Tamarind based Agri-horti system for higher productivity and profitability in Northern Dry Zone of Karnataka

Recommendation Domain

Bijapur, Bagalkot and Gulbarga districts and eastern parts of Belgaum, Lingsugur of Raichur districts of Karnataka.

Existing Practice

The farmers in the northern dry zone of Karnataka cultivate single crop of pearl millet/ groundnut/ sunflower/ pigeon pea during kharif season and sorghum or chickpea during post monsoon season. The yields of these crops are low due to soils with shallow depth, low water holding capacity, lower fertility and length of growing period is less than 90 days. Further, there is a risk of midseason and terminal drought during kharif and early and midseason drought during rabi resulting low productivity of the crops.

Improved Technology

Tamarind based agri-horti systems technology is developed by the AICRPDA center, Bijapur. It includes planting of tamarind (DTS-1) seedlings at a spacing of 10 m x 3 m. Tamarind trees (DTS-1) starts bearing from 5th year onwards. During this period, kharif crops viz., pearl millet/ sunflower can be cultivated with recommended package of practices in between the rows of tamarind trees. This helps to utilize off season rainfall also.

Performance

Tamarind based agri-horti system gives a maximum pearl millet equivalent yield (PEY) of 14297 kg/ha with tamarind + sunflower followed by tamarind + pearl millet (12895 kg/ha) as compared to cultivation of arable crops alone. The overall yield advantage can be up to 810 per cent and 720 per cent, respectively over sole crops viz. pearl millet (1571 PEY kg/ha), sunflower (1760 PEY kg/ha).

Impact and Upscaling

Tamarind based agri-horti systems provides risk resilience to the weather aberrations, sequester carbon and enhances overall productivity even during drought year and ensures higher income to the farmers. The technology can be upscaled through programmes like Karnataka Rainfed Agriculture Policy, NHM, SHM watershed programmes etc.
Simarouba based Agri-horti system for higher profitability in Northern Dry Zone of Karnataka

Recommendation Domain

Bijapur, Bagalkot and Gulbarga, eastern parts of Belgaum and Lingsugur part of Raichur districts of Karnataka.

Existing Practice

The farmers in the region normally cultivate pigeonpea, sunflower and pearlmillet during *kharif*, and sorghum and chickpea during *rabi* in medium to deep black soils. The seasonal variability in rainfall and dry spells during the cropping season affect the performance and yield of annual crops resulting low yields of crops.

Improved Technology

Simarouba based agri-horti system comprises of planting of Simarouba seedlings at a spacing of 10 m x 10 m. In between the rows and in between the plants of Simarouba within a row, guava can be planted. Further, annual crops viz., chickpea, sorghum can be cultivated in between the rows of Simarouba.

Performance

With Simarouba based agri-horti system, chickpea equivalent yield of 2510 kg/ha (319 kg/ha of Simarouba beans yield + 5208 kg/ha of guava fruit + 234 kg/ha of chickpea) can be obtained with Simarouba + guava + chickpea system with yield advantage of 286 per cent as compared to sole crop of chickpea. The yield advantage was to the tune of 286 per cent over growing chickpea alone (650 kg/ha).

Impact and Upscaling

This technology can be popularized and upscaled through Karnataka Rainfed Agriculture Policy, NHM, SHM, watershed programmes etc.

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Sapota based Agri-horti system for higher productivity and profitability in North Dry Zone of Karnataka

Recommendation Domain

Bijapur, Bagalkot and Gulbarga, eastern parts of Belgaum and Lingsugur part of Raichur district of Karnataka.

Existing Practice

The normal cropping pattern followed in medium to deep black soils in north Karnataka is to keep land fallow during kharif and take up crops like rabi sorghum/sunflower/chickpea in rabi season. The net returns are not sufficient to maintain the family on sound footing.

Improved Technology

The technology comprises of planting of sapota grafts (variety Kalipatti) at 12 m x 12 m spacing in medium to deep black soils. In between sapota rows, sowing of sunflower can be taken up during kharif followed by rabi sorghum + chickpea (2:1) or greengram during kharif followed by rabi sorghum + chickpea (2:1) or pearl millet (wider row) during kharif followed by sunflower (wider row). The annual crops can be sown till the canopy of sapota trees covers the entire land.

Performance

With sapota based agri-horti system, the maximum gross income can be attained with sapota intercropped with sunflower during kharif followed by rabi sorghum + chickpea (2:1) sequence cropping system (Rs. 42,400/ha) followed by growing of greengram during kharif followed by rabi sorghum + chickpea (2:1) (Rs. 39100/ha) and growing of pearl millet (wider row) during kharif followed by sunflower (wider row) during rabi season (Rs. 25928/ha). It is one of the most drought proofing technologies.

Impact and Upscaling

Considerable area is now under sapota based agri-horti system in Bijapur, Bagalkot, Bellary and Koppal districts, however with protective irrigation. For initial establishment of sapota plants, protective irrigation is needed which can be done by institutional and policy support for rainwater harvesting and efficient utilization through farm ponds, drip irrigation system and in convergence with schemes like Karnataka Rainfed Agriculture Policy, NHM, SHM, watershed programmes etc.

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