All of GPP goes to carbohydrate storage (carbostg ) and then carbostg is parceled out to NPP and autotrophic (maintenance and growth) respiration.   For grasstrees, carbostg can be lost when coarse roots die.  For trees, it can be lost when fine branches or large wood die or are havested.  For crops, it is lost when fine roots die. The photosynthesis calculations (see the function calcphotosyn in calcPhotosyn.c for more details) use a lot of those parameters near the bottom of each set of grasstree.100, tree.100, and crop.100 parameters (starting at AMAX and ending at PSNTOPT.  There are potential GPP (water unlimted) and actual GPP (water limited) outputs in psyn.csv.  The water and temperature effects on GPP are also in this output file.

Aside from increasing carbostg losses due to autotrophic respiration, you can also decrease GPP (and thus carbostg) by reducing AMAX.  You might want to try this instead of or in addition to increasing autotrophic respiration fluxes to keep carbostg reasonable. Or you could reduce/increase AMAX in just part of the growing season by reducing/increasing one of the AMAXSCALAR(\*) parameters

But even if carbostg gets huge, it is really not going to adversely affect any model processes. One thing about carbostg and GPP, however, is that they have zero effect on NPP regardless of how big or small they are.  Potential NPP is calculated the same in all versions of the model, based on PRDX, radiation, water, temperature, etc, and then actual NPP is <= potential NPP based on N availability.  NPP is subtracted from carbostg, but it is not restricted by the amount carbostg.

Actual plants, particularly perennial plants and trees, store carbohydrates in their tissues so they can draw on them when the next growing season begins and rely less on active photosynthesis until leaves are formed. They are energy reserves. In the model, the main reason for creating the carbostg pool was to be able to simulate the autotrophic respiration fluxes. If the model draws too much carbostg the model will add 15 gC/m2 to it to prevent it from going negative and to keep the model running. However, you will probably see a warning message that the model did that.  If you care about getting the maintenance and growth respiration correct, you'd want to pay attention to these warnings and find ways to increase GPP or decrease carbostg losses.

In the model, maintenance respiration increases with leaf biomass, air temperature, soil moisture, and with carbohydrate storage (up to a maximum amount).  Maintenance respiration will be reduced when carbostg gets low.

In the model, growth respiration is just a fixed fraction (GTGRESP(\*)) of the NPP of each plant part.