

Techno -economic comparison of methods of upper tank hot water soaking system and ground tank cold soaking in parboiling of paddy

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A study was undertaken to compare upper tank hot water soaking system with ground tank cold water soaking system of rice mills. It was evaluated in terms of techno-economic analysis using different economic and quality indicators such as net present value (NPV), benefit to cost ratio (B/C ratio), payback period, return on investment, internal rate of return (IRR) & total milling yield (TMY), head rice yield (HRY), percentage of broken (PB), percentage of white belly, percentage of discoloured grain. The net present value for upper tank hot water soaking system was Rs. 3,766,095.80 where as for ground tank cold water soaking system, it was 1,683,175.15. The benefit to cost ratio for upper tank hot water soaking system and for ground tank cold water soaking system was 1.66 and 1.35 respectively. The total payback period for upper tank hot water soaking system was 3.01 years, where as it was 3.71 years for ground tank cold water soaking system. The return on investment was 20.36 percent for upper tank hot water soaking system and 16.98 for ground tank cold water soaking system. The internal rate of return for upper tank hot water soaking system was 25.55 percent where as for ground tank cold water soaking system, it was 19.45. Total milling yield of dried parboiled paddy produced by upper tank hot water soaking system was 73.88%, where as 72.60% for ground tank cold water soaking system. The head rice yield and broken percentage of milled rice for upper tank hot water soaking system were 97.5 and 2.5 respectively and that of ground tank cold water soaking were 95.1 and 4.9 respectively, and were significantly different ($p < 0.05$). Percentage of white belly and discoloured grain were 1.6 and 2.80 for upper tank hot water soaking system and 0.41 and 2.22 for ground tank cold water soaking system. discoloured. The economics and quality of upper tank hot water soaking system was made in comparison with ground tank cold water soaking system, because most of the millers, who have modern rice milling plant, are keen to introduce this system to their milling plant as it increase the plant capacity and quality. It was observed that upper tank hot water soaking system was a good proposition for soaking paddy within a short period and was techno-economically better than ground tank cold water soaking system. The system saves time and labour & gives high capacity and high quality product.