FLUE-CURED TOBACCO CURING COST IN RELATION TO THE CURING FUEL

Budimir A; Šarčević H; Belarić S; Zdeličan J; Boić M; Kozumplik V
1 Hrvatski Duhani d.d. Virovitica, Osječka 2, Virovitica 33 000, Croatia
2 University of Zagreb, Faculty of Agriculture, Svetošimunska 25, Zagreb 10 000, Croatia

Introduction

In Croatia curing flue-cured tobacco is done in bulk-curing barns, in racks, using natural gas. Price of the gas has increased about 100% during last five years. Price of the cured tobacco has not followed the gas price increase. Thus, tobacco farmers have been looking for other sources of energy for curing flue-cured tobacco. Wood as logs, pellets or chips (biomass), might be replacement for the gas. The purpose of this research was to find out the benefit of curing flue-cured tobacco with the biomass instead of natural gas.

Materials and Methods

In 2011 and 2012 growing season curing flue-cured tobacco in bulk curing barns with natural gas and with the biomass was performed at several farms. The existing rack bulk curing barns were used for the curing. For curing with the biomass the gas thermo-generators were replaced with the thermo-generators suitable for curing with logs (Fig 1), chips (Fig 2) or pellets (Fig 3). Curing with pyrolytic burning logs was also assessed but in 2012 only (Fig 4). The barns differed in the thermo-generators only. Curing in all the barns was done at the same time and the tobacco leaves of one curing cycle were from the same stalk position. In a curing cycle the racks were filled with the same green tobacco weight. Curing the tobacco was done in seven cycles each year. The birch three wood was used as logs, pellets and chips, and as logs in the case of pyrolysis. The biomass humidity was about 35%.

Results and Discussion

On the average, for curing a kg of tobacco leaf 0.83 m³ of gas, 1.58 kg of logs, 1.50 kg of pellets and 1.49 kg of chips was used (Graph 1). Average price of a m³ of gas was 0.77 $, a kg of logs 0.073 $, a kg of pellets 0.212 $ and a kg of chips 0.098 $ (Graph 2). Thus, curing cost of a kg of tobacco leaf cured with gas was 0.64 $, with logs 0.11 $, with chips 0.14 $ and with pellets 0.31 $ (Graph 3). At the same time curing a kg of the tobacco with pyrolytic log burning cost 0.107 $.

Conclusions

Curing a kg of the tobacco leaf with gas cost 0.64 $, with logs 0.11 $, with pellets 0.31 $ and with chips 0.14 $. Average curing per season per barn (seven tobacco barns) was with logs 5475.00 $, with chips 3462.00 $ and with pellets 2250.00 $, as compared to curing with natural gas. The cheapest way curing with wooden logs, but a slightly cheaper than with chips. With the present cost of natural gas and wood, the logs and chips for the thermo-generators for the logs and chips could be recuperated in two years. The one year results of curing with pyrolytic biomass burning are not in favor of this curing manner, as compared to burning logs without pyrolysis, because of higher prices of the pyrolytic thermo-generator.

Literature:

2. Macialek, Justin Alan ; Reduction of Flue-cured Tobacco Production cost utilizing a hot water system , 2010.