

The Sea Buckthorn



Sea buckthorn (*Hippophae rhamnoides* L., Elaeagnaceae) is a winter hardy, deciduous shrub or small tree with yellow or orange berries (Bailey and Bailey 1978). It develops an extensive root system rapidly and is therefore an ideal plant for preventing soil erosion and land reclamation. It can withstand temperatures from -43° to 40°C (Lu 1992). It is considered to be drought resistant (Heinze and Fiedler 1981); however, irrigation is needed in regions receiving <400 mm of rainfall per year for better growth (Li and Schroeder

1996).

THE PLANT

Sea buckthorn is a dioecious multi-branched, thorny shrub, reaching 2 to 4 m in height with stout branches forming a round often symmetrical head. It has brown or black rough bark and a thick grayish-green crown (Rousi 1971). Staminate and pollinate flowers are inconspicuous appearing before the leaves. Leaves are alternate, narrow 4 to 6 cm long, and lanceolate with a silver-grey color on the upper side (Synge 1974). Flower buds are formed mostly on 2-year-old wood, differentiated during the previous growing season. Fruit is subglobose, 6 to 10 mm long and 4 to 6 mm in diameter, turning yellow to orange when mature in mid Sept. The root system is characterized by nitrogen fixing nodules (Akkermans et al. 1983).

USES

Sea buckthorn can be used for many purposes and has momentous economic potential. It has been used for centuries in Europe and Asia. Recently, it has attracted considerable attention from researchers around the world, including North America, mainly for its nutritional and medicinal value. The fruits are rich in carbohydrates, protein, organic acids, amino acids and vitamins. The concentration of vitamin C in sea buckthorn fruit, ranged from 100–300 mg/100 g fruit, is higher than strawberry, kiwi, orange, tomato, carrot, and hawthorn (Bernath and Foldesi 1992; Lu 1992). Sea buckthorn is also high in protein, especially globulins and albumins, and fatty acids such as linoleic and linolenic acids. Vitamin E content in sea buckthorn (202.9 mg/100 g fruit) is higher than wheat embryo, safflower, maize, and soybean.

MEDICAL USES



Medicinal uses of sea buckthorn are well documented in Asia and Europe. Clinical tests on medicinal uses were first initiated in Russia during the 1950s (Gurevick 1956). Sea buckthorn oil was formally listed in the Pharmacopoeia in 1977 and clinically tested in Russia and China (Xu 1994). The most important pharmacological functions attributed to sea buckthorn oil are: anti-inflammatory, antimicrobial, pain relief, and

promoting regeneration of tissues. Sea buckthorn oil is also touted as a treatment for oral mucositis, rectum mucositis, vaginal mucositis, cervical erosion, radiation damage, burns, scalds, duodenal ulcers, gastric ulcers, chilblains, skin ulcers caused by malnutrition, and other skin damage. More than ten different drugs have been developed from sea buckthorn in Asia and Europe and are available in different forms, such as liquids, powders, plasters, films, pastes, pills, liniments, suppositories, and aerosols. Sea buckthorn oil extracted from seeds is popular in cosmetic preparations, such as facial cream (Li and Wang 1998). In Europe and Asia, there are numerous products made from sea buckthorn, such as tea from leaves, beverages and jam from fruits, fermented products from pulp, and animal feeds from leaves, pulp, and seed residues.