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Characterizing the Patterns and Trends in International Trade Network of Gum Arabic: Implication for the Producer Countries

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Abstract

Gum arabic is among the oldest internationally traded non-timber forest products. The commodity is extracted from *Acacia* species adapted to the drier agro-ecologies of tropical regions. It has wider industrial application in food, beverage, pharmaceutical, cosmetic and other industries. In order to fully understand the gum arabic value chain and its impact on the national economy and rural development of producer countries, a holistic understanding of the structure of the trade flow is crucial. This paper uses a network analysis tool to analyse the characteristics of gum arabic international trade network (ITN). The structure of the trade networks is compared to examine the trends to what extent the characteristics of the ITN changed over the last decade. The analysis reveals that the international trade of gum arabic demonstrates an expanding trend both in volume and trade connections from 2002 to 2011. A general increase in the size of the trade network in terms of the number of vertices and links as well as increasing trend in the density of the network was observed in the last decade. The gum arabic international trade is concentrated in certain industrialised countries including France, Germany, USA, and Great Britain. Their significance in the ITN is explained by the high in-degree, out-degree and the betweenness centrality indices. The increase in density of the network over the last ten years implies the increasing connectedness of countries in the gum arabic commodity trade. Overall the international trade flow of gum arabic is dominated by industrialised countries that controlled the processing and distribution of the commodity. This might have an implication for forward integration of the producer countries in value added processing of the commodity and in finding new partners and market outlets in developed countries. Promoting foreign direct investment and faire trade mechanisms can balance the benefit distribution between the producers and the international partners.

Keywords: Betweenness centrality, density, forward integration, gum arabic, ITN, vertex