Minimizing the milk of lime and steam consumption during sugar beet processing in delta sugar factories.

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Abstract:

This investigation was carried out at Delta Sugar Factories during (2013), (2014) and (2015) working seasons to minimize the milk of lime consumption which added to the diffusion juice in the juice purification station in a few steps to precipitate and destabilize the non-sugars (impurities). Also to reduce the steam consumption % on beet in the evaporation station and hence reduce the costs during sugar beet processing. From the results obtained, it could be noticed that the analysis of the comparison between the additions of milk of lime on hot and cold diffusion juice gave a high difference values between hot and cold liming in two different production lines, line(1) (hot liming) and line(2) (cold liming). Thin juice purity, non-sugar elimination in juice purification (% beet), juice purification efficiency(%), gain in purity(%) and recovery (%) were higher in cold liming than in hot liming, while non-sugar in thin juice (% beet), color formation in thin juice (IU at 420 nm), thin juice hardness (mg/100DS), sugar loss to molasses (% on beet), and molasses (% on beet) were higher in hot liming than in cold Liming. Also, in the first production line of Delta Sugar Company the steam consumption % on beet is very high values reached to about 43% on beet, so that some trials were occurred to reduce it by addition a new Booster evaporator in parallel with first effect, a new falling film (third effect) and plate evaporator unit (fifth effect). Consequently, the capacity of the first production line increases to 8000 ton beet per day, and so we will hope to increase the overall capacity for the factories to 18000 ton beet per day.

Keywords:

Sugar beet (Beta vulgaris L.), sucrose, beet juice, quality, steam.

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