

How to increase cane and Sugar yield per Hectare

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There are many factors which affect the cane and sugar yield per hectare. However, among them planting technology and sugar recovery are the major one which influence the cane and sugar yield per hectare. Cane yield can be increased by adopting new planting technique of sugarcane sowing in 2 rows in one trench at a distance of 1.25 to 1.50 feet apart of 2.5 feet wide and 1.25 feet deep trench with 2 feet wide bed (Figer-1). By following this new technique 47% water is saved (Chattha, 2007) in addition to increase in cane yield . Weed free and erect crop of sugarcane is obtained due to proper hoeing and earthingup mechanically. Planting of sugarcane in closer spacing of 2.5 feet apart furrows is a major cause of low cane yield and wastage of irrigation water and other resources. In case of new planting technique of sugarcane 55 tranches are made with 110 rows of sugarcane instead of 88 furrows and 88 cane rows in indigenous method of furrow planting at 2.5 feet apart. As the number of cane rows is increased, cane and sugar yield increases due to increase in plant population of sugarcane per hectare. Mechanical interculture to eradicate weeds is not feasible in case of old technique of planting sugarcane as it has to be done manually or with bullocks which is costly, time consuming and difficult one. Thus lodged crop of thin canes with poor cane yield and low sugar recovery is obtained. Majority of cane growers does not have the required implements to adopt new planting technique of sugarcane, hence, most of the cane crop is sown with the old planting technique which results in less average cane yield on national level than the cane yield of advanced cane growing countries of the world. Moreover, a

lot of irrigation water and weedicides are wasted in case of planting sugarcane with old technique. To increase cane yield soil also plays a very prominent role. Sugar cane can be grown on all types of soil but loam soils are considered the best for good crop yield. The pH of soil should also be less than 8.5. the soil should be well drained with 2% organic matter. Soil should be prepared up to 45 cm depth as 75% portion of roots is accommodated there some roots may penetrate to deeper regions. Soil organic matter may be improved by adding farm yard manure, filter cake or by green manuring of leguminous crops like guara, daincha, jantar, sunhemp and barseem etc. Addition of farm yard manure, filter cake or green manuring should be done 6-7 weeks before planting of sugar cane. Irrigation may be applied for quick decomposition of organic manures. For thorough decomposition of green manures half bag of urea can be applied. The whole field has to be irrigated every time during the whole season. Though there are many other factors which affect the cane yield but these factors can be managed whereas problem of availability of proper implements cannot be ensured without the help of government or sugar industry. As regards sugar yield per hectare it can be increased by improving the sugar recovery of the cane crop. Sugar recovery can be improved by crushing high sugar varieties/clones like CPF-246, CPF-247, CPF-248, CPF-237, HSF-240, HSF-242, SPF-234 US-633, US-133, US-127, US-704, US-778, US-718, US-247, US-658, CSSG-2402, CPSG-25 and CPSG-2923. Quality cane production can be ensured by adopting a number of production technology concerns such as use of promising varieties as seed, timely sowing, optimum and timely application of balanced fertilizer, irrigation water, harvesting and supply of mature cane, effective disease or pest control or proper weed eradication and better ratoon crop management. Very little attention is paid to all such factors to improve the cane and sugar yield per hectare. However, a strong managerial gesture at industry level is equally important to safeguard effective selection and utilization of quality cane at mills doorsteps for better sugar recovery. As this is only possible by ensuring efficient and competent employment, incentivized quality cane procurement, discouragement of supply of poor

quality or staled and un-cleaned cane at the mills cane yard to avoid rusting and fermentation and the professional honesty on part of mills as well as growers level in order to meet the challenge of more sugar recovery per unit cane weight to increase the sugar production per hectare. Crushing of low sugar varieties is a major hurdle towards sugar recovery improvement. The planting of low sugar varieties like SPF-238, SPSG-79, CO-1148 (India) and Triton have posed a serious threat to the viability and even existence of such sugar mills which are getting less than 10% sugar recovery at the prevailing cane and sugar prices. The industry should not accept crushing of such low sugar varieties in the mills to save it self from total failure. Use of organic manures like farm yard manure, poultry feces, stillage waste, stillage water, filter cake (press mud) and green manuring in addition to inorganic fertilizers can also help to increase the cane and sugar yield per hectare. Use of balanced fertilizer is a key for better cane yield and good sugar recovery as use of nitrogenous fertilizer without phosphorous and potash makes the cane plant succulent and invites the insect pest and encourage the lodging of the sugarcane crop whereas phosphorous and potash fertilizers increase the resistance of the cane plant and improve the sugar recovery for better cane and sugar yield per hectare. The Farmers can be motivated to plant high sugar varieties by giving incentive on extra sugar present in the new cane varieties to get high sugar yield per hectare. In the same way planting of sugarcane by new production technique can be encouraged by providing implements like Sub Soiler, Rotavator, Disc harrow, Ridger and Intercultural ploughs on subsidized rates by the sugar industry and government . Sugarcane crop is very important as Sugar industry is the 2nd largest in Pakistan after textile with 87 sugar mills across the country. Out of this total, 84 sugar mills are operational which have the crushing capacity of 89.62 million tones (**PSST, 2012**). However, actual cane crushing is 50.09 million tones resulting in production of 5.03 million tones of sugar with a maximum sugar recovery of 10.00% (**PSST-2013**). With only 1% increase in sugar recovery that is 11%, there will be 0.5 million tones increase in sugar production with a value of Rs.25 billion. The area under sugarcane cultivation is 1.128 million hectares. With a small increase in

sugar recovery, there will be a huge benefit for the industry. Sugar recovery from the sugarcane serves as the most dynamic driving force for controlling economic viability in the national grid of sugar mills to increase the sugar production per hectare. Sugar recovery at mills level heavily influences the ultimate control price fixation for cane purchase by the sugar mills at the very gross root level. This small increase of 1% in sugar recovery is quite possible as 11 sugar mills are already getting more than 11% sugar recovery whereas about 35 sugar mills are getting more than 10% sugar recovery **(Table-1 a,b,c&d) (PSMA,2013)** by planting high sugar varieties **(Table-2)**. Out of 1.128 million hectares of sugarcane, 0.9024 million hectares are crushed by the sugar mills. With the increase of sugar yield per hectare the cost of sugar production per hectare can be decreased up to Rs.27,704 per hectare if all the sugar mills manage to get 11% sugar recovery, the losses of the industry can be averted into benefit. The target of 11% sugar recovery is not imaginary or hypothetical figure as some sugar mills are getting more than 11% sugar recovery. JDW – 2 and Naudero with 11.60 and 11.50% sugar recovery have set an example of getting high sugar recovery. Even these mills cannot make further breakthrough without high sugar clones like US-633, US-133, US-127 and CPSG-25. The mills like Chishtia, Abdullah (ii)(Yousaf) with lowest sugar recovery should develop variety cane in their areas to improve their varietal composition and sugar recovery **(PSST-2012-13)**. Sugar yield can also be increased by the supply of clean and unstaled cane in the mills as tops and trash reduce the sugar recovery up to 1% **(Table-3), (Chattha. et al, 2007)**. However, considering the sugar recovery of ten top cane producing countries of the world, even 11% sugar recovery is less than the desired level of at least 12.00%. Whereas, clones S2003-US-127, S2002-US-133, S2003-US-633, S2003-US-704, CSSG-2402, CPSG-2923, CPSG-25 and S2003-US-165 are present in the research institutes with complete data for the last 10 years waiting for approval with more than 12.00% sugar recovery. These clones are also early maturing and crushing in the mills can be started from 1st November.

