



SEKAB

*Ethanol from
sugar beet pulp*

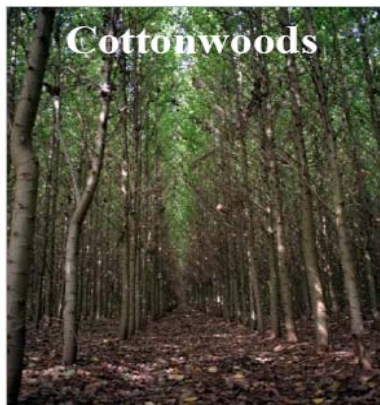
Karin Öhgren Gredegård, PhD





Bioethanol Research and Pilot Plant - ethanol from biomass

Biomass is all around us



A person wearing a red jacket and a white cap is sitting on a large rock in the foreground, looking out over a vast, dense forest of evergreen trees. The forest extends to the horizon under a bright sky. The text "Sweden has a lot of forests" is overlaid in the center of the image.

**Sweden has
a lot of forests**



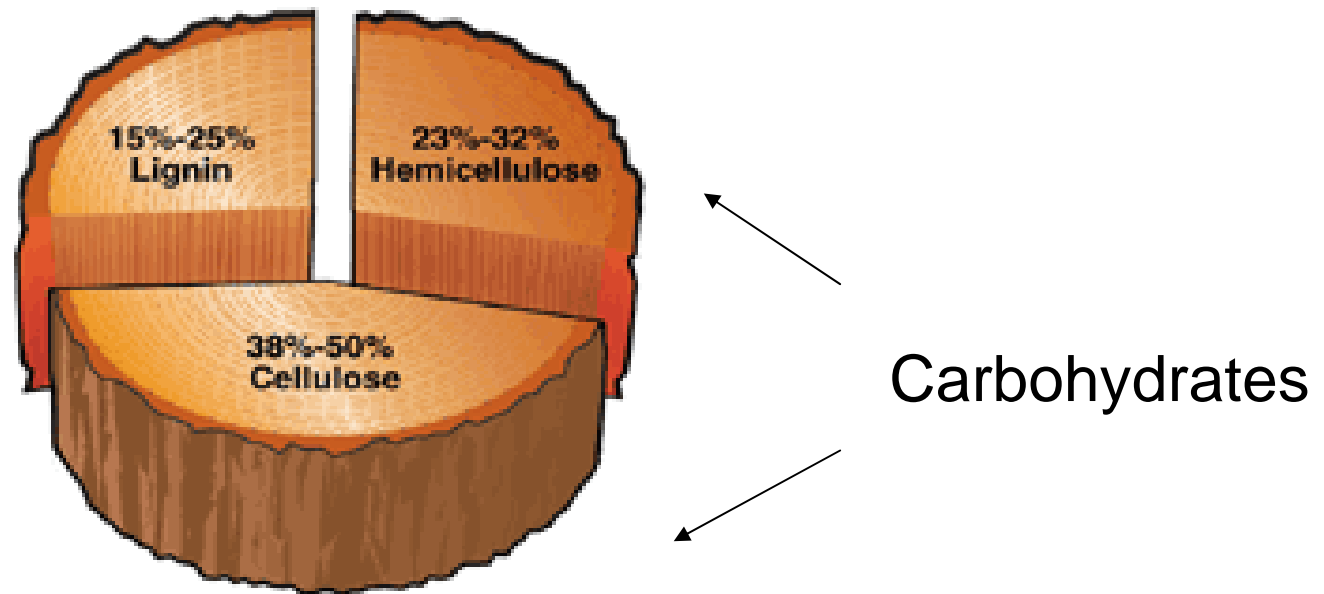
*The first ethanol from
the Pilot Plant*

