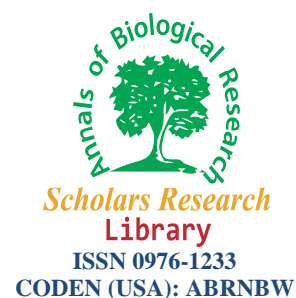




Scholars Research Library

Annals of Biological Research, 2016, 7 (4):1-4
(<http://scholarsresearchlibrary.com/archive.html>)



Traditional method of Rabfor paddy cultivation in Bhor and Mahad regions of Western Maharashtra, India

P.V. Patil*, R. Mungikar*** and D. K. Kulkarni **

*Department of Horticulture, A. T. College, Bhor

**BAIF Development Research Foundation, Pune

***Maharashtra State Biodiversity Board (MSBB), Pune

ABSTRACT

Rab is a traditional method of burning land with naturally available biomass arranged in three layers. This method is used only for growing seedling of rice. A sample survey of 20 farmers were carried out by interview. Perception of farmers were recorded and their opinion regarding benefits of this method are, 7 % it controls weeds, 8 % suggest it eradicate diseases spores and available disease resistant seedlings. 8 %vigorous growth of seedlings, 4%rab operation is helpful for easy uprooting of seedlings, 2 % sturdy seedlings are obtained. Rab is also effective to sterilize soil, burn the grass seeds and develop high seed germination percentage. Leaf litter of forest tree species, 10-20 different plant twigs, FYM, grasses etc. are used in this method. Agriculture experts are need to search alternative practice to control loss of natural biodiversity which exist in remote hilly areas of western Maharashtra.

Key words- Rab method, Paddy saplings, Bhor and Mahad region, Maharashtra.

INTRODUCTION

Traditional knowledge exists worldwide in all communities covering varied areas like health, agriculture and natural resource management. In case of the developing world Africa and Latin America are also rich in traditional knowledge. Asia in general and India in particular have a distinct traditional knowledge found in oral tradition. In recent years scientist, ecologist, environmentalist are attracted towards documentation and searching scientific reasons for maintaining traditional knowledge in tribal communities from their ancestors (4).

The tribals have their own rationale to continue with Raab system of agriculture. The tribals in Dangs had a long history of struggle since the time of the Britishers. In 1889 all forest land was categorized into Reserve and Protected forests and the rights over the land of the local communities had taken away. From 1902 onwards there was a prohibition to undertake cultivation in the reserve forests. In the year 1970 the ownership of the land where the *raab* was practiced was decided to legally hand over to Dangs with Forest Department retaining the rights over the trees. Of the total area of 1764 sq. km of the Dangs district presently 588 sq. km is the cultivated land known as malki land. The rights over the land could not stop the degradation of the trees which compelled the government to handover the rights of the trees to the communities in 1997.

Local communities comprising Bhils, Konkanas, Varlies and Gamits of Dangs district of Gujarat. The district is located in the southern part of Gujarat with Sahyadri Hills in the East and plains of Gujarat to the West. The Dangs forms the northernmost limit of the Western Ghats, a global biodiversity hotspot (5,6).The staple crops grown in the district are finger millet, vari and paddy. The unique agricultural practice prevailing in Dangs to grow the cereals in which piling up leaf litter and lopped branch biomass from the forest trees in small plots (40-50 sq. m) and then burned just before the onset of monsoon.is called *raab*. After the first shower, seeds of the above crops are sown and

the seedlings raised in this plot is a nursery of paddy saplings. At the onset of the monsoon the area around the nursery is ploughed and the germinated seedlings of 50-60 cm are transplanted to the prepared land without using any fertilizer. The impact of this practice on the surrounding forests is severe.

Western ghatof Maharashtra has been practicing Raab activity since ancienttime. Kulkarni and Kumbojkar (1) reported ethno-agricultural practices among Maadokoli tribe and recorded plants used for *Rab*. Singh (7) has recorded raab method used in Konkan region for paddy cultivation. In the present study area communities like Maratha, Mahadevcoli, and Baudha in Bhor, Pune district and Maratha, Kunbi, Mahadeokoli, Dhanger, Harijan, Katkari of Mahadtahsil of Raigad District(Konkan) are still using *rab* method for paddy cultivation. The detailed survey of 20 farmers were carried out and presented in this paper.

