Nepalese Turmeric

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# Introduction

## Overview and Uses of the Turmeric Plant on the Farm

Turmeric, or *Curcuma longa*, L (*C. longa*, L) is a species in the class of Liliopsida, the subclass of Commelinids, in the order of Zingiberales, in the family of Zingiberaceae, and of the genus *Curcuma* (Chattpadhyay, Biswas, Bandyopadyay, & Banerjee, 2004). Turmeric is a flowering plant, though it very rarely produces flowers, and is propagated by replanting from root cuttings or rhizomes (Nasirujjaman, Salah Uddin, Zama, Reza, 2005). The quantity and quality of curcumin in the roots is the most important feature of the plant as it is sold by weight (Food and Agricultural Organization of the United Nations (FAO), 2004). The leaves and shoots of the plant may be used as ground cover to suppress weeds for future turmeric crops, or for other crops. This may allow for the retention of moisture in the soil during the drier seasons, and for nutrient retention as well. \

## Uses for Turmeric as a Product

Curcumin in turmeric is most commonly known as the ingredient essential for curry powder, which is highly valued in Asian and Middle Eastern cuisine (Prasad, & Aggerwal, 2011). In addition, turmeric is also used for its medicinal properties in Asian traditional medicinal practices (Chattopadhyay, *et al.,* 2004). It has been shown to be effective in aiding a number of physiological disorders, including, but not limited to rheumatoid arthritis, cough, wounds, and sinusitis (Chattopadyay, *et al.,* 2004). In addition, turmeric is used in a number of foods that are manufactured and consumed in huge quantities such as chips, dairy products, mustards, and cereals (Prasad, & Aggerwal, 2011).

## The Potential of Turmeric for Nepal

Nepal borders on India, the world's largest producer and exporter of turmeric, which controls sixty percent of the market (Angles, Sundar, Chinnadurai, 2011). As a result, India already has in place a vast network of transportation that Nepal can utilize to export the product. Nepal is surrounded by land, with no direct access to water used for transportation. Recently, in an effort to reconnect the nations, India and Nepal have agreed to build multiple highways connecting the nations (Hallan, 2014). This would allow for easier transport from Nepal and direct access to the export route India has established for turmeric.

Because turmeric is sold by the tonne based on the quality, substantial efforts have been made in India to increase yields in the rhizomes of the plant and reduce the amount input required to bring the plant to harvest. This makes Nepal's proximity to India essential, as Indian research and practice can easily be obtained and applied by Nepalese farmers. For instance, turmeric has been successfully intercropped with maize, reducing the need to weed during the growing season and having very few effects on the yield of either plant (Pandey, Bharati, & Mishra, 2003). Furthermore, the use of farmyard manure did not have any substantial impact on the quality of the plant's curcumin output; thus, farmyard manure can be used for the crops that would benefit most from its use (Manhas, Gill, Khajuria, & Kumar, 2012). Also, it has been shown that turmeric requires a substantial amount of water input and stable temperatures between 15˚C-35˚C (Netafim). The terai (plains) and lower hill regions of Nepal more than meet these requirements (World Bank, 2014).

## The Drawbacks of Turmeric

There are several obstacles to overcome before turmeric will be a sustainable export crop for Nepal. Smaller farms benefit less from the production of turmeric, as it requires a larger cost and a smaller return when compared to a larger farm (Kiruthika, 2013). Interestingly, the larger the farm, the lower the cost of production and the increased return on sale (Kiruthika, 2013). Furthermore, storing turmeric can be difficult, especially during the wet seasons. Turmeric must be stored free of humidity and sunlight. If it is not, it will lose its pigment (FAO, 2004). Moreover, due to the sterility of the plant, it is difficult and expensive to cultivate introgressions to combat threats to the plant such as the rhizome fly, leaf spot and rhizome rot (Netfim); however many researchers are attempting genetic engineering (Shirgurkar, Naik, von Arnold, Nadgauda, & Clapham, 2005, Nasirujjaman, *et al.,* 2005). Also due to the sterility of the plant, upwards of twenty-five percent of the rhizomes are needed for planting the following year (Nasirujjaman, *et al.,* 2005). Finally, the cleaning procedure for spices is very complicated and requires special equipment and noxious gases (FAO, 2004). However, despite these drawbacks, there remains potential for turmeric export to Canada.

## The Turmeric Market in Canada

Canada has a large population of immigrants that identify as being from the Asian continent, roughly 6 million (Statistics Canada, 2006). This means, approximately twenty percent of the Canadian population is used to having turmeric as part of their routine cuisine. Furthermore, many different ethnic backgrounds enjoy a good curry, including those who identify as Canadian and British, making up another 11 million potential customers (Statistics Canada, 2006). This market should peak the interest of companies like McCormick Canada and Lowblaws for interest in importing a quality turmeric and

curry powder. Furthermore, Metro Incorporated is in the process of introducing completely Asian ethnic stores in areas within Canada that have a high population density of Asian culture. Even more importantly, alternative medicine is a hot commodity currently. Roughly 10 billion dollars is spent each year on it (Prasad, & Aggerwal, 2011). As a result of turmeric's medicinal properties, its potential for introduction into this market in Canada would initially appeal to 6 million consumers with room for growth. There is a substantial market and a number of companies within Canada that would be very interested in importing turmeric from Nepal, which will help to increase agriculture and quality of life for Nepalese subsistence farmers.

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