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Spatial Price Transmission as Incentive for Watermelon Supply: Strategy for Food Security in Northeast Nigeria

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Abstract

This work seeks to study spatial price transmission and market integration of watermelon markets in northeast of Nigeria. The Johanssan co integration test, Vector Error Correction model and Granger causality test was employed on the time series data, collected for a period Ten (10) years among 292 watermelon marketers in the study area. Johansan co-integration test indicated that the four watermelon markets were significantly not co-integrated. The criterion for selection is that trace statistic value was greater in absolute term than the critical value at 0.01 and 0.05 levels of significance. Vector Error Correction (VEC) model test showed that the speed price adjustment was significance at the short-run. The implication is that there was symmetric information among the markets. The Granger Causality Test indicated that between Nguru and Bisari and Gashua and Gwio-kura were unidirectional respectively. The null Hypothesis of non- stationarity was rejected at first difference among the four (4) markets. The result is consistence with most agricultural product. The regression and index of market concentration of watermelon prices revealed $1.3 \text{ IMC} > 1$ which implies low short-run market integration between Gwio-kura and Gashua and IMC between Basiri and Nguru revealed a low short-run integration of $\text{IMC } 17.5 > 1$. Using the IMC values as indication for market efficiency the result revealed high market efficiency between the rural and urban watermelon markets. The price differential brings about a drift of the product to areas of higher prices and demands. The paper recommended that for higher profit margin, it is necessarily for marketers to move the product to distant markets with high demand. In addition, value addition activities like the watermelon fruits being processed in other forms, such as watermelon juice should be adopted in the area. This could provide job opportunities and wealth creation among the rural poor. With increased profit and higher demand, farmers and marketers could enhance their livelihood and ensure food security because with higher income, they could afford non-farm expenditure such as education and medical bills.

Keywords: Market integration, spatial price transmission, watermelon, Northeast Nigeria