MATERIALs AND METHODS

Area under study:

The study area is located in the western part of Maharashtra with Sahyadri Hills in the West and plains of Maharashtra to the East. The staple crops grown in the area are finger millet, vari and paddy. The unique agricultural practice prevailing in study area is to grow sapling of paddy in a land which is burned by using piling up leaf litter and lopped branch biomass from the forest trees in small plots (40-50 sq. m) and then burned just before the onset of monsoon. After the first shower, seeds of the paddy crops are sown and the seedlings raised in this limited area. At the onset of the monsoon the area around the sapling is ploughed and the germinated seedlings of 50-60 cm are transplanted to the puddled land without using any fertilizer.. The tribals communities or local farmers have their own rationale to continue with this system of agriculture.

Bhor and Mahad talukas are covering an area of 892.0 sq. km. and 810 sq. km. Bhor is situated 54 km south of Pune and between 18°45' N latitude and 73° - 73°15' E. longitude. Bhor region has 185 villages and total population is 1, 54, 903. Mahad region is situated 120 km west of Bhor and between 18° 5' N latitude and 73° 25' E. longitude. Mahad region has 182 villages and total population is 1, .Bhor and Mahad region is populated with all types of communities like Maratha, Kunbi, Mahadeokoli, Dhanger, Harijan, Katkari etc. Most of the communities depend upon agriculture as a main occupation. Information was documented by using Participatory Rural Appraisal (PRA) techniques like observation and discussion. In the present paper 5 traditional agricultural implements were identified and described. In the present survey 20 informants belonging to Bhor and 74 Mahad were interviewed. Average population in villages surveyed from Bhor and Mahad are 95.9% and 94.4%, respectively More than 10-20 different plant twigs, FYM, grasses and leaf litter of forest is used for *rab* method of rice seedling cultivation.

Table -1 :Plants used for *Rab*cultivation in study area:

Sr.No.	Local name	Botanical name	Family
1	Ain	<i>Terminalialata</i> Heyne ex Roth,	Combretaceae
2	Kinjal	<i>Terminiliapaniculata</i> Roth.	Combretaceae
3	Jambhul	<i>Syzygiumcumini</i> (L) Skeels.	Myrtaceae
4	Bhondaga	<i>Caseariagraveolens</i> Dalz.	Flacourtiaceae
5	Asana	<i>Brideliasquamosa</i> (Lam) Gehrm.	Euphorbiaceae
6	Nirgudi	<i>Vitexnigundo</i> L.	Verbenaceae
7	Mango	<i>Mangifeaindica</i> L.	Anacardiaceae
8	Ukas	<i>Calycopteris floribunda</i> (Roxb.) Poir.	Combretaceae
9	Dhavada	<i>Anogeissuslatifolia</i> Wall. ex Guill. & Perr.	Combretaceae
10	Umbar	<i>Ficusracemosa</i> L.	Moraceae
11	Sag	<i>Tectonagrandis</i> L.	Verbenaceae
12	Anjan	<i>Memocylontalbotianum</i> Brand	Melastomataceae
13	Fern	<i>Pteridiumaquilinum</i> (L.) Kuhn	
14	Bhaman	<i>Colebrookeaoppositifolia</i> J. E. Smith	Lamiaceae
15	Adulsa	<i>Justiciaadhatoda</i> L.	Acanthaceae
16	Tantani	<i>Lantenacarnera</i> L.	Verbenaceae
17	Babhul	<i>Acacia catechu</i> (L.) Willd. Sp. Pl.	Mimosaceae
18	Subabhul	<i>Leucaenatisiliqua</i> (L.) Gillis.	Mimosaceae
19	Kalak	<i>Bambusaarundinacea</i> (Retz.) Willd.	Poaceae
20	Karvand	<i>Carissa congesta</i> Wight.	Apocynaceae
21	Pangara	<i>Erythrinavariegata</i> L.	Fabaceae
22	Kala umbar	<i>Ficushispida</i> L.f.	Moraceae
23	Dagadipala	<i>Tridaxprocumbens</i> L.	Asteraceae