Sugar beet pulp

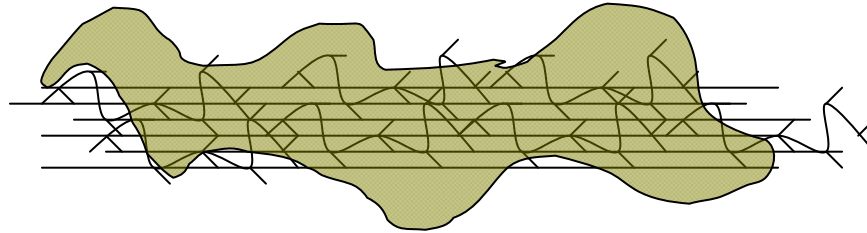


Simplified process

Pilot Plant



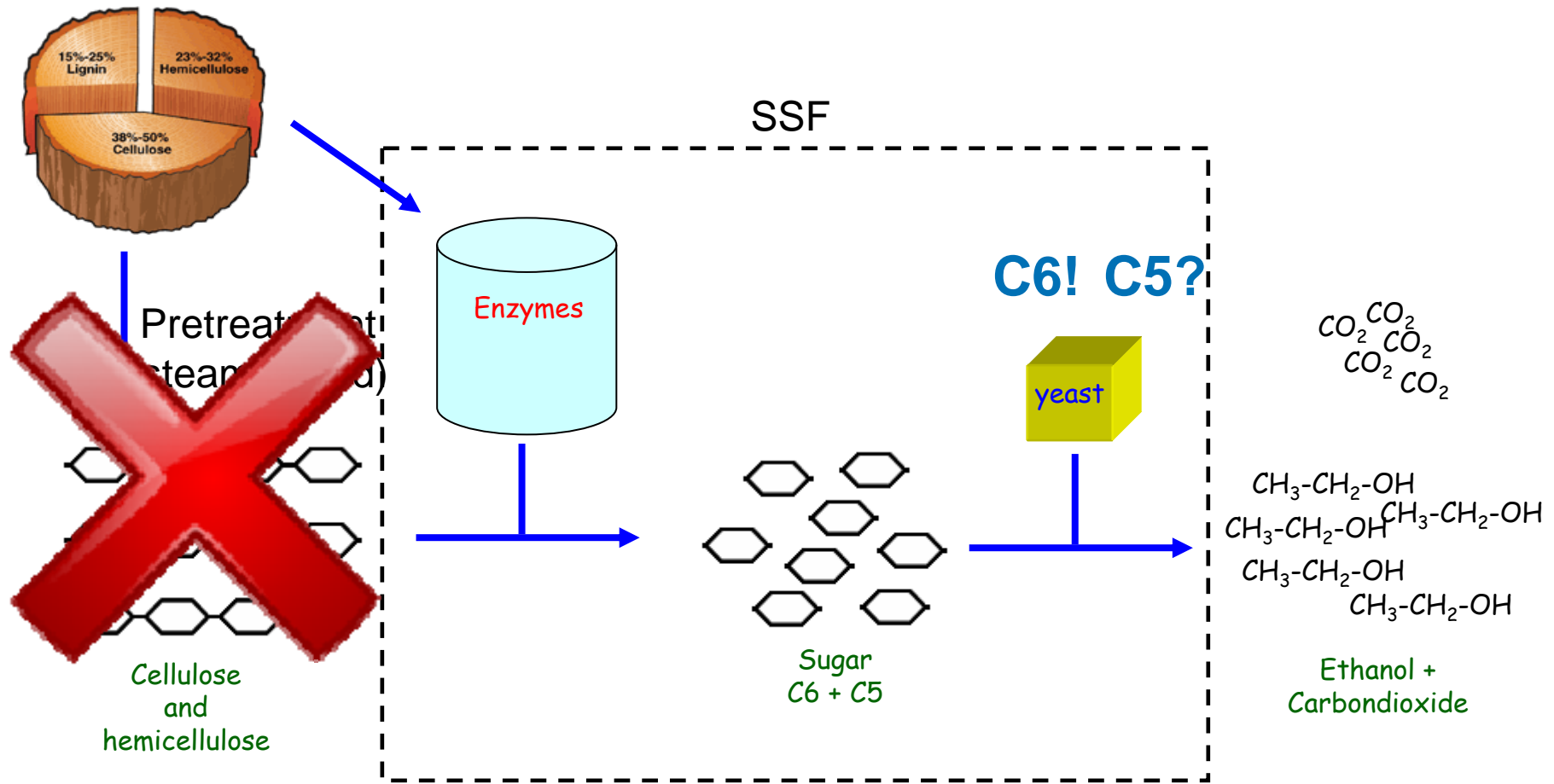
The structure of biomass



As much as possible of the carbohydrates needs to be degraded to free sugar units that then can be fermented to ethanol.



The Process in detail



Söderström, Johanna, 1999, "Etanolproduktion från betmassa" (Ethanol production from beet pulp), Department of Chemical Engineering, Lund Institute of Technology, Lund, Sweden

Örtofta sugar mill



18 000 ton sugar beet / day



2 900 ton sugar / day



825 ton dry pulp / day



Economy

- 825 ton pulp per day → 100 m³ ethanol (C6)
125 m³ ethanol (C5)
- 0.4 €/L → 5 M €/year (C6)
11 M €/year (C6+C5)
- Investment cost 18-22 M €
- Operating cost ?



Conclusion

An investment like this will be:

- the first pulp-ethanol production unit in the world
- operating only for about four months per year
- not profitable due to
 - short operating time
 - poor pentose fermentation

