A clean field after the eradication of Lantana camara (Santosh Gupta)

Eradication of Lantana Camara (invasive species) for Soil Rehabilitation on Private Land ( )

Lantana (Ram Phool)

Lantana camara is an invasive species having severe ecological impacts on local biodiversity and economic impact on local communities. Lantana camara has proliferated in central India and occupied many forest lands, commons, and private land. The cut rootstock method provides minimum disturbance to the soil, wherein the plants' roots are cut three inches below the ground. It is followed by lifting the bush and keeping it upside down to prevent it from gaining ground.

Introduced as an ornamental plant to India in the 1800s, Lantana has infested the forests, grazing grounds, and farmlands. It has invaded over 13 million hectares, which is around 4% of the total land area of the country. In the context of Madhya Pradesh, the species has encroached on shared and remote villages' lands along the fringes of protected areas such as the Kanha Tiger Reserve, impacting wildlife and local communities in multiple ways.

Tribals in the Kanha landscape generally inhabit upper catchments of rivers, usually having large portions of uplands as part of their landholdings. These lands have never attracted investments from land development projects. They used to cultivate millets (particularly Kodo and Kutki) every alternate year. Apart from this crop, the farmers collect tendu leaves (Diospyros Melanoxylon) from these lands every year. Keeping the soil quality in view, they take these crops every alternate year and in some cases, once in three years with a gap of two years. This gap of two years helps Lantana spread on private land.

Traditional practices for controlling lantana camara are chopping the main stem, clipping aerial shoots, burning, and grubbing (total uprooting). These practices however, either led to vigorous regeneration of Lantana or were labor intensive. The cut rootstock method/technology applied under the project provides minimum disturbance to the soil, wherein the plants' roots are cut three inches below the ground. It is followed by lifting the bush and keeping it upside down to prevent it from gaining ground.

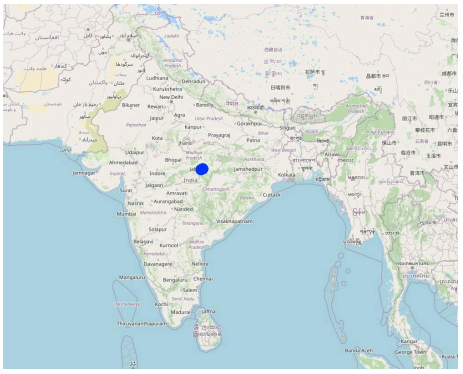
The Foundation for Ecological Security (FES), an NGO located in India, has been working on the eradication of Lantana Camara from the commons land since 2010-11, however from the year 2016-17 onwards, with the support from GIZ, FES also started supporting village institution in eradicating Lantana from private upland. Significant activities are undertaken for the eradication of Lantana and as shown hereunder:

A. Improving community governance mechanism; local communities were engaged by ensuring that the village executive committee took the Gram Sabha (Village Governing Body) into confidence and prepared the by-laws to conserve the lantana-eradicated site. Rules and regulations were framed for the uprooting of the Lantana, its payment process, and usages of the uprooted Lantana for fencing the plot, preparation of biochar, or other usages providing ecological benefits.

B. Adoption of the 'cut rootstock method' for the uprooting of Lantana; removing Lantana is tricky because methods such as burning, haphazard uprooting, or cutting result in the recurrence of the species.

C. Appropriate measures were taken to minimize the recurrence of Lantana seeds through regular monitoring and plantation of grass seeds and other plants.

D. Grass seed sowing; with the active support of the village institution, the collection of indigenous grass species was done. Before the advent of the monsoon, the community prepared the grass seed ball and sowed it in the plot. A seed ball helps the seed to protect it from insects, birds, and runoff. In the rainy season, these grass seeds germinate and grow.



: Mandla, Madhya Pradesh,

: 100-1000

- 80.26523, 22.81034
- 80.07561, 22.7431
- 80.07561, 22.7431

:
/

?:

: 2015

(> 50)

/

With the grasses coming, the lantana seeds do not get a suitable environment to germinate and grow.

Eradication of Lantana from the private lands helps the communities access their lands. This has resulted in the cultivation of millets on the same land, which was otherwise left fallow for so many years.

Farmers removing the lantana from their field and common land (Keertan Bhagel)

/ -

- : - . Cropping system: / sorghum/millet : 1
? ? /

- Transhumant pastoralism
- /
: -

?