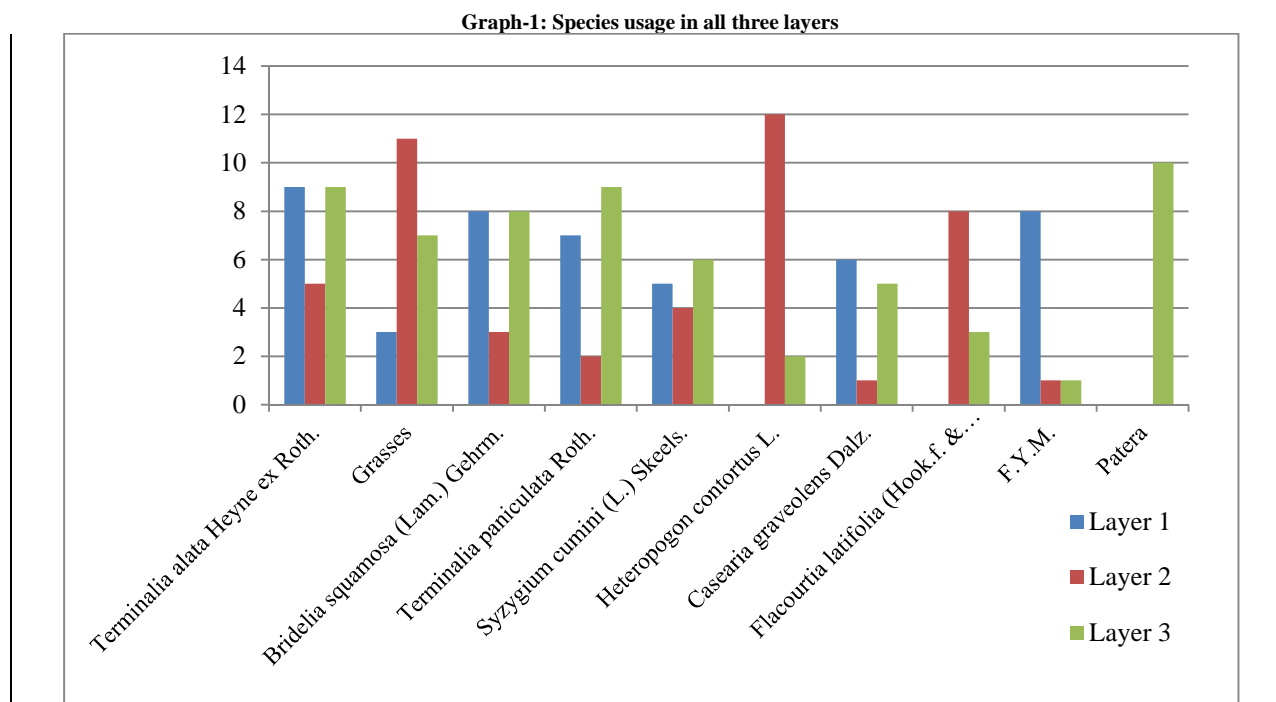


Table 2 : Species usage in all three layers

Species Name	Layer 1	Layer 2	Layer 3	Total
<i>Terminalia alata</i> Heyne ex Roth.	9	5	9	23
Grasses of different species	3	12	7	22
<i>Bridelia squamosa</i> (Lam.) Gehrm.	8	3	8	19
<i>Terminalia paniculata</i> Roth.	7	2	9	18
<i>Syzygium cumini</i> (L.) Skeels.	5	4	6	15
<i>Heteropogon contortus</i> L.	--	12	2	14
<i>Casearia graveolens</i> Dalz.	6	1	5	12
<i>Flacourtia latifolia</i> (Hook.f. & Thoms.) Cooke	--	8	3	11
Farm yard manure	8	1	1	10
Patera (Dried leaves and biological material)	--	--	10	10
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guill & Perr.	5	--	4	9
<i>Ficus racemosa</i> L.	5	--	4	9
<i>Dichanthium annulatum</i> (Forsk.) Stapf.	3	4	--	7
<i>Vitex negundo</i> L.	3	--	4	7
Branches of plants	--	5	1	6
<i>Carissa congesta</i> Wight.	--	5	--	5
<i>Themedia triandra</i> Forssk.	--	5	--	5
<i>Mangifera indica</i> L.	--	--	4	4
<i>Arthraxon lancifolius</i> (Trin.) Hochst.	--	3	--	3
<i>Calcyopteris floribunda</i> (Roxb.) Poir	2	--	1	3
Karada (leaf letter)	--	1	2	3
<i>Leucaena latisiliqua</i> (L.) Gillis.	--	--	3	3
<i>Oryza sativa</i> L.	3	--	--	3
<i>Sorghum bicolor</i> Moench	3	--	--	3
<i>Acacia catechu</i> (L.) Willd.	--	--	2	2
<i>Erythrina stricta</i> Roxb.	--	2	--	2
<i>Memecylon umbellatum</i> Burm.f.	--	2	--	2
<i>Nephrolepis exaltata</i> (L.) Schott	--	2	--	2
<i>Psidium guajava</i> L.	--	--	2	2
As per availability of biological material	--	1	--	1
<i>Bambusa arundinacea</i> (Retz.) Willd.	--	--	1	1
<i>Colebrookea oppositifolia</i> J.E. Smith.	--	1	--	1
<i>Justicia adhatoda</i> L.	--	1	--	1
<i>Lantana camara</i> L. var. <i>aculeata</i>	--	1	--	1
<i>Tectonagrandis</i> L.	--	--	1	1

