Seabuckthorn: World Scenario

1) Worldwide distribution

Seven species and 8 sub-species reported worldwide; 3 from India, namely, Hippophae salicifolia, H. rhamnoides subsp. turkastanica and H. tibetana.


(Swenson & Bartish, 2002; Parimelazhagan et al. 2005)

Useful dioecious shrub (Hippophae spp.; family Elaeagnaceae ) - distributed in Europe (Finland, Sweden, Poland, Hungary) and Asia (Afghanistan, Pakistan, India, Nepal, Bhutan); concentrated in the Hindu Kush-Himalayan region, including China, and parts of Europe - in climatically cold-temperate areas; also grows in sub-tropical zones of Asia and Europe at higher elevations.

2) Acreage & Projected production

China : 1,038,000 ha (planted 28.6%); 2,81,000 tons (1990)
Former USSR: 47,000 ha (planted 12.8%); 4,200 tons (1982)
Mongolia: 29,000 ha (planted 1.4%); 2,160 tons (1990)

Total value of Seabuckthorn products sold by China was US$ 20 million in 1990. (Rongsen 1992)

1.5 million ha (planted 60%) of Seabuckthorn, 200 processing plants in China. (Dharmananda, 2004- http://www.itmonline.org/arts/seabuckthorn.htm)

3) High commercial potential
- Rich source of Vitamin C, Vitamin E & β-carotene
- High nutraceutical and medicinal value

Vitamin C content of fruits is 3-4 times higher than that of ‘Aonla’ fruit, and 6-16 times higher than Kiwi fruit. Vitamin E & β-carotene contents of seabuckthorn oil are much higher than those of other nutrient oils.

A large number of drugs have been developed for use in different therapies, like oral & rectum mucositis (‘Gibozoli’), burns, ulcers, dermatitis, skin burns (‘Olazoli’), etc. (in former USSR). Besides pharmaceutical products (cough mixtures, sea buckthorn oil for skin damage, burns, repair, etc), a large number of cosmetics (shampoo, hair conditioner, hair dyes) have also been developed in China.

Some other seabuckthorn products developed in China are: Soft drinks, hard drinks, drink granules, functional drinks, jam/jelly, sweets and raw materials (condensed juice, oil, etc.)

(Rongsen, 1992; Li, 2002; Stobdan et al., 2008)

4) Controls water and soil losses

- Effective in controlling water and soil losses; its deep and horizontal root system binds soil and loose mud tightly. Seabuckthorn was planted in 67,000 ha land in Jianping County (Liaoning Province, China); this helped to increase vegetation cover from 4% in 1950s to 34% in 1990s. Run off was reduced by 90% and soil erosion by 70%.

- Extremely effective in Loess Plateau (640,000 km²) in northern China, in the upper and middle of Yellow River and China proper; earlier low vegetation cover & highly soil erosion prone area; eroded area of the Plateau was 430,000 km²; annual top soil losses were 1600 million tons and annual deposition of sediments downstream from the Yellow river accounted for 400 million tons. Currently more than 100,000 km² of eroded area of Loess Plateau has been improved, predominantly using biological methods; more than 200 million tons/year of sediment washed to the Yellow River have been reduced. Seabuckthorn now covers an area of 200,000 ha in Loess Plateau.
- Seabuckthorn forest (74 km long) planted along the banks of Changtouhe River in Youyu County (Shanxi Province, China) was found to protect the river banks and sediment discharged into Yellow River decreased by 3-5 million tons annually.

(Rongsen, 1992; Li Min et al., 1989; Dharmananda, 2004- http://www.itmonline.org/arts/seabuckthorn.htm)

5) Improves soil fertility

- Plants have dense crown and a strong, well developed root system; roots can go deep into poor soil. A 5-year old seabuckthorn bush has root system with extension of 4.5 m and tap root depth of 2.5 m. Roots can fix nitrogen (association with actinomycetes Frankia), and improve soil fertility along with increased microbial diversity. The total nitrogen, phosphorus and organic matter in pure seabuckthorn forests are 0.074%, 0.064%, and 1.3%, respectively, more than the amounts in waste mountain land (0.060%, 0.055% and 0.952%, respectively).

(Rongsen, 1990, 1992; Li Quangzhong et al., 1989; Stobdan et al., 2008)

6) Afforestation by air seeding

Necessary for cultivation, afforestation, and restoring degraded land & slope stabilization carried out successfully. Air seeding carried out for cultivation in the following areas:

- Datong county (Qinghai Province, China)
- Xihe County & Lanzhou (Gansu Province, China)
- Wuqui County (Shanxi Province, China)

(Rongsen, 1992)

7) Maintains ecological balance
- Improves microclimate, controls loss of water & soil, provides fuel wood and added dividends to farmers and local community.

Under seabuckthorn forests (e.g., Jianping County, China) several species of birds (*Crossoptilon manchurian, Turdus ruficollis*, etc) thrive on its fruits; many carnivorous animals (*Canis lupus, Vulpes vulpes, Felis bengalensis*, etc.) catch prey and take shelter in its forests. Edible fungi and rabbits can be trapped for food from these forests.

(Rongsen, 1992; Dharmananda, 2004- http://www.itmonline.org/arts/seabuckthorn.htm; Stobdan et al., 2008)
Indian Scenario

1) Distribution mainly in high altitude areas of IHR
   - Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh [ Leh-11,500 ha, Uttarakhand 3750 ha ]
   (Stobdan et al., 2008; Yadav et al., 2009)

2) Commercial products developed
   - Beverages (DIHAR, Leh), Other products (health drink, food colourant, fruit juice powder, etc.) are being developed (DFRL, Mysore)
   (Stobdan et al., 2008; Khanum & Bawa, 2009)

3) Agroforestry species
   - Important agroforestry species in HP (Jahlama, Hinsa, etc.)
   (Kuniyal et al., 2002; Dhyani et al., 2010)

4) Multipurpose use
   - Source of fuel wood, fodder, roofing material for huts, bio fencing, used for making agricultural tools, etc.
   (Rongsen, 1990, 1992; Singh & Singh, 1998; Dwivedi et al., 2009; Dhyani et al., 2010)

5) Propagation
   - Conventional & Biotechnological methods applied for multiplication.
(Singh, 1995; Anon, 2006; Singh & Sawhney, 2005; Purohit et al., 2009)
Possible activities that can be taken up

1) Full commercial exploitation
   - Develop beverages & nutraceutical products
   - Develop cosmetics & pharmaceutical products
   - Preparation of low cost vitamin tablets

2) Use in controlling water and soil losses

3) Increase area of sea buckthorn plantation

4) Protect sea buckthorn area

5) Plantation for slope stabilization

6) Develop well equipped nursery for propagation/multiplication and income generation

7) Apply biotechnological methods to produce quality plant material

8) Install small processing plants (for juice/pulp extraction) in remote areas

9) Create awareness amongst farmers, growers and villagers, and impart training on processing technologies.
Cited References


