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# **Czech J. Food Sci.**

**Golpour I., Parian J.A.,  
Chayjan R.A.:**

# **Identification and classification of bulk paddy, brown, and white rice cultivars with colour features extraction using image analysis and neural network**

Czech J. Food Sci., 32 (2014): 280-287

We identify five rice cultivars by mean of developing an image processing algorithm. After preprocessing operations, 36 colour features in RGB, HSI, HSV spaces were extracted from the images. These 36 colour features were used as inputs in back propagation neural network. The feature selection operations were performed using STEPDISC analysis method. The mean classification accuracy with 36 features for paddy, brown and white rice cultivars acquired 93.3, 98.8, and 100%, respectively. After the feature selection to classify paddy

this study. The highest mean classification accuracy (96.66%) was achieved with 13 features. With brown and white rice, 20 and 25 features acquired the highest mean classification accuracy (100%, for both of them). The optimised neural networks with two hidden layers and 36-6-5-5, 36-9-6-5, 36-6-6-5 topologies were obtained for the classification of paddy, brown, and white rice cultivars, respectively. These structures of neural network had the highest mean classification accuracy for bulk paddy, brown and white rice identification (98.8, 100, and 100%, respectively).

### **Keywords:**

stepdisc analysis; HSI; HSV back propagation algorithm, bulk images

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