Nepalese Broom Grass (*Thysanolaena Maxima*)

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Course: AGR 2150
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Due: November 24, 2015

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Product Information

Nepalese broom grass (*Thysanolaena Maxima*) is a multipurpose perennial cash crop that belongs to the family *Poecea* (Bisht and Ahlawat, 1998). It is found growing along steep hills, sandy banks of rivers and damp steep banks along ravines (Bisht and Ahlawat, 1998). It is widely distributed throughout Nepal but only up to an altitude of 2000 metres (Bisht and Ahlawat, 1998). The grass can be grown on severely degraded and marginal lands (SatNet Asia, 2014). Broom grass tends to grow in tussocks, with 4-5 tussocks in a 100 metre radius and is harvested during the winter seasons between January and March (Bisht and Ahlawat, 1998).

Broom grass is a significant source of income for subsistence communities, primarily for the women who collect it to manufacture and sell them as brooms across Nepal (Llewellyn, 2015). In addition to providing cash income when sold as brooms the plant provides a variety of uses to the farmers such as, the leaves provide green forage for livestock, the roots promote soil conservation, and the dried up stems can be used as stakes to support growing vegetables (Llewellyn, 2015). Broom grass has had a direct impact in preventing frequent landslides, helping retain ground moisture and fertility, and improving soil quality by reducing soil erosion (Llewellyn, 2015). Broom grass has the ability to crowd out invasive species when intercropped and is beneficial in retaining soil nutrients to regrow vegetation (Llewellyn, 2015). The grass also possesses numerous medicinal properties that are essential in subsistence communities (SatNet Asia, 2014).

Environmental Sustainability

The planting of Nepalese broom grass has a direct impact on preventing surface soil erosion on steep hillsides (Gautam, 2015). Broom grass grows in clumps and has many tangled up roots that grow to about one metre below the ground (Gautam, 2015). This makes it highly effective in preventing soil erosion on hillsides as the grass is less likely to fall compared to other plants and trees that would have been planted there (Gautam, 2015). The roots and leaves of the plant slow down water drops and the flow of water after heavy rain by absorbing the water in the soil (Gautam, 2015). Growing broom grass on degraded land has been proven to help rehabilitate it as it helps retain ground moisture and promote fertility (SatNet Asia, 2014). There is no irrigation required to grow the grass and it does not produce any wastewater (SatNet Asia, 2014). No external inputs or energy is needed to grow the plant as it only requires human labour, which can be extensive in the first year of growing (SatNet Asia, 2014). Broom grass farming is highly recommended in new shifting cultivation systems on marginal lands to repair the damage from previous slash and burn methods (SatNet Asia, 2014).

Impact on Promoting Local Biodiversity

The start of Nepalese farmers growing broom grass has increased the local biodiversity in the communities (SatNet Asia, 2014). Now that the farmers have to tie up there live stock since they feed on the broom grass, other plant species in the area can successfully regrow and multiply (Gautam, 2015). Broom grass that have been planted in areas where slash and burn cultivation took place has caused tree stumps to grow branches and other vegetation to grow back (Gautam, 2015). Endangered animals such as the Barking Deer and Monkey are now reappearing in the infertile slash and burn areas where they once lived, as the broom grass used to rehabilitate the soil helps promote the growth of other vegetation the animals use for food (Gautam, 2015). Broom grass does not compete for land with cereal crops so they can be grown simultaneously (SatNet Asia, 2014).

How The Product is Grown and Harvested

In order to grow broom grass the slips in the planting site must be clear of weeds and debris (Bisht and Ahlawat, 1998). Planting the broom grass slips in fertile soil ensures the best yield (Bisht and Ahlawat, 1998). It is usually planted at the beginning of monsoon season during the months of May to June as the soil has the best moisture for plant genesis (Bisht and Ahlawat, 1998). One month before planting pits of 30m cubed are dug up and left for weathering (Bisht and Ahlawat, 1998). On hilly land the pits should be placed about 1.5 x 2m apart along the contour lines or trace bunds, while on fertile land the best spacing is 2.5m x 2.5m (Bisht and Ahlawat, 1998). Farm yard manure and 10% BHC fertilizer at 10 grams per pit are mixed into the pits before planting the seeds (Bisht and Ahlawat, 1998). The plant becomes rather low maintenance after planting (Bisht and Ahlawat, 1998). The plant requires to be weeded 3-4 times in the first year and annually in the following years (SatNet Asia, 2014). Manure can be applied to the soil during the second weeding to provide the best yields in the first year (SatNet Asia, 2014). The pits need to be fenced off to protect the plants from grazing (SatNet Asia, 2014).

