RESEARCH PROGRAM ON
Dryland Systems

CGIAR

Implementation report on

"Assessment and dissemination of sustainable silvi-pasture practices"

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June 2015

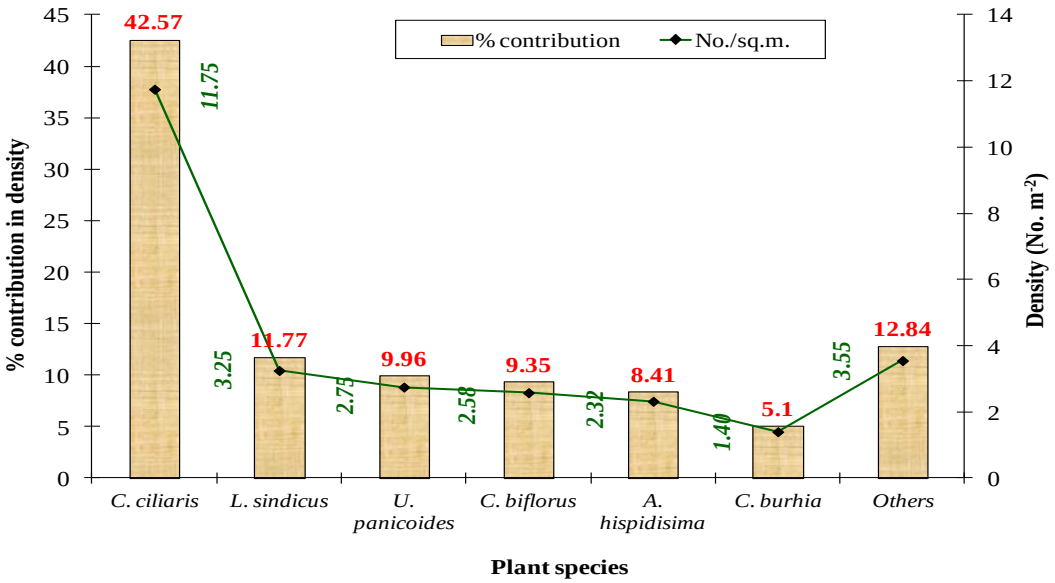
NRM and institutional options for sustainable management of silvi-pasture systems on community lands for enhanced eco-system services

The blog:
https://gravisindia.wordpress.com/2015/01/19/icrisat-and-gravis-develop-models-for-sustainable-management-of-community-silvi-pasture-systems-in-jodhpur-barmer-and-jaisalmer/

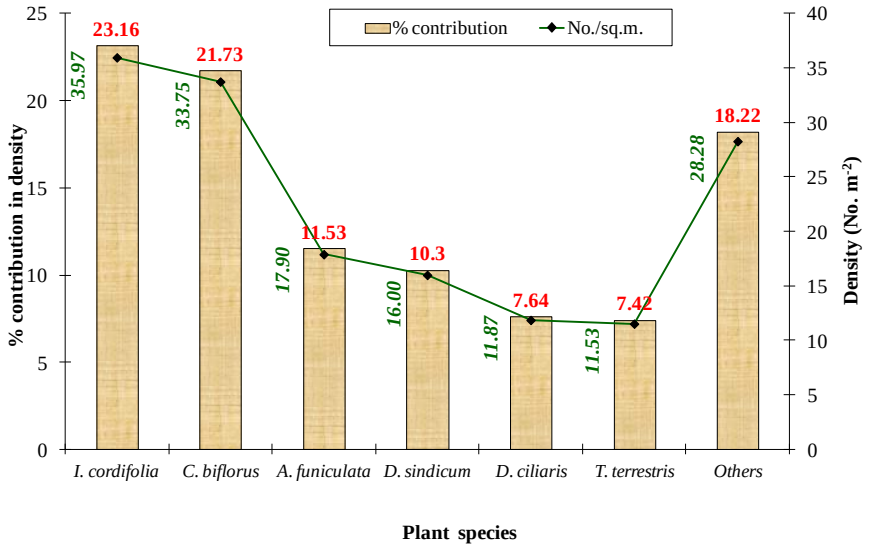
Three Pasture development committees were formed together with a women subcommittee to ensure the role and responsibility of women for proper management of CPRs in three villages. In silvi-pasture system of Govindpura soil and water conservation works have been taken-up during the month of April & May particularly pertaining to making of contour bunds, loose stone check dams, stabilization of banks of water stream etc. these activities were required to arrest soil & water erosion from the pasture. Besides about 500 pitchers (earthen pots) were installed near the newly planted seedlings of fodder trees to ensure their proper establishment. However, few more S&W conservation activities like gully plugging, intermediate bunds at some sites, contour boxes etc. are needed in this pasture. Since the grass establishment is very poor in this pasture, there is need to give more attention to this CPR for grass establishment (*L. sindicus* and *C. ciliaris*). Similarly in CPR of Dhok & Damodara we need to give attention on required S&W conservation measures before inception of monsoon. In my view before adoption of soil and water conservation measures it will be better to take advice of S & W conservation engineer so as ensure proper planning of this activity in these pastures. Also during the season the silvi-pasture development work in these pastures should be strengthened through re sowing of grasses and gap filling by suitable tree species in vacant spaces of the pastures.

