

# **CHAPTER – II**

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**MORPHOLOGY OF THE PLANT :  
SESBANIA GRANDIFLORA & CHARACTERISATION  
OF ITS CONSTITUENTS**

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### **MORPHOLOGY OF THE PLANT : SESBANIA GRANDIFLORA AND CHARACTERISATION OF IT'S CONSTITUENTS**

*Sesbania grandiflora* belongs to the family Leguminosae and is a native of Malaysia and grown in many parts of India, such as Punjab, Delhi, Bengal, Assam and the Andaman. It is also grown as a shade and support tree for pepper and betel vines in Maharashtra, Uttar Pradesh, Tamilnadu and as a shade of coconut in Maharashtra, Tamilnadu and Kerala.

*Sesbania grandiflora* (Photograph 2.1) is a short lived, quick growing, soft wooded tree<sup>87</sup>. It is 6 to 9 meter high and 0.6 m in girth. The leaves of the plant are 15 to 30 cm long and abruptly pinnate. The leaflets are linear oblong and glabrous. Leaflets are in 10 to 30 pairs and has remarkable sickle shaped red to white flowers, which are 10 cm long hanging in two's to four's from leaf axils. It has flat beans which are about 50 cm long. Beans have about 15 to 50 pale coloured seeds (Photograph 2.2).

In Sanskrit, it is called as Agathi, agasti or anari. In Hindi it is known as Bak, agasti or Basna. In Marathi, it is popular as Hadga or agasta. The plant grows best on black cotton soil and it is self productive where the surface soil is loose and uneven. It is drought resistant and quick growing<sup>88</sup>.



PHOTOGRAPH 2.1  
**SESBANIA GRANDIFLORA**



PHOTOGRAPH 2.2

SEEDS OF SESBANIA GRANDIFLORA

*Sesbania grandiflora* is grown for ornament and is valued as food as a good fodder. Its young flowers and pods are used as vegetable salad etc. The plant is used as effective wind break in banana plantations, especially when the plants are topped. In West Indies, *Sesbania grandiflora* is employed as a wind break in citrus and coffee plantations. Leaves contain large quantity of proteins. Leaf proteins<sup>89</sup> are considered to be of good quality with a biological value of 64% and a digestibility coefficient of 85 at 5% level of protein intake.

*Sesbania grandiflora* flowers are sweetish in taste and succulent. Seeds are unpalatable and said to be toxic. A sample of seeds collected at Allahabad gave on analysis the following values on dry weight basis. Crude protein 36.5, fat 7.4, total carbohydrates 51.6 and ash 4.5 gm per 100 gm of seeds freed from seed coat. The inner membrane contain 69.9% protein perhaps the highest recorded among vegetable seeds.

The protein has a low biological value 35.6% and digestibility coefficient of 92.4. The proteins can be used as filler for casein and glues<sup>90</sup>.

A sample of seed from Andhra Pradesh extracted with carbon tetrachloride yielded 10% of an oil with the following characteristics, acid value : 15, sap value : 205.5, iodine value: 22.7, powdered seed on petroleum extraction yields 6.6% of fatty oil<sup>91</sup>.

Analysis of seed tegman which constitutes 20% of the seed gave the following values : Moisture : 5.2, ash : 1.3, fat : 0.8, crude fibre : 2.7, reducing sugars : 0.1, sucrose: 1.4, nitrogen : 2.8, pentosans : 6.3 & carbohydrates: 65.4%. The chief polysaccharide present is the Galactomannan obtained in a yield of 33% by alkali extraction of the tegman.

The inner bark of *Sesbania grandiflora* yields a good fibre whose average length is 2.7 mm, total diameter is 0.022 mm and lumen diameter is 0.01 mm. The fibre is used for cords.

The wood is white, soft and the charcoal from wood is used for gunpowder. Wood is also used to make toys. The juice of bark is used by fisherman for toughening their nets. It is also used for tanning and for colouring matting. Dried and powdered bark is used as cosmetics in Java.

*Sesbania grandiflora* is oftenly used in medicine. The juice of the roots is given with honey as an expectorant. The paste of roots in water is applied in rheumatism. The bark is bitter and is used as a tonic and febrifuge. A decoction of the bark in small doses is taken against diarrhoea and dysentry. An infusion of the bark is given in first stages of small pox, malaria and other cruptive fevers. Powdered bark is externally applied to cure scabies. It is recommended for the treatment of ulceration of tongue.

The leaves are tonic, diuretic and laxative. The juice of leaves and flowers is used in nasal catarrh and headache. Leaves are chewed to disinfect mouth and throat and are useful in sore mouth. Juice of flowers is put in the eyes to cure dimness of vision. Seeds are useful as an emmenagogue.