

Essentiality of fast-growing tree species in Krushi Aranya Prothsaha Yojane

Krushi Aranya Prothsaha Yojane (KAPY) is a special programme launched by the Government of Karnataka¹. In this programme, the Forest Department raises quality seedlings in forest nurseries and distributes seedlings to the farmers, public and NGOs at subsidized rates, and also pays incentives to the farmers to encourage them to grow native tree species on their farmlands. Incentives of Rs 10, 15 and 20 have been paid for each seedling that survived after the first, second and third year respectively. Evaluation of the seedlings would be done by the forest officers¹. In 2017, the incentive amount was increased to Rs 30, 30 and 40 for the first, second and third year respectively, for each surviving seedling at the end of each growing period².

As the Government of Karnataka decided to implement this programme in all villages of the state, Department of Forest required large-scale manpower to work at various levels. Thus, Village Forest Committees formed under the Karnataka Sustainable Forest Management and Bio-diversity Conservation, and National Afforestation Programme–Forest Development Agency, forest promoters and volunteers working in association with these schemes, NGOs and Federation of NGOs have been involved for creating awareness, registration, pitting, transportation of seedlings, planting, guidance for after care, protection and reporting the survivability per cent to the concerned Range Forest Office³. Accordingly, the state Government has also fixed payment to the participating NGOs, agencies or voluntaries Rs 2 per seedling for creating awareness, registration of farmers, digging of pits, transportation and ensuring planting at the right time in the first year. In the second, third and fourth years, Rs 1 per surviving seedling has been paid as service charge for providing guidance to the farmers regarding aftercare and protection, counting of surviving seedlings, preparation and submission of estimation to the Range Forest Officer about the incentives to be distributed to the beneficiary farmers and its disbursement.

The Government order 2017 excludes fast-growing tree species, including *Melia dubia* and *Grevillea robusta* under KAPY². Exclusion of these species on the grounds that they grow fast, exemption from the clutches of forest rules for harvesting and fetching early income to the farmers seem to defeat the vision of the programme on scientific, economic, environmental and psychological grounds. We surveyed about 170 *M. dubia* block plantation in Andhra Pradesh, Karnataka and Tamil Nadu across rainfall gradients. Most of the growers procured seedlings from private nurseries with guidance from the Forest Department. *M. dubia* growth varies from region to region. In drier regions, the tree grows slowly and attains marketable size after 12–15 years. Most of the isolated *M. dubia* trees sold by the farmers were 18–20 years of age or more. We recorded dying of *M. dubia* trees in 3–4 year plantations in drier regions of Ballari and Chitradurga districts of Karnataka and Anantapur district of Andhra Pradesh; those trees had not attained marketable girth and height to be sold to processing industries. Thus, some farmers incurred loss. *G. robusta* also grows slowly in drier regions, even though it is found to be hardy and can withstand long dry season. Wood prices in the market are also falling to Rs 4300 per tonne and fetching lesser profit than expected. These fast-growing tree species also require minimum 10–15 years for harvest. *M. dubia* and *G. robusta* are found to be the best tree species in South India for agroforestry and to enhance tree cover outside the forest. Therefore, supporting the marginal, small and medium farmers with incentives to grow these trees on bunds along with a mix of other species will ripple positive motivation among them for practice of agroforestry, as fast-growing species fetch early income to the farmers.

India has lost significant forest cover (approximately 28%) in the last century^{4,5} and the southern states have lost about 42% (ref. 5). Moreover deforestation in India has been linked to weakening of the summer monsoon rainfall, because of decrease in evapotranspira-

tion and subsequent decrease in the recycled component of precipitation⁶. To reduce wood and wood products demand and supply gap and for sustainable development of natural forests, plantations of fast-growing species are essential^{7–9}. Thus, ecosystem restoration programmes like KAPY should focus on a mixture of fast- and slow-growing tree species to ensure diversity and satisfy economic interest of farmers, and evolve as a people's programme with participation of all stakeholders.

1. <http://www.aranya.gov.in/Static%20Pages/KrushiAranya.aspx>
2. Aranyakaranakke protsaha dhana hechchala. *Vijaya Karnataka* (in Kannada), 11 June 2017.
3. Gazette of Karnataka, Part I, No. 760, dated 15 May 2013, Government Press, Bangalore, 2013, pp. 1–4; <http://www.aranya.gov.in/Static%20Pages/KrushiAranya.aspx>.
4. Tian, H. *et al.*, *Global Planet. Change*, 2014, **121**, 78–88.
5. Reddy, C. S. *et al.*, *Biodivers. Conserv.*, 2016, **25**, 93–116.
6. Paul, S. S. *et al.*, *Sci. Rep.*, 2016, **6**, 32177; doi:10.1038/srep32177.
7. Bargali, S. S. and Singh, S. P., *Can. J. For. Res.*, 1991, **21**, 1365–1372.
8. Bargali, S. S., Singh, S. P. and Singh, R. P., *Ann. Bot.*, 1992, **69**, 405–411.
9. Bargali, S. S., Singh, S. P., Shrivastava, S. K. and Kolhe, S. S., *Int. Rice Res. Notes*, 2007, **32**(2), 40–41.

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