

Translation from the French original document

Comments on Betalacool II trials

The first tests of development of November 16 show:

- that after a washing, on the outlet side of the machine, one counts some 1000 germs per ml
- at 85°C, the machine can cause a drop in the microbiological population of some 4 orders of magnitude
- this shows that the control of the bacteria of contamination is definitely better than in the first series of tests of October 2006, moreover in the following tests, the problem of the bacteria is under control, which is measured by the bacteria population and the analysis of the lactic acid
- in spite of a contamination of bacteria, one obtains interesting alcohol yields with 9,5% vol. of ethanol

The tests of November 20 show:

- the alcohol levels are much more important than in the tests from October with 9 to 10% vol. of ethanol. Possible explanations
 - higher initial sugar rate (intrinsic with beet)
 - lower dilution by water
 - higher efficiency of yeasts by a better control of inoculation and the addition of nutrients (nitrogen)
 - competition by wild fauna controlled
- the wild bacteria are still present, at rates from some 10^4 to 10^5 bacteria per ml of mash. One can conclude that the population is controlled with the reading of the final concentrations in acetic and lactic acid being very weak
- a calculation based on a percentage of some 16% sugar in beets, with 1,21 litre of mash for 100 kg of roots and a dilution of water 6,35% brings us to less than 14 g of sugar per litre. However the yeasts must have an output of to the maximum 16 g of sugar for 1% vol. of ethanol, which means that one cannot have more than 8,75% vol. of ethanol by the beet sugar. Consequently, two possible assumptions:
 - the sugar rates are erroneous, the method of the sugar refineries does not manage to extract all sugar from beets
 - the Steiner method makes it possible to draw sugars from the walls, pectin, or cellulose (bioethanol of 2nd generation)
- with 33°C, fermentation is very fast, in a few 24 hours, it is almost finished
- fermentation by the Steiner method is possible without additional supply of enzyme, the contribution of enzyme makes it possible to accelerate the mechanism
- the traditional alternatives are much slower,