Management, control and utilization of Prosopis: Community experiences and approaches in Kenya

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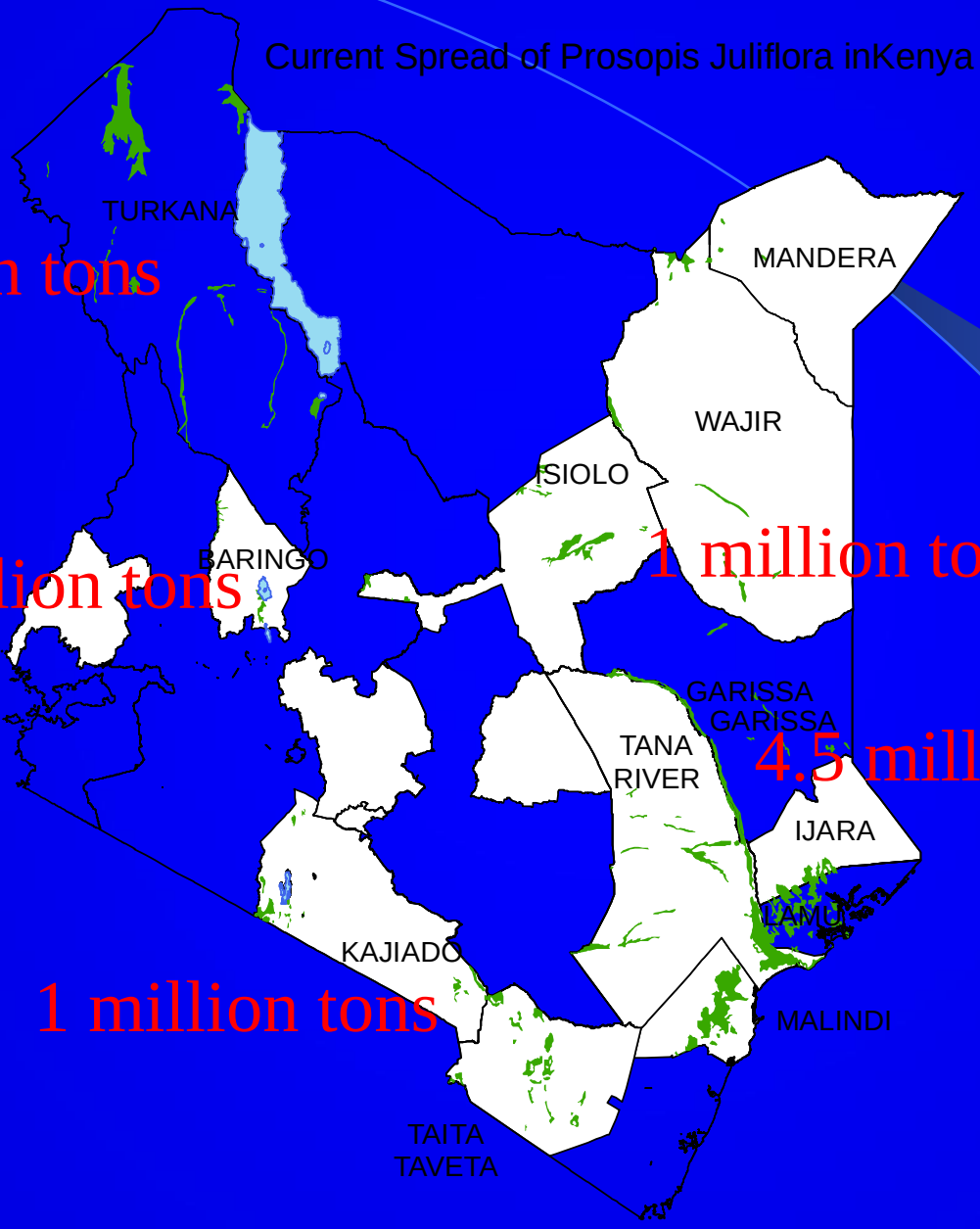
Typical invasion by *Prosopis juliflora*

Currently estimated at 2% of Kenya's land cover



30 million tons biomass

0.5 million tons

1 million tons

4.5 million tons

1 million tons

Typical sizes of Prosopis forests

Merti, Isiolo county

Lotikipi plains
Turkana county

Evolution of approaches used in Kenya

(a) Awareness creation and defining the problem (1999- 2004)

(b) Participatory development of technologies on management and control (silvicultural, biological, etc) (2005- 2008)

(c) Strengthening of capabilities of communities to manage the invasions (2009 to date)

(d) Focus on management of invasions through processing and utilization as a resource (on-going)

(e) Formation of community structures for effective management and linking industies to the Prosopis resource (on-going)

(e) Aggressive data collection to inform policy formulation and national strategy development through Research and Development (on-going)

(f) Review of integrated control methods to curb new invasions especially in remote areas (in consideration)

