

## **Abstract**

Studies were undertaken to establish the performance of a genetic algorithm-optimized solar tunnel dryer in drying of fish by comparing quality attributes of fish dried in the optimized solar tunnel dryer with that dried in a nonoptimized solar tunnel dryer and in open sun. A two-way analysis of variance revealed a highly significant difference between moisture ratios for the fish dried under the optimized solar tunnel dryer and the other methods ( $F = 53.59$ ,  $F_{crit,1\%} = 4.09$ ). In addition, thiobarbituric acid reactive substances showed that fish dried in the optimized dryer did not develop rancidity ( $2.30 \mu\text{g MA/kg}$ ), that dried in nonoptimized dryer approached rancid values ( $5.3 \mu\text{g MA/kg}$ ), while open sun dried fish was slightly rancid ( $7.95\text{--}8.45 \mu\text{g MA/kg}$ ). Further, based on total volatile base nitrogen, fish under the three drying treatments did not develop significant putrefaction. Furthermore, it took 15, 22, and 28 h to dry fish to equilibrium moisture content of 0.12 kg/kg (dry basis), for the optimized and nonoptimized solar tunnel dryers and for the open sun drying, respectively. Thus, the optimized solar tunnel dryer is superior to both nonoptimized solar tunnel dryer and open sun drying in the drying of fish.