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Nepalese *Choerospondias axillaris* (lapsi)

Choerospondias axillaris (lapsi) is a tree that shows remarkable potential for export to Canada, much to the benefit of Nepalese farmers. A tree native to far western Nepal, it is a crop that is unfortunately very underexploited. There are many aspects of the tree which indicate that it may be beneficial to cultivate it more frequently, and open it up to international trade. Its potential is already evident through the fact that the tree is distributed from “north-east India to south-east China and Japan ... Vietnam, [and] Thailand” (Poudel, 2003:55).

The first aspect of the tree that shows potential is its fruit. The fruit is sold between October and January, with the price being equal to that of the mandarin orange (Poudel, 2003:56). In Kathmandu alone, the transactions of the fruit was estimated at \$1 million US in 2003, which is over 50 million Nepalese Rupees (Poudel, 2003:56). The flower of the tree is currently used to make candies and pickles (Kunwar, Mahat, Sharma, Shrestha, Kominee, Bussmann; 2012:596). The fruit is rich in essential amino acids, including “Arginine (106 mg/100gm), glutamic acid (36 mg/100gm) glutamine (32 mg/100gm); vitamin C and minerals such as potassium (355 mg/100gm), calcium (57 mg/100gm) and magnesium (34 mg/100gm)” (Poudel, 2003:56). The fruit is already popular with tourists, and this fact, along with its obvious

health benefits, indicate that it could quite possibly become popular in western nations, especially within herbal medicine stores, were it to be made into a pill form.

The second aspect of lapsi that shows potential is its wood. The wood from the tree has the potential to be used for timber and medicine, a potential that has remained largely untapped (Kunwar, Mahat, Sharma, Shrestha, Kominee, Bussmann; 2012:596). The timber can be used for light construction as well as fuelwood, and the seed stones are already used as fuel for brick kilns (Poudel, 2003:56). Furthermore, the bark can be used to treat secondary burns, which further adds to its potential within herbal medicine stores (Poudel, 2003:56).

Lapsi has become recognized as a potential agroforestry tree species that will allow for income generation to hill farming communities in Nepal (Poudel, 2003:56). Furthermore, due to the fact that it is grown in uncultivated lands, it makes a great contribution to “providing wood and food crops through the utilization of marginal lands” while also contributing to the conservation of the soil, as well as environmental protection (Poudel, 2003:56).

Despite the incredible potential it demonstrates, there are still some issues with cultivating the tree. First, the production of the fruit does not meet the demand for quality products, and the production from remote areas has not filled this gap (Poudel, 2003:56). The expansion of cultivation is limited due to the risk of non-bearingness (Poudel, 2003:56). Only the female trees produce fruits, and then only after 7-10 years of planting (Poudel, 2003:56). Appropriate techniques for early sex determination as well as simple and reliable vegetative propagation methods have yet to be developed and passed down to the farmers (Poudel, 2003:56). Furthermore, there is a lack of knowledge regarding the

occurrence and distribution of Lapsi, and farmers are planting the trees without information about their origin, quality, or potential to provide yield (Poudel, 2003:56). That being said, there are 301 village development committees in 29 hill districts who have reported the cultivation of lapsi for socio-economic purposes, and over 40,000 trees are at fruit bearing state, while over 450,000 new trees were planted in these areas (Poudel, 2003:56). Working with the Nepalese farmers in order to help solve these problems could result in much higher fruit yields for the tree.

An extremely important aspect about Lapsi is that it would help empower local farmers, as they have the indigenous knowledge about its cultivation, management, and utilization (Poudel, 2003:56). These farmers have increased cultivation of the tree throughout the past 10-20 years without evidence of improved technologies and no improved horticultural practices, such as irrigation, fertilization, and pruning (Poudel, 2003:56). This indicates that if farmers were to learn improved management techniques, they could potentially increase cultivation of the tree much more than they already have on their own. Furthermore, most rural farmers prefer to collect underutilized plants from government-owned forests, but lapsi is one of the few plants that is cultivated “at fieldscale in the districts surveyed, for [its] current high market value” (Kunwar, Mahat, Sharma, Shrestha, Kominee, Bussmann; 2012:593). This fact would evidently help to empower rural farmers, as they would be in charge of the yield, and not dependent upon the government-owned forests.

Because Lapsi has a thinner crown density, and is tall and deciduous in nature, resulting in low shading effects on cereal crops, it is an excellent agroforestry tree (Poudel, 2003:56). That being said, there are disadvantages to the tree in that there is the

occurrence of crop damage while lapsi is being harvested (Poudel, 2003:56). A way around this would be to plant it on the margins of that farmland, as well as on corners and pasture lands (Poudel, 2003:56).

Especially important when considering the impact that lapsi may have on farmers' livelihoods is the fact that rural women play an important role in the identification, utilization, and conservation of underutilized plants (Kunwar, Mahat, Sharma, Shrestha, Kominee, Bussmann; 2012:593). It is the women who hold the knowledge about "gathering locations and seasons, preservation, processing, and culinary uses of such plants" (Kunwar, Mahat, Sharma, Shrestha, Kominee, Bussmann; 2012:593). Because of this, increased cultivation of lapsi, as well as its potential role in international trade, could help immensely in empowering local Nepalese women, which could lead to benefits outside of their agricultural lives as well. Participatory approaches through the existing government forestry network could help to solve the current constraints of lapsi production in Nepal (Poudel, 2003:57).

Export Potential

Potential Canadian companies who may be interested in the products of the lapsi tree include:

- Ample Food Mart (for fruit)
 - Grocery store with focus on Asian foodstuffs
 - 235 Fletchers Creek Boulevard, Brampton, On L6X-0Y7
 - Customer service: 1-905-455-3575

- Rona, Inc. (for timber)
 - A Canadian distributor and retailer for hardware, home improvement and gardening products.
 - Headquarters: Boucherville, QC, Canada
 - Customer Service: 1-866-283-2239
 - CEO: Robert Sawyer

- Shoppers Drug Mart (for fruit and timber in herbal remedies)
 - Canada's largest retail pharmacy chain
 - Headquarters: North York, Toronto, Ontario
 - Customer Service: 1-800-647-7737
 - CEO: Dominic Pilla

- The Vitamin Shop (for fruit and timber in herbal remedies)
 - Canada's Premier Vitamin and Nutritional Supplement Dispensary
 - 1212 Broad Street, Victoria, B.C. V8W-2A5
 - Customer service: 1-888-386-1211

Works Cited

Kunwar, Ripu M., Laxmi Mahat, Lila N. Sharma, Keshab P. Shrestha, Hiroo Kominee, and Rainer W. Bussman. 2012. "Underutilized Plant Species in Far West Nepal." *Journal of Mountain Science* 9:589-600.

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