The mature panicles which turn light green or red are harvested in the winter season from January to March (SatNet Asia, 2014). The timing of the harvest is essential as if the plant is harvested prematurely (5-7 days) their production declines, while if it harvested late it will begin to wilt (SatNet Asia, 2014). The panicles are either harvested by cutting above the soil separating the panicle for stem or pulling the panicles out by hand (Bisht and Ahlawat, 1998). It is important to make sure the young sprouts are not damaged or the plants uprooted during harvest (SatNet Asia, 2014). The yield will be the lowest in the first and fifth year with the highest in the third (SatNet Asia, 2014).

Cost

1. Jungle cutting and removal of debris -$15.06 (Bisht and Ahlawat, 1998)

2. Ranging and clearance of lines including stacking for 1600 plants- $5.02

3. Digging of pits 30 cm3, 1600 Nos. -$15.06

4. Farm Yard Manure - $10.04

5. BHC or Gamexine at l0g/Pit - $12.05

6. Transportation of seedlings and planting- $15.06

7. Weeding and soil working (3 times)- $15.06

8. Harvesting and drying of brooms - $10.04

9. Making bundles, transportation and other expenses- $5.02

10. Cost of seedlings/propagules - $70.30

Total cost of cultivation for the first year- $172.71

Maintenance cost in 2nd and subsequent years - $50.21 (Bisht and Ahlawat, 1998)

Gender Impacts

The farming of broom grass has had a sincere impact on the women in the communities (Gautam, 2015). It has helped women become more empowered by raising there financial status and lessening the burden of other tasks (Gautam, 2015). Females in the communities perform 70 percent of the labour required for the cultivation and manufacturing of the brooms (SatNet Asia, 2014). Women's efforts to promote broom grass farming has been very important as they have started pressuring males of the family to grow the plant after seeing the income potential it has (Gautam, 2015). Women carry the responsibility of the tedious tasks of collecting firewood for cooking and fodder for animals, which can be eliminated with broom grass as the plants stocks provide firewood and the leaves provide fodder (Gautam, 2015). Even though women have the added task of harvesting broom grass it is much preferred over searching for firewood and fodder (Gautam, 2015).

Export Potential

Brooms are required in most households across the world so there is a large market for the product. Producing good quality brooms at low prices gives the product a comparative advantage and makes it very marketable. Farmers should sell the product themselves to maximize profits. This should either be done online or sold in bulk to local stores or on the international market. Brooms sold on the local market sell for an average of $0.48, while in Canada it can range from $10-20$ (SatNet Asia, 2014). According to these prices there are immense profits that can be made by Nepalese farmers if they can successfully sell their products internationally. Farmers need to reach out to department stores such as Walmart or Dollarama to sell their products as they buy and move product in bulk generating more profits. Exporting the brooms to Canada only requires duty to be paid on the products (CBSA, 2015). It has been noted that broom grass has been tried by paper and pulp industries to make paper, which means once that method of manufacturing becomes more popular Nepalese farmers can mass produce broom grass to be sold to these companies (Bisht and Ahlawat, 1998). The brooms can be transported quite easily as cargo because it is a finished product.

Conclusion

Over the years broom grass has slowly started becoming an important crop for subsistence farmers in Nepal. The grass has amplitudes of benefits ranging from helping farmers combat soil erosion and increasing ground fertility, to providing income selling manufactured brooms locally and internationally. Farmers should seriously consider selling their products on the Canadian market as there are huge margins for profit and less barriers for exporting the product.

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