RESULTS AND DISCUSSION

Rab is an age-old cultivation practice followed in the Konkan region. In this practice, farmers burn the piece of land where a rice nursery is to be raised. Scientifically, it is a sort of partial sterilization of the soil. It improves the physical

structure of the soil and increases availability of nutrients in the soil. The practice is therefore beneficial in raising vigorous seedlings, though it involves wastage of valuable organic matter, which can preferably be used in compost making. *Rab*, also helps control the weeds, provide better germination and healthy seedlings, help better plant stand and increase the yield on per unit area basis.

Rab practice has an importance in different ways. Local farmers are burning land with three layers of plant resources. In Konkan (Mahad) region of Maharashtra the local farmers use cattle dung and vegetable matter from wastelands and forests to provide manure to the crop field. They are collected for few months before the paddy season and then spread on the surface of the nursery area containing seedlings, covered with a thin layer of soil and burnt slowly, just before the monsoon starts. In this context, '*Rab*' is a quick method of providing other nutrients, particularly potassium, which is usually the limiting nutrient. Allowing organic matter to decay naturally would be too slow to help the seedlings and composting is made difficult due to the scarcity of water. The burning also helps to kill weed and harmful organisms (2). Farmers from Bhor and Mahad region on the importance of cultivation. Seven farmers opinioned that it controls weeds, 8 suggest to eradicate diseases spores and disease resistant seedlings. 8 says that vigorous growth of seedlings, 4 says that operation is help full for easy uprooting of seedlings, 2 says that sturdy seedlings are obtained. It is also effective in sterilizing soil, burning the grass seeds and high seed germination percentage. 23 farmers use leaves and twigs of *Terminalia alata* Heyne ex Roth., 19 *Bridelia squamosa* (Lam.) Gehrm., 18 *Terminalia paniculata* Roth., 15 *Syzygium cumini* (L.) Skeels., 14 *Heteropogon contortus* L., 12 *Casuarina graveolens* Dalz., 11 *Flacourtia latifolia* (Hook.f.&Thoms.) Cooke, 9 *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill & Perr., 9 *Ficus racemosa* L., 7 *Dichanthium annulatum* (Forsk.) Stapf., 7 *Vitex negundo* L., 5 *Carissa congesta* Wight., 5 *Themeda triandra* Forssk., 3 *Arthraxon lancifolius* (Trin.) Hochst., 3 *Calycopteris floribunda* (Roxb.) Poir., 4 *Mangifera indica* L. etc. 10 farmers use farm yard manure, 21 add different types of grasses and 10 use collected leaf litter from forest resources. This information is useful to know the natural resources for cultivation. *Rabbing* (parching) paddy nursery soil controls most seedling and adult paddy plant diseases in the field. The steps were taken to prepare land for burning in three layers. *Terminalia alata* is a commonly used plant to provide intense heat (3)

CONCLUSION

Bhor and Mahad region is rich in vegetation and local people collect twigs, leaf litter for *raab* method since ancient time. This method is useful for many reasons and it is continued in tribal belts of Western Maharashtra. There is need to alter this loss of biodiversity by planting suitable plant species useful for *raab* cultivation. Even modern methods need to be search to prepared saplings of paddy without disturbing present biota.

Acknowledgement

The authors are thankful to President, BAIF Development Research Foundation and Principals of A.T. College, Bhor, for facilities and encouragement.

REFERENCES

- [1] D.K Kulkarni & M.S. Kumbhojkar. *Asian Agri-History*, 2003, 7(4): 295-312.
- [2] W. Pereira. *The Ecologist*, 1991, 21(2): 97-100.
- [3] Y. L. Nene. *Asian Agri-History*, 2012, 16(1): 45-54.
- [4] U.C. Sharma. *Asian Agri-History*, 1997, 1(4): 267-273.
- [5] N. Myers. *The Environmentalist*, 1988, 8 : 1-20.
- [6] N. Myers. *The Environmentalist*, 1990, 10: 243-256.
- [7] A. K Singh. *Asian Agri-History* .2014, 18(3): (257-282)