

**STUDIES ON AMLA AND
TERMINALIA BASED AGRI-
HORTICULTURAL
SYSTEM INTERCROPPED WITH
ASWAGANDHA**

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- Arid and semi arid regions of India are characterized by fragile environment with poor to average productivity.
- Agri-horticultural system is one of such sustainable land management system which improves the total productivity and farm income per unit of land and also fulfills the needs of farming community.

❏ The medicinal plants are the gifts of nature for the well being of mankind and now-a-days the whole world is shifting from the use of synthetic drugs to the use of natural drugs.

❏ Agroforestry offers a convenient strategy for promoting the cultivation of Medicinal and Aromatic Plants (MAPs) grown under forest cover because most of them are shade tolerant.

❏ Aswagandha is such a medicinal plant which can be grown under shade, intercropped with tree species

Ashwagandha



Experiment:

“Performance of aswagandha in different cropping situations under dry land conditions”

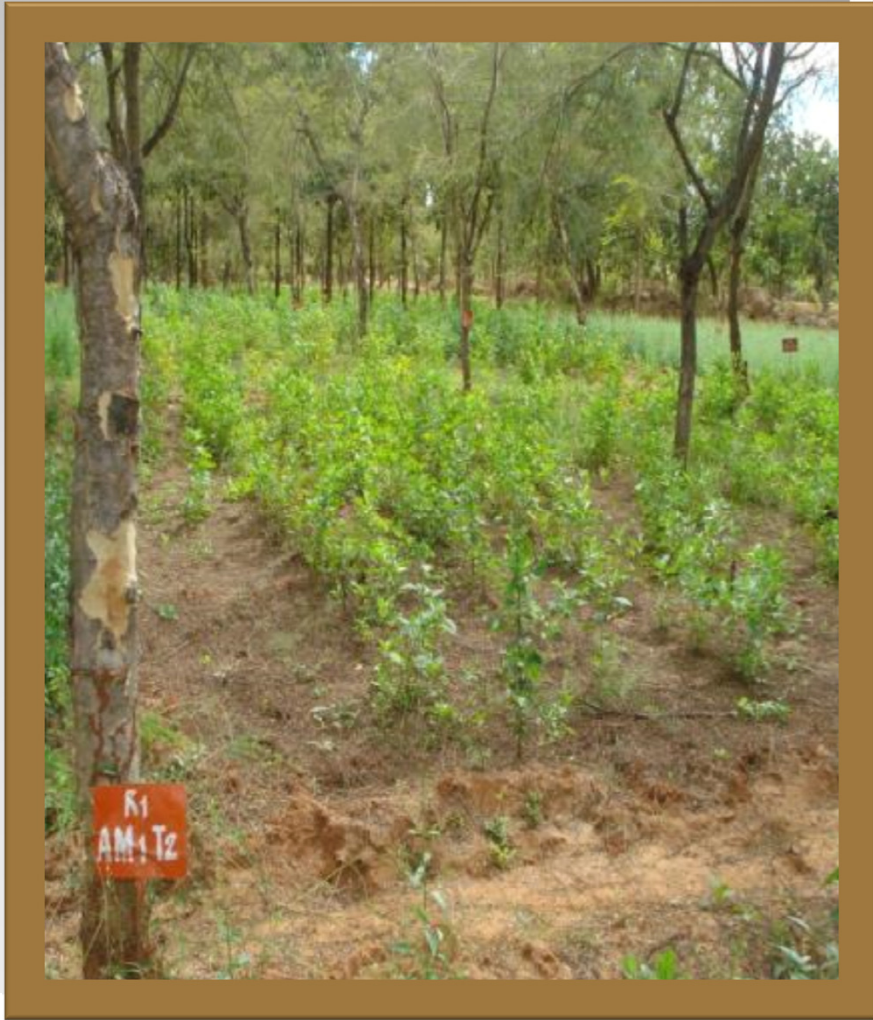
Cropping situations (CS) – 3

1. Intercropping aswagandha in amla based cropping system (C_1)
2. Intercropping aswagandha in terminalia based cropping system (C_2)
3. Sole crop of aswagandha (C_3)

**SOLE CROP OF
ASWAGANDHA**



**ASWAGANDHA INTERCROPPED IN
AMLA**



ASWAGANDHA INTERCROPPED IN TERMINALIA



Table 1 : Dry matter (g m⁻²), root yield (kg ha⁻¹), seed yield (kg ha⁻¹) and withanolide content (%) of aswagandha as influenced by different cropping situations during 2008-09 & 2009-10

Treatments	Final harvest (g m ⁻²)		Root yield (kg ha ⁻¹)		Seed yield (kg ha ⁻¹)		Withanolide (%)	
	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
Cropping situation (CS)								
C₁-Aswagnadha intercopping in Amla	669.9	606.1	283.4	274.2	35.4	29.7	0.32	0.25
C₂ – Aswagandha intercopping in Terminalia	304.1	279.7	113.6	106.9	22.8	17.8	0.24	0.19
C₃ - Sole cropping of Aswagandha	776.4	755.9	442.5	410.4	50.3	46.2	0.43	0.38
SEm+	5.99	5.00	2.96	3.33	0.47	0.77	0.01	0.02
CD (P=0.05)	16.65	13.99	8.22	9.24	1.31	2.14	0.03	0.05

Table 2 : Total gross and net monetary returns (Rs ha⁻¹) from the system (tree+crop) in aswagandha under different cropping situations during 2008-09 and 2009-2010

Treatments	2008-09			2009-10		
	Total Gross monetary returns	Total Net monetary returns	Profit per rupee investmet	Total Gross monetary returns	Total Net monetary returns	Profit per rupee investment
Cropping situations (CS)						
Intercropping in amla	53494	27911	1.60	52342	24404	0.85
Intercropping in terminalia	270767	245184	9.45	266400	238462	8.41
Sole crop	45260	23177	1.07	41959	17522	0.73

Market price of economic products

Root cost @ Rs.100/kg
Seed cost @ RS. 20/kg

Terminalia @ Rs.20/kg
Amla @ Rs.10/kg

CONCLUSIONS:

- ✚ Among two intercropping systems, aswagandha grown in amla plantation was more beneficial due to sparse shading offered by the tree when compared to terminalia based cropping system where in dense shading affected the growth of aswagandha.
- ✚ Hence, it is worthwhile to adopt the practice of agri-horticulture system in rainfed areas when favourable situations like medium to deep soils with good amount of rainfall and its proper distribution, proper management practices *etc.*, prevail.
- ✚ By inclusion of shade tolerant crops like medicinal crops as intercrops in the existing agri-horticultural system, the crop productivity could be enhanced in poor and marginal soils for imparting stability and providing sustainability to the farmers of drylands.

Future line of work

- Other medicinal crops like andrographis which can sustain shade can be tested under different agri-horticultural systems.
- Studies on pruning in terminalia and its effects on the performance of intercropped medicinal plants may be initiated.
- There is a need to assess the suitability of different agroforestry systems under various agroclimatic conditions for promotion of livelihood of rural people.