a concrete wall?).

The goal should be to do as little earthmoving as possible. Small slopes that aren't too steep can sometimes be modified or contoured by hand using shovels and wheelbarrows. But large or extremely steep slopes that involve major earthmoving will require the services of a professional soils engineer, landscape architect, drainage engineer, landscape contractor, or a combination. These professionals will be able to establish the best position of retaining walls, terraces, paths, stairs, and drainage systems. Whether you decide to take on the project yourself or hire someone, don't forget to contact local authorities to determine if you will need any construction permits.

### Retaining Walls and Terraces

Retaining walls are the most common way to deal with steep slopes, because they minimize the amount of earthwork necessary. While some homeowners choose to build one high wall with a large level area at the bottom, most decide to construct a series of lower walls with level areas (terraces) between them. The terraces can be as wide as you like (depending on site restrictions and engineering requirements),



from 3-foot-wide planting strips to large expanses of lawn. Terraces are an effective way to create several small, level gardens while minimizing erosion and runoff.

Retaining walls can be constructed from many materials including boulders, fieldstone, concrete, treated wood, railroad ties or landscaping timbers, self-stacking precast concrete blocks, and bricks. Wood is often used because it is less expensive and blends well with plants. Masonry materials or concrete will cost more than wood products, but will last longer. Short walls constructed of large boulders can give the slope the appearance of a rock garden.

## Steps, Ramps, and Paths

If you change a steep slope into a series of terraces, you will need some way of accessing the level areas. Steps can often be constructed from the same material as the retaining walls. Steps will work fine for pedestrian use, but gently sloping ramps will be needed for bicycles, wheelbarrows, or lawnmowers. Ramps and paths are often constructed as "switchbacks" that zig-zag horizontally across the slope. This makes them less steep, so they're easier to walk on. When designing switchback paths, try to provide a level resting area about every 30 feet.

## Plants

The simplest and most cost-effective way to cope with a steep slope is to plant it (with something other than lawn grass). Plants alone can solve less serious erosion and runoff problems on small slopes. Their roots hold the soil in place, and their foliage helps to cover the soil and reduce the impact of falling rain. Choose a variety of plants with different canopy heights (trees, shrubs, and groundcovers) and strong, dense roots of various depths.

When choosing plants for your slope, be aware of microclimates that may exist in sloped areas of your landscape. Cold air tends to sink to the bottom of a slope, so less hardy plants may not survive there. Also, consider not only the amount of sun exposure, but also the amount of maintenance the plants may require. Deadheading or dividing perennials, pruning trees, cutting back groundcovers, and weeding can be difficult in a sloped area. If your slope doesn't have access to irrigation, use native plants or wildflowers.

Before planting, test the soil and add organic matter or other amendments that it may need. Work in a small area at a time, clearing only the area that you can plant immediately. If you use herbicide (following the label directions carefully), leave the dead grass or weeds undisturbed until you're ready to plant. Their roots will hold the soil in place and reduce erosion until the new plants get established. If you want to completely clear a large area down to bare soil, you can put down a layer of straw and then use jute erosion control netting to hold it in place. The jute netting can be left in place and allowed to slowly decompose.

Create small "basins" in the sloping soil as individual planting holes. Avoid straight rows-staggered placement will help to prevent water from running straight down the hill. Dig holes that are large enough to allow the roots to spread out. Make sure that taller plants are positioned vertically, and stake them until their roots get established.



Apply a layer of organic mulch between the plants, such as shredded bark or leaves, which will break down and improve the soil. To irrigate your planted slope, use drip irrigation or soaker hoses rather than overhead sprinklers, as they allow water to slowly seep into the soil and thereby reduce runoff and erosion.

Transforming a steep slope into a beautiful garden isn't easy or inexpensive, but it can be very rewarding. Unusable land will become useful, erosion problems will be reduced or eliminated, and your property value may increase. It's worth the time and money to do it right.

## References

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