In CPRs, seed collection and harvesting and distribution of fodder grasses is managed by women sub-committee.

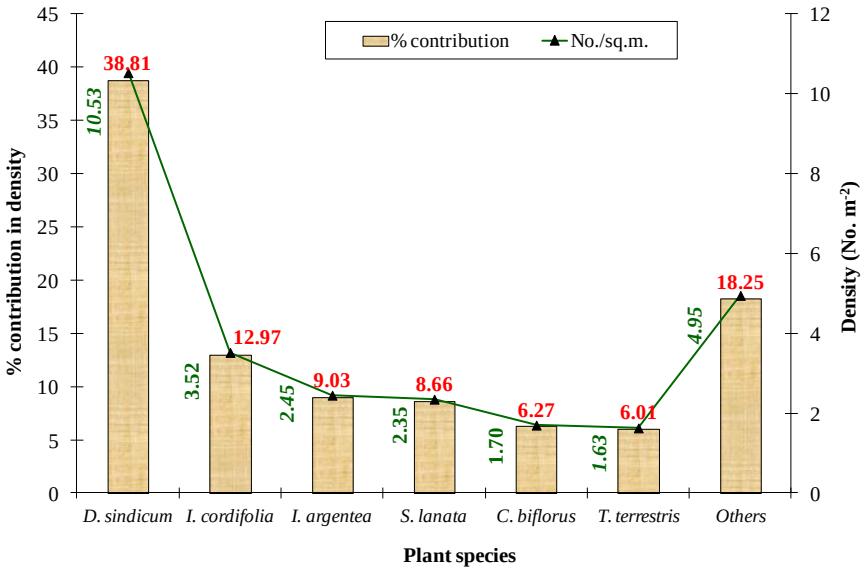
Density (No. m^{-2}) and percent contribution of plant species in silvipasture system at village Dhok, Dist. Barmer (Year, 2014)



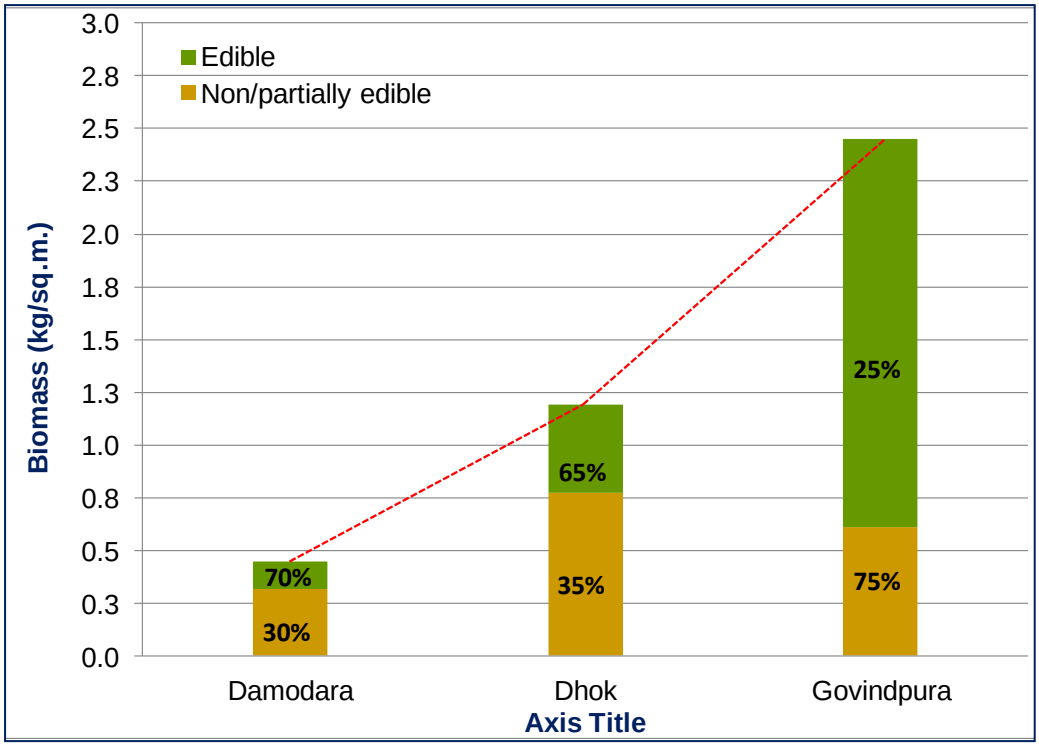
Density (No. m^{-2}) and percent contribution of plant species in silvipasture systems at village Govindpura, Dist. Jodhpur



