



PHENOLOGY CHARACTERIZATION OF DIFFERENT SEED SOURCES OF *PONGAMIA PINNATA* UNDER AGROFORESTRY SYSTEM AND THEIR EFFECT ON INTERCROPS

S.S. INAMATI¹ AND S.J. PATIL

Department of Silviculture and Agroforestry

College of Forestry UASD, Sirsi - 581401

*Corresponding author: inamatiss@gmail.com

ABSTRACT: A field experiment conducted on eleven seed sources of *Pongamia pinnata* selected from three provenances from Maharashtra, Tamil Nadu and Karnataka to identify suitable seed sources for inclusion in agroforestry condition and study their effect on intercrops. Study with respect to phenological characters, indicated that in general *Pongamia* sources sheds its leaves in the dry months and remains leafless for a period of 2 months. Difference among sources showed significant variation for leafless period, further it is also clear that difference among provenances on leafless duration. It was also found that significant differences were identified for time of flushing and leaf shedding initiation, generally peak leaf flushing occurred from March 1st week to March 3rd week. *Pongamia* sources from Maharashtra and Karnataka initiated leafing during 1st week of March while it showed peak initiation of leaf flushing during 3rd week of March. Strong influences of provenances were observed for time of leaf flush initiation. Early commencement of leaf flushing among sources might have been shaped by the early onset of monsoon in these provenances. It was suggested that seed source which is early in leaf fall and late leaf flushing would be most ideal for introduction into agroforestry systems as it provide a prolonged period of open sun to the growing intercrop. There was a huge variation among *Pongamia* sources for all the flowering phenophases. The time taken to initiate flower buds and peak flowering showed statistically significant differences among *Pongamia* sources and the pods ripened during March to May during the year and fruit maturity was from February to May. *Pongamia* sources from Tamil Nadu were early in commencement of flower buds, flowering and opening of flower when compared to sources from Maharashtra and Karnataka. Growing of intercrops under MTP-III + soybean and MTP-I + safflower resulted in decreased yield due to lower growth and yield components. Among *Pongamia* sources based agroforestry system, the yield of soybean and safflower were affected more than that of sole crops. The yield reduction was to the extent of 58 per cent in MTP-III + soybean and 46 per cent in MTP-I + safflower compared to their sole crops.

Key words: Phenology, *Pongamia*, Seed source, Soybean, Yield

Citation: Inamati SS, Patil SJ (2017) Phenology characterization of different seed sources of *Pongamia pinnata* under agroforestry system and their effect on intercrops. Indian J Trop Biodiv 25(2): 178 - 185

Received on : 23 Aug. 2017
Accepted on : 10 Oct. 2017
Published on : 30 Dec. 2017

Pongamia pinnata is deciduous or nearly evergreen tree species which grow to a height up to 15 m and seed contains 27-40 (Sangwan *et al.*, 2010) per cent oil which is used in pharmaceutical, tannin, paint industries, soap, pesticide and now a day it is also used in production of biodiesel. It is known to withstand harsh climatic conditions like high temperature and low rainfall; it performs well in poor soil also. Its growth characters, phenological characters and oil content varies with different seed sources. The loss from using the wrong sources can be great and even disastrous and is especially true in perennial species (Zobel and Talbert, 1984). *Pongamia pinnata* can be included as one of the promising tree species in agroforestry in various ways may be on bunds, alley cropping, live fence and even whole plantation.

Phenology is the study of recurring biological events, among the phases of plant species tropical plants with their high level of species diversity display phenological events such as leaf shedding, leaf flushing, flowering and fruiting etc in relation to time and space (Justiniano and Fredericksen, 2000; Singh and Singh, 1992). But phenology of tropical forest tree species is not well understood although water is most frequently cited as a primary factor responsible for timing of phenological events (Singh and Singh, 1992). However, various phenological events are triggered by rainfall, water availability, temperature, photoperiods, duration of dry spell and change in day length (Bhat and Murali, 2001; Hamann, 2004 and Sivaraj and Krishnamurthy, 2002).

Therefore, the present study was conducted on phenological variation among *Pongamia* sources under agroforestry system and their effect on intercrops.