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Research Note :

RUSSIAN OLIVE (*Elaeagnus angustifolia* L.): PROBABLE ORNAMENTAL PLANT FOR BIO-AESTHETIC LANDSCAPING IN COLD ARID ECOSYSTEM

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Ladakh is a cold arid desert region of India, characterized by freezing winters and scorching summers with high solar intensity and meager annual precipitation. The region lies between 32°-36°N latitude and 76°-79°E longitude with an area of 97,782 km^2. The region is believed to be one of the coldest region and driest place on the earth. Because of these peculiar features, the region possesses scarce vegetation with most of the area looking fade and barren. The people of Ladakh tend to strive hard for their sustenance with the efficient utilization of many of the plant species existing in the region with their unique management through their indigenous knowledge for fulfilling their domestic requirements (Both, 1; Singh, 6). The fast growing populations, ever increasing human needs and depletion of the natural resource has necessitated initiation of scientific management of natural resources in the region. Besides this, Reeve *et al*. (4) describes that "Plants in cities have a humanizing effect". They enhance the general quality of the environment and also indirectly contribute to an increase in the value of other components of the environment, of buildings for example. The appropriate use of plants increases the quality of the environment up to 30% (Reeve *et al.* 4). For plants to be considered as ornamental, they may require specific work and activity by a gardener. Most commonly ornamental garden plants are grown for the display of aesthetic features including: flowers, leaves, scent, overall foliage texture, fruit, stem and bark, and aesthetic form. Natives in Ladakh have zest for establishment, development and beautification of their surroundings (Fig. 1&2) for their own satisfaction *vis-a-vis* attracting the tourists, which is the major contributing industry to the economy of the region. It is estimated that only Leh district receives around 60 to 80 thousand tourists annually (*leh.nic.in*) and in 2011 it crossed 1.5 Lakh. For the same, they are testing varying annuals, biennials and perennial plant species either available to them locally or brought from Kashmir valley, Himachal Pradesh or other nearby parts of the country. In this process, the people of the region have amazingly selected and successfully established many ornamental plant species for their home gardens and surrounding landscape. The present article deals with identification and selection of the ornamental characteristics of Russian Olive (*Elaeagnus angustifolia*) which is found growing successfully in the region and its probable aesthetic utilization for beautifying the cold arid landscape. For the characteristic brown red colour and excellent finish of its wood, the species is used for making pillars in of traditional houses and furniture. Leaves and twigs are lopped and fed to domestic animals during winters when there is dearth of fodder. Fruits are edible.However, in Leh, its fruits do not mature due to shorter growing season. Being actinorhizal in nature, the plant also fixes atmospheric nitrogen (Raj *et. al.,* 3).

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Ornamental characterization of Russian Olive (*Elaeagnus angustifolia*) :

Texture, form, size and colour are the physical characteristics of plants that provide interest,

variety and aesthetic appeal to a landscape. Besides being essential to life on our planet, plants add beauty and charm with their unique forms and colour. The basic criteria involved in physical characterization which details the plants distinct look and personality. Ornamental plants and trees are distinguished from utilitarian and crop plants, such as those used for agriculture and vegetable crops, and for forestry or as fruit trees. This does not preclude any particular type of plant being grown both for ornamental qualities in the garden, and for utilitarian purposes in other settings. Some plants are extroverts/loud, boisterous and energetic attention getters, while others are introverts/quiet, calm, and content to be in the background. Tanguy and Tanguy (7) distinguished between an "objective plant" and a "subjective plant": objective plants consist of their physical characteristics (habit, shape, leaf size etc.), while subjective plants are made up from the observer's interpretation of the objective plant. Many plants have strong associative and symbolic meanings, for individuals as well as for large groups of people, and in culture, generally speaking. A good mix of plant personalities creates an interesting and appealing garden. The cold arid desert plants have not till date been utilized for landscaping to their fullest potential. The phenotypic characters of the plant and their interaction with the environment and its various biotic and abiotic components was documented. Russian olive has not yet received attention by floriculturists and landscape architects, so unexposed as ornamental till date. A survey conducted mainly in Leh city and its surrounding nearby villages regarding the various aspects of probability of the use as ornamental was done as per its visual appearance/features and place in the home gardens.