-	500

/

- ( ) / : boreal coniferous . / ,
Tree types (/): : , ,
, , , /

- Ca:

- Bf:
, Bs: /
, Bl:

SLM

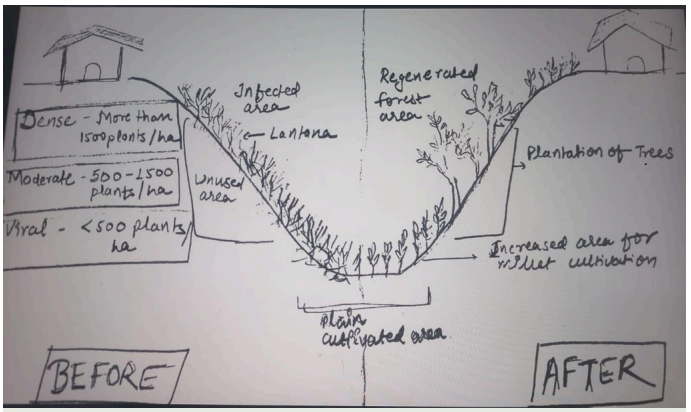
SLM

-
-

- V3: , V4: /

- M1:

Drawing covering the landscape of private land where Lantana eradication was carried out. The drawing indicates the before and after situation with a change in the land profile. It can be seen that before the eradication land was covered with a thick cover of Lantana while after the eradication, land has plants and grass. The drawing also shows the slopes of the land under treatment.



Author: Payal

- (**1 hectare**)
- **INR**
- ( ) 1 USD = 80.0 INR
- 204

The density of lantana in the field is categorized into 3: more than 1500 bushes are considered high density, and between 500-1500 are considered moderately dense, while less than 500 is known as lowly dense.

n.a.

n.a.

			(INR)	(INR)	%
Removal of lantana	ha	1,0	7229,0	7229,0	16,0
				7'229.0	
				90.36	

- [ ] < 250
- [ ] 251-500
- [ ] 501-750
- [ ] 751-1,000
- [x] 1,001-1,500
- [ ] 1,501-2,000
- [ ] 2,001-3,000
- [ ] 3,001-4,000
- [ ] > 4,000

- [ ]
- [ ]
- [x]
- [ ]

1427.0

Monsoon season is June-September which has the majority of the rainfall

Mandla, Madhya Pradesh

(0-2%)
(3-5%)
(6-10%)
✓ (11-15%)
(16-30%)
(31-60%)
(>60%)

✓

0-100
✓ 101-500
501-1,000
1,001-1,500
1,501-2,000
2,001-2,500
2,501-3,000
3,001-4,000
> 4,000

✓

(0-20)
✓ (21-50)
(51-80)
(81-120)
(> 120)

( )
✓ / ( )
✓ (,)
/ ( )

(> 20)
/ ( )
✓ (,)
/ ( )

(>3%)
(1-3%)
✓ (<1%)

< 5
5-50
✓ > 50

✓ /

( )
✓ ( )

?
/
✓

( )

/
✓

✓

✓

SLM

( )
✓ (/)
/

10%
10-50%
✓ 50%

✓
✓
/

✓

/
✓ /

✓
✓ (,)

✓
✓
✓

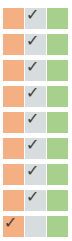
✓ < 0.5
0.5-1
1-2
2-5
5-15
15-50
50-100
100-500
500-1,000
1,000-10,000
> 10,000

✓

✓

( )
( )
✓ ( )
✓ ( )

(.)



SLM: 242 kg per ha
SLM: 350 kg per ha
These are the estimated figures

/
(
/)

/

SLM /

(
)

/

/

/

(
)

(-springs)

(
)

Short- and long-term benefits are pretty high compared to the cost involved.

-

/
1-10%
11-50%

?
0-10%
11-50%

> 50%

51-90%
91-100%

/

1000 hectares

?

/

?

/

( )

:

- 1. Availability of additional land for cultivation of other crops such as Millets on upland
- 2. Improved land for fodder cultivation
- 3. Reduced losses due to animal attacks on the standing crops as animals are now not finding the space to hide

:

- Reduced human-animal conflict will lead to productivity gains for both forest dwellers and wild animals
- Available land will be used for millet cultivation, which is rich in nutrition and well-suited to the local ecological conditions. The requirement for water is also very minimal for these crops.
- This will also improve local biodiversity as farmers will now grow more plant varieties suitable for climatic conditions.

/ / :

/ / :

- Cultivation of crops using chemical pesticides and fertilizers may have a negative impact on both soil and the environment Training and handholding of the farmers around the natural and sustainable farming practices

Santosh Gupta

Editors

Noel Templer
Stephanie Katsir
Kim Arora
Tabitha Nekesa
Ahmadou Gaye
Siagbé Golli

Udo Höggel
Joana Eichenberger
Sally Bunning

: 21 2023 : 11 2024

Santosh Gupta - SLM

https://qcat.wocat.net/km/wocat/technologies/view/technologies_6660/

SLM

- Alliance Bioversity and International Center for Tropical Agriculture (Alliance Bioversity-CIAT) -
- Ecociate Consultants (Ecociate Consultants) -
- GIZ India (GIZ India) -

- Soil protection and rehabilitation for food security (ProSo(i)l)

- FES internal documents prepared during the year 2021-22: Internal documents