Several things happen when you sweep a wing. First of all, something called the "lift curve slope" changes. Lift curve slope is abbreviated "dCl/d-alpha" ("dee-see-ell,dee-al-fah"), which is mathematical jargon for the rate of change (the "slope") of the graph of lift coefficient relative to angle of attack (normally noted with the greek letter "alpha"). In even plainer English, it's how fast the lift coefficient increases as you pull the nose up. For most airfoils, on a straight wing the lift coefficient (Cl, pronounced "see-ell") usually increases a bit more than 0.1 for each degree of increase in angle of attack, assuming the Reynolds numbers (abbreviated "Re") are reasonably high. At very low Re, all bets are off. As you sweep a wing aft, dCl/d-alpha's for all locations on the wing decrease by the cosine of the sweep angle. For a 20 degree sweep, dCl/d-alpha will be about 94% of the unswept value, at 30 degrees it drops to 87%, at 40 degrees it's down to 77%, and at 50 degrees of sweep it's only 64%. The maximum lift coefficient stays the same, it just takes more angle of attack to get there. For example, if your straight wing with an RG 15 airfoil stalls at an alpha of about 11 degrees, a 50 degree swept wing won't stall till about 17 degrees. The lift coefficient at that point will still be about the same (assuming we aren't getting a bunch of vortex lift, but that's another subject, more on that in a moment).

So far what we've discussed effects the entire wing, so it really isn't the main factor in tip stalling characteristics. The main culprit for swept wings in this regard is something called the "lift valley" that occurs in the center section of aft-swept wings. For a 15 degree aft sweep, the lift coefficient in the center will be reduced to about 91% of what it should be without the sweep (note that this is in addition to the reduction due to the dCl/d-alpha effects on the entire wing). This means that the center of the wing isn't working as hard, so the middle and outer portions have to work harder to make up the difference. Since they have to work harder, they reach their maximum limits sooner.

Since the "lift valley" phenomenon steals away lift from the center and concentrates more of it in the tips, this also has a nose-down effect on pitch trim. Of course if you add washout to correct this, it helps cancel out this effect, returning the trim situation to something close to normal.

The problem with using washout for this situation is that the effect is highly non-linear, so that if you try to correct it with linear washout, the tips may be ok and the root may be ok, but the lift in the mid-span will be wrong. Ideally you should have non-linear washout, with almost all of it occurring in about the first half of the wing.
In addition, geometric washout can usually be optimum at only one angle of attack, and increasingly bad the further you get from that particular alpha. If you have a one-speed aircraft like a weight lifter or an indoor model, that might not be a problem, but for most models we need to fly at a variety of airspeeds.

There's another problem on swept wings called span wise flow. The air doesn't just flow across the wing in the chordwise direction, it also tends to flow along the wing. It also tends to carry along any problems it's picked up along the way, so a separation region (otherwise known as "stall") that starts inboard tends to spread outboard very quickly. This is one reason why swept wings often have all sorts of gimcracks and widgets and miscellaneous ironmongery hung all over them such as stall fences, sawtooth leading edges, vortilons, vortex generators, etc., in an attempt to stop the stalled areas from spreading into more critical regions (such as around the ailerons). Extra washout would work too, but if you use enough to prevent tip stall completely, it could cause problems with negative lift and undersurface flow separation at the wingtips at high speed. Those gimcracks and widgets and miscellaneous other ironmongery are starting to look a little more attractive!

Now what about taper? Taper can help make the lift distribution of a wing more elliptical, but if we're not careful we can cause tip stall problems. On a model this is particularly critical because we operate in a very sensitive range of Reynolds numbers. If you use a lot of taper, you almost guarantee tip stall problems because of ridiculously low Re's at the tip, and the reduction of max lift and stall angle that usually goes with that. Add the effects of the lift valley and you have a model design with tremendous potential for truly awful handling! For this reason we usually want to be conservative with our use of taper. On medium-sized models, a taper ratio of about 60-70% (i.e.: the tip chord is 60-70% of the root chord) is usually safe; on small models I'd consider even less taper. This is where some expertise with blending different airfoils can really come in handy. There are other ways besides an elliptical planform or elliptical washout to end up with an elliptical lift distribution.

So let's see: to properly design a swept wing we need a very sophisticated panel-method computer code to analyze the lift distribution, another very sophisticated code to design the airfoils, a Cray to run them on, years of experience and training to use them effectively, and a good low-speed wind tunnel to verify that we aren't deluding ourselves? Well, maybe if we want to have the greatest design in the entire history of its class, but for a good sport model we can probably get acceptable results with something a bit simpler.

Let's assume that your taper is resulting in a reasonably good approximation of an elliptical lift distribution. This also means that the local lift coefficients are reasonably close to constant along the span. Now all we have to do is provide enough washout to correct for the lift valley's effects.

To prevent tip stall, first look at the lift coefficient vs. angle of attack (Cl vs. alpha) graph for your airfoil. Find the angle of attack for the stall. Now divide that by the cosine of your sweep angle. The result is the angle of attack where your tip will stall.

Now find the depth of the lift valley at the wing root. This is tricky, but you can make a VERY CRUDE approximation (ok all you aero-phd purists on the list, I know this is a gross oversimplification, but we seem to do that for almost everything else on this list, so now it's my turn to do it!) with the following relationship:

(Swept Root Cl) = (Unswept Root Cl) x [1 - (.006 x sweep in degrees)]^2

This is an approximation, and based on a constant angle of attack at the tip. It will be most accurate at around 15 degrees sweep, and will tend to over predict the depth of the lift valley at higher sweep angles. This means that you will calculate a little more washout than necessary at these higher sweep angles, which isn't such a bad thing.

For example, if you have 15 degrees of sweep, the lift at the root will be reduced by the factor [1 - (.006 x 15)]^2 which equals 83% of the unswept root Cl. At 30 degrees sweep we calculate 67%, and at 45 degrees we get 53% (the real value is about 60%). Like I said, this gives you a bit of extra safety factor at the higher sweep angles.

Multiply the stall Cl for your airfoil by the factor you just calculated. This is the Cl at the root when your tip is stalled if you don't have any washout. Look on your Cl vs. alpha graph and find the angle of attack (alpha) that corresponds to that Cl. Now measure the difference in degrees between that alpha and the stall alpha.

Divide that angle by the cosine of your sweep angle. This result is the amount of washout it takes to make the root of your wing stall at the same pitch attitude as the tip. Because the shape of the lift valley is non-linear, the areas just outboard of the root will probably stall a little before this. Add a little more washout if you like just for safety factor, and go build a wing!

For example, assume we have a 20 degree swept wing with an RG-15 airfoil, and a root Re of 150,000. From "Soartech 8" we find that the unswept stall Cl is about 1.05 at an alpha of 11 degrees. When the tip reaches stall at Cl = 1.05, the root of the swept wing will only be at Cl = 0.813 . From the Cl vs. alpha plot in "Soartech 8" we find that it's another 5.5 degrees to reach stall, and the effects of 20 degrees of sweep on the dCl/d-alpha increases that almost 6 degrees. Anyone care to experiment with some stall fences and leading edge cuffs first?