Density (No. m^{-2}) and percent contribution of plant species in silvipasture systems at village Damodara, Dist. Jaisalmer



Biomass production (kg/sq.m.) and percent contribution of edible and non/partially edible plant species in silvi-pasture systems developed under targeted villages of CRP1.1 in Rajasthan



Biomass of Different Components in *Kharif* Season

Tree biomass was estimated by non-destructive method (50m x 50m quadrates) by simply applying of bio-statistics based allometric equations used by Pandya *et al*., (2013).

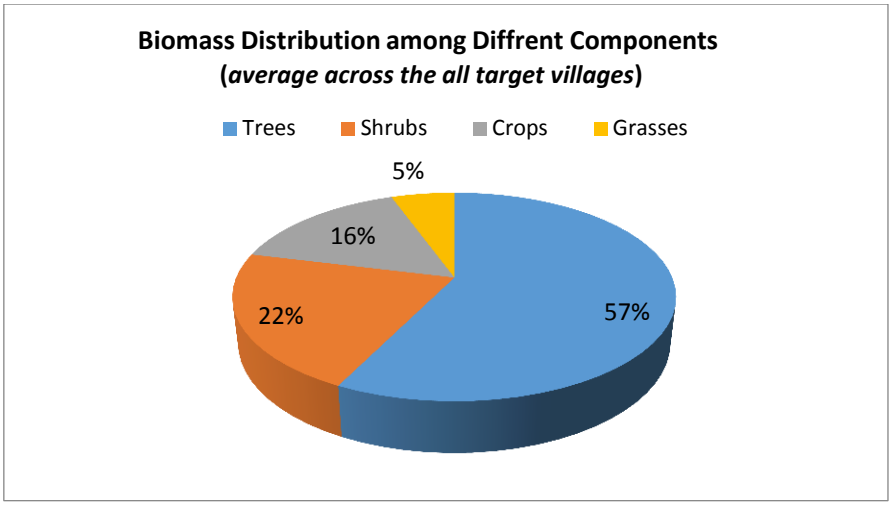
Above ground biomass (AGB) =Wood density x $T_{Biovolume}$
Below ground biomass (BGB) =AGB x 0.26
Total biomass =AGB + BGB
Shrubs (5m x 5m quadrates), grasses and crops (1m x 1m quadrates), were harvested for estimation of biomass.

Biomass of trees varied between 15595.96 kg /ha (Dhok) to 39839.2 kg/ha (Mansagar). On an average, across all the villages, shrub biomass was 8999.12 kg/ha. Crop biomass ranged between 4126.69 kg/ha (Didhoo) to 9057.33 kg/ha (Mansagar). Grass biomass was maximum in Mansagar village (5678.25 kg/ha) and minimum in Sakaria village (434.29 kg/ha) (Table 2). Total biomass was maximum in Mansagar village i.e. 66953.11 kg/ha and minimum in Dedha village i.e. 29911.78 kg/ha. Biomass distribution among different components indicated that tree biomass maximum in target villages (Fig.1). The variation in total biomass was attributed to the different species, species density, climatic and edaphic factors.

Table 2. Biomass of woody and non-woody components in different villages (kg/ha)

District	Village	Tree biomass	Shrub biomass	Crop biomass	Grass biomass
Jodhpur	Govindpura	34633.42±2618.32	8001.33±1681.58	8704±1393.47	4318.27±224.18
	Mansagar	39839.2±3366.89	12378.33±2591.61	9057.33±237.43	5678.25±767.51
Barmer	Dirassar	21211.96±6301.25	10752±1185.54	6431.33±1439.98	4942.85±1125.20
	Dhok	15595.96±3320.36	8158.66±1077.24	7361.78±789.67	746.66±203.33
Jaislmer	Damodara	17662.55±1233.41	8081.33±1438.49	5418.66±174.33	1170±206.63
	Dedha	18674.89±3145.92	6365.33±1056.55	4223.33±758.86	648.23±256.17
	Didhoo	17723.73±2930.13	10336±972.61	4126.69±832.51	518.65±276.52*
	Sakaria	26439.29±2873.25	7920±226.52	7014.04±1093.19	434.29±189.26

* over grazed



Biomass distribution among different components

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The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

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