Fig. 1: Young Specimen Plant.

Fig. 2: Flowers of *Elaeagnus.*

Description of Russian Olive:

Elaeagnus angustifolia is widely grown across southern and central Europe as an ornamental plant: for its scented flowers, edible fruits, and attractive silver foliage and black skin. *Elaeagnus angustifolia* L. (Syn: *Elaeagnus hortensis* Bieb.) is a small Eurasian tree with dark brown branches bearing silvery young shoots. Fruits are dry and ellipsoid to oblong in shape with thick stony endocarp. The species is distributed from Spain in west to China in the east through western and central Asia (Hooker, 2). In India, the species is found in Ladakh, the Western Trans-Himalayan region of the country. *Elaeagnus angustifolia* is usually a thorny shrub or small tree growing to 5–7 m in height. Its stems, buds, and leaves have a dense covering of silvery to rusty scales (Fig.1). The leaves are alternate, lanceolate, 4–9 cm long and 1-2.5 cm broad, with a smooth margin. The highly aromatic flowers, produced in clusters of 1-3, are 1 cm long with a four-lobed

creamy yellow corolla (Fig. 2), they appear in early summer and are followed by clusters of fruit, a small cherry-like drupe 1-1.7 cm long, orange-red covered in silvery scales. The fruits are edible and sweet, though with a dryish, mealy texture.

Robinson (5) writes that every human being responds in a personal way to individual plants. Therefore, subjective responses to plants can be separated from their objective qualities, which all observers can with certainly be expected to perceive. Each plant needs to be considered individually when selecting plants for a composition, but the entire composition takes on greater importance than the individual plants. For this reason, it is important to describe how the characteristics of each plant will relate to the plant or landscape next to it.

Aesthetic Description of Russian Olive (*Elaeagnus angustifolia* L.)

Common name: Russian olive
Botanical name: *Elaeagnus angustifolia*
Local name: Sersang
Habit and Habitat: A multi-stem tree growing on high altitudes preferring moist soil.
Mature tree size: 15-25 feet
Water requirement: Moderate (optimum soil moisture availability during active growth period)
Growth rate: Moderate
Form: Pyramid long and upright
Attract wildlife: Yes
Flower colour: Yellow/ light yellow
Flowering season: Late spring
Foliage colour: Silvery green
Fall colour: Slight silvery to fade dusty green
Pest/Disease: No serious disease/pest
Propagation: Seeds, cuttings and suckers
Other features: Small attractive scented flowers, attractive dark brown multi-stem. Dense shade tree and easily propagable, bears edible fruits and fixes atmospheric nitrogen.
Landscape value: Excellent as a specimen plant in home gardens; naturalized with native ornamentals to attract wildlife during flowering. Besides it can be utilized as a roadside avenue or for boundary plantation. It can prove as an excellent wind breaker. Hedging can be done with Russian olive if pruned and trained properly.

CONCLUSION

Russian olive is a unique plant in terms of its growth, branching pattern, silvery foliage, scented flowers and all together a unique contrast when compared with some common plants. Its mode of easy propagation, dense foliage, responsive to pruning and excellent multi-stemmed growth can prove its ornamentality for a landscape. The present paper defines Russian Olive as an ornamental plant and provides a bird eye view to the Landscapists, Naturalists, Floriculturists and all the related individuals and organizations to further explore its aesthetic value. There is no sufficient evidence in literature regarding the ornamental use of Elaeagnus in India so far. Preliminary investigation is considered helpful in further selection and evaluation of various ornamental parameters to expand its value and potential.

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