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A NOTE ON TRIPLET SEEDLINGS IN *GYMNOCLADUS ASSAMICUS* - A GLOBALLY THREATENED TREE SPECIES OF NORTH EAST INDIA

N. LYNGDOH*, M. BISHWAPATI AND MUKUL KUMAR
COLLEGE OF HORTICULTURE AND FORESTRY, EAST SIANG DISTRICT, PASIGHAT- 791 102, ARUNACHAL PRADESH, INDIA.
Corresponding author's e-mail: lyngdoh@gmail.com

ABSTRACT:

Gymnocladus assamica is a tree endemic to the North East region of India and is a globally threatened species. In the event of mass propagation of seedling for planting in forest areas, an experiment was conducted to know the germination behavior of the species. During the experiment certain seedlings were found to have triplet shoots. The percentage of such plants was 1.31% of the germinated seedlings. In all seedlings there appears to be a degeneration of one or two shoot at various stages of development.

KEY WORD: *Gymnocladus assamica, North East India, Criticallyendangered.*

INTRODUCTION:

Abnormality of a trait is the expression which is a variant of the normal appearance. In seedling abnormalities can occur in form of polyembryony, double embryo, twin and triplet seedlings, albino and chlorophyll mutant seedlings. Such abnormalities are due to several factors such as developmental error during development of ovary, during fertilization, genetic factors or mutation (Gunaga *et al.,* 2008). Although abnormal seedling generally occur in very low frequencies (Rane et al., 2012; Wanage *et al.* 2012), it is necessary to remove them in the nursery to ensure uniformity in the planting stock. In this correspondence we report the occurrence of such abnormality in seedlings of *Gymnocladus assamica*, a globally threatened tree species of the North East India.

MATERIAL AND METHODS:

Gymnocladus assamicus (Family: Fabaceae) is a medium-sized (ca. 15m) deciduous tree with restricted distribution in north east India and presently confined to Bomdila and Tawang districts of Arunachal Pradesh. It is declared globally threatened with only less than 30 surviving individuals. *Gymnocladus assamicus*is one of the prioritized species listed in the Network programme for preventing the extinction of critically endangered plant species in India. Under the programme, production of seedlings to be planted in niche areas for population enrichment is one of the main objectives.

For raising the seedlings pods are collected during the month of December and January from Dirang Village, Bomdila district of Arunachal Pradesh. Extraction of seeds was undertaken promptly after collection. Sowing of seeds was undertaken during the month of June. Pretreatment consisted of soaking seeds in boiled water overnight. For studying the germination behavior of species, 100 seeds each in 4 replications were sowed in well prepared nursery bed at Department Nursery of the College. Observation on germination was recorded for 21 days after sowing.

RESULT AND DISCUSSION:

Germination percent for *Gymnocladus assamicus*was recorded to be 43.00 ± 6.16% after 21 days of sowing. Of the germinated seedlings, 1.31% seedlings were found to have triplet shoots(Fig 1a). However, in all seedlings there appears to be a degeneration of one or two shoot, either during the early stage of development (Fig 1b) or at a later stage (Fig. 1c). Perhaps this is the first report of such abnormality in the species. There are very few surviving individuals of *Gymnocladus assamicus* and trees are mostly isolated. The occurrence of abnormal seedlings could be a manifestation of inbreeding depression common among species with low population sizes. Nevertheless such abnormalities have also been recorded for widely distributed species such as *Acacia farnesiana, Bombaxceiba, Calophylluminophyllum, Dalbergiasissoo, Garciniaindica, Mammeasuriga, Mangiferaindica, Nothapodytesnimmoniana, Putranjivaroxburghii, Santalumspicatum, Saracaasoca, Shorearobusta, Tectonagrandis, and Terminaliaarjuna*(Gunaga and Vasudeva, 2008). So far the behaviour of abnormal seedlings, especially their growth pattern, has not been studied in detail. Whether such variation can be utilized in any breeding activity remains to be seen. However, some research workers on such twin seedlings had recommended keeping leading shoot for higher vigour and remaining shoots can be culled out at earliest possible to use these seedlings for field planting (Gunaga and Vasudeva, 2008).

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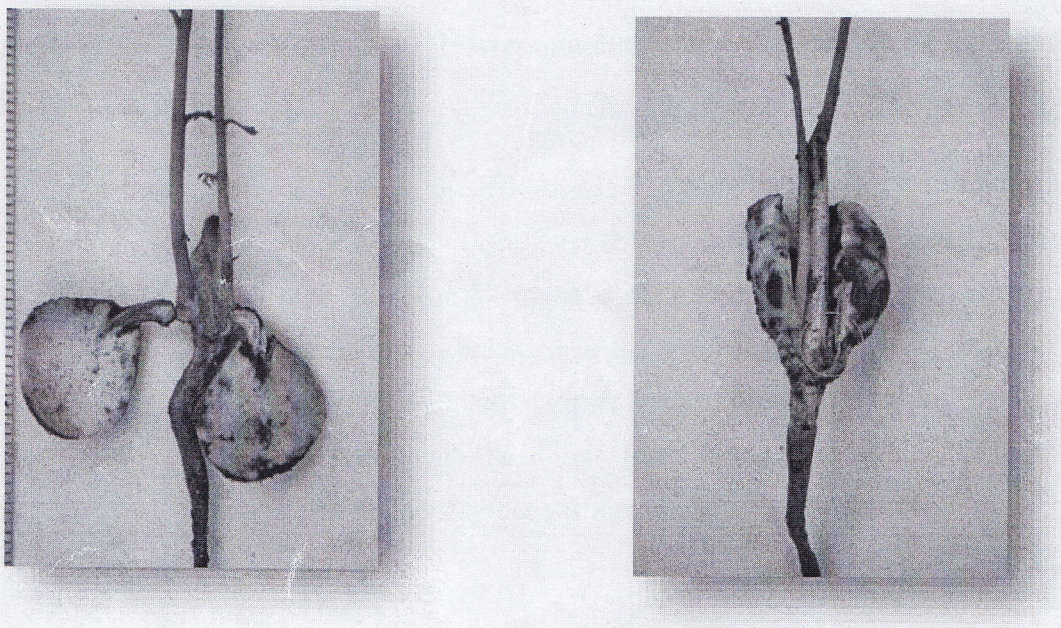

(a) (b)

Fig 1: (a) Triplet Seeding of *Gymnocladus assamicus* (b) Triplet Seeding of *Gymnocladus assamicus*with two surviving shoots. Green circle marks the degenerated shoot during early stage of development.

(c)

(c) Triplet Seeding of *Gymnocladus assamicus*with only one survival shoot. Arrows indicate two degenerated shoots at later stage of development.