WHAT IS CLAIMED IS:

1. A method comprising:

providing a saccharified mixture from a saccharifying process and separating a first cellulase solution from a solid component of the saccharified mixture, said first cellulase solution comprising enzymes and sugars;

saccharifying a first biomass using the first cellulase solution, thereby producing a second biomass and a first sugar solution;

separating the second biomass from the first ~~liquid~~ sugar solution, the first sugar solution enriched in sugars compared to the first cellulase solution; saccharifying the second biomass using a second cellulase solution, the second cellulase solution comprising fresh enzymes, thereby producing a third biomass and a second sugar solution; and

separating the third biomass from the second sugar solution to obtain a recovered second cellulase solution comprising enzymes and sugars.

2. The method of claim 1 wherein the biomass has been treated by a method selected from the group consisting of irradiation, sonication, oxidation, pyrolysis, steam explosion and combinations thereof.

3. The method of claim 1 wherein the biomass has been treated by irradiation.

4. The method of claim 3 wherein the biomass receives a total dosage of between about 10 and 200 Mrad.