

ABSTRACT

IDENTIFICATION OF THE AUTHENTICITY OF LAMPUNG ROBUSTA COFFEE USING ELECTRONIC NOSE SYSTEM OF ARTIFICIAL NEURAL NETWORK WITH BACK PROPAGATION METHOD

By

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Research on detection of the aroma system for native Lampung robusta coffee with a mixture of rice and corn using an electronic nose (e-nose) consisting of 5 sensors, namely MQ-3, TGS-2602, TGS-2611, TGS-2600, and TGS-822. The purpose of this research is to be able to develop a system based on an Artificial Neural Network (ANN) using the backpropagation method. The hidden layer variations used show that the ANN parameters will be maximized in hidden layers 4 with the same average parameter value of 94% and an error value of 5.3%. Grouping samples with Principal Component Analysis (PCA) has also been able to identify data on coffee sample types. Manual calculations were also performed to determine the value of the standard deviation and relative uncertainty of the sample and it was found that the average standard deviation was 0.11 V and the relative uncertainty was 6%.

keyword : *Electronic nose, e-nose, Robusta coffee, back propagation, PCA*

ABSTRAK

IDENTIFIKASI KEASLIAN KOPI ROBUSTA LAMPUNG MENGGUNAKAN SISTEM *ELECTRONIC NOSE* JARINGAN SYARAF TIRUAN DENGAN METODE *BACK PROPAGATION*

Oleh

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Penelitian mengenai sistem deteksi aroma kopi lampung robusta asli dan campuran beras maupun jagung dengan menggunakan *electronic nose (e-nose)* yang terdiri dari 5 sensor yaitu MQ-3, TGS-2602, TGS-2611, TGS-2600, dan TGS-822. Tujuan penelitian ini adalah mampu mengembangkan sistem berbasis Jaringan Saraf Tiruan (JST) dengan metode *backpropagation*. Variasi *hidden layer* yang digunakan menunjukkan bahwa parameter JST akan maksimal pada *hidden layer* 4 dengan rata-rata nilai parameter yang sama yaitu sebesar 94% dan *error value* sebesar 5,3%. Pengelompokkan sampel dengan *Principal Component Analysis* (PCA) juga telah mampu mengidentifikasi data jenis sampel kopi.

Kata kunci : *Electronic nose, e-nose, kopi robusta, back propagation, PCA*