How we have done it in Kenya

(a) Awareness creation on Prosopis invasion

(b) Participatory formation of community groups

(c) Targeted regular intensive training of key facilitators (Theory and practice)

(d) Field practical training

Tree felling techniques

Removing young seedlings

Sawing techniques

(e) Select high priority invasions and sites

(f) Targeted management of priority areas

(g) Extract stumps or kill by burning with manure

(h) Make sawn timber as first line of profitable use

(i) Produce poles and charcoal as 2nd and 3rd options

Modern charcoal production technologies

Portable metallic kiln

Improved traditional method

(j) Carry out active land use to prevent re-invasion

(k) Collect pods, dry, process them for feeds and food

Processing pods for human food

Making livestock feeds in Garissa

Cost comparisons of a variety of feed ingredients commonly used in manufacturing of feeds in Kenya

Feedstuff	Metabolizable energy, MJ/kg	Crude protein, %	Crude fibre, %	Equivalent worth	Cost, Ksh/kg	Net Cost saving	Rank
Rice polishings	10.04	8.2	31.9	103	8	95	12
Molasses	9.80	2.9	0	127	25	102	11
Prosopis pulp meal	**9.94**	**11.5**	**24**	**154**	**-**	**154**	**10**
Prosopis pod flour	**9.30**	**11.7**	**20.1**	**160**	**-**	**160**	**9**
Wheat bran	8.37	15.5	15	201	8.4	193	8
Maize germ meal	11.51	12.4	10.2	214	11	203	7
Maize germ cake	9.20	17.4	6	251	15	236	6
Wheat pollard	11.72	16	8	257	10.5	247	5
Sunflower seed cake	7.95	27	28	279	14	265	4
Cotton seed cake	9.62	30	24	336	11	325	3
Soybean meal	10.46	44	6	530	36	494	2
Prosopis seed flour	**12.95**	**39.9**	**7.3**	**510**	**-**	**510**	**1**

Link community producers to feeds industry

200 tonnes Prosopis based feeds have been made in the first industrial pilot production. Several others underway

Observations already made

1. There is a serious lack of knowledge and technologies to manage Prosopis but the knowledge gap is gradually being filled.
2. Successful management of Prosopis requires serious commitment and political will by Governments
3. Initial capital expenditure is required to make an impact of core invasions and these efforts must be sustained for long term impact on control and management
4. While land privatization makes it easy to manage the invasions, the communal set ups common in most African cultures remains a challenge that must be overcome

What has worked and what has not

1. Clearing and replacing *Prosopis spp* with grass and crops. This has succeeded *only* on private land, *rarely* on communal areas. Best results noted in Baringo County where an NGO provide *subsidized* cultivation costs and *grass seed*. 145 households actively engaged on about 500 ha managed over a total invaded area of 300 square kilometres.
2. Utilization: Charcoal production has worked extremely well driven by *supportive Government policy* to open Prosopis charcoal and limited charcoal from other species. Constrained by lack of proper supervision and coordination to allow systematic clearing/management regimes of invaded areas
3. Processing of pods has worked well. Limited by lack of raw materials (crop residues) to make local mixtures of feeds. Long distances and poor roads to major markets also limits large scale use of pods

CNT: What works and what does not

4. Formation of groups and their sustainability. Groups are best as entry points by agents and partners to work with communities, for training and passing technology to larger communities, for bargaining and setting product prices and providing organized labour. However, they are only sustained by how much each member gains at the end of the day.
5. Control through utilization approach is working but not as desired. Invasions have not been significantly reduced at the levels and densities that are considered manageable. Government of Kenya now making revisions on the approach
6. Many development partners engaged on Prosopis management efforts but there is poor coordination of these efforts. This encourages duplication of activities and wastage of resources. Government now coordinating these efforts

9. What next?

- Regional approach towards management and utilization within ECA building from the experiences of Kenya, Ethiopia, Djibouti & Sudan
- Establishment of Regional Centres of Excellence in Ethiopia, Kenya Sudan, Djibouti and other IGAD member countries to share technologies and approaches in pastoral areas.
- Areas of focus are refinement of the activities and governance structures of the existing groups for profit maximization while ensuring environmental integrity without losing the primary objective on control and management of the Prosopis invasions
- Regular monitoring of new invasions and timely initiation of management and control programmes to desired densities
- Increased role of Prosopis resources for mitigation on climate change, improved livelihoods and consolidation of its status as a miracle tree for 21st century and beyond
- Continuation of Research and Development programmes at all levels (such as improvement/breeding, new industrial uses, etc)

Bold research steps?

- Identification, marking and breeding/cloning of existing superior genotypes for specific qualities of wood and pod yields using non invasive Prosopis species
- Improving the existing inferior populations using materials of known high quality and certified non invasive stocks
- Controlled trials of high quality non invasive Prosopis species for human food (*Prosopis alba*, *P. pallida*) and livestock feeds (*P. kuntzei)*
- Serious investments in research and innovations and exchange of scientific discovery and knowledge globally

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THANK YOU!