REVIEW ON DROUGHT TOLERANT MEDICINAL PLANTS

Prachi A. Khaire

Assistant Professor, Dravyaguna-vidnyan Department,
Government Ayurveda College, Tuljapur Road, Osmanabad- 413501, Maharashtra, India
*Corresponding Author- e-mail: drprachikhaire10@gmail.com; Mob no: 9029260190

ABSTRACT:

In India, where agriculture is the main occupation of about 70% of the population, the total area under cultivation is about 169.7 M ha. The frequency and intensity of extreme weather events like droughts have increased during the last few decades due to global warming. In our country 1/6th of the total geographical area (51.1M ha) contributing 12% of population is drought prone. It covers 13 states including 74 districts.

Drought results in recurrent crop failure and yield reduction. Besides this, medicinal species are difficult to obtain in sufficient quantities from traditional suppliers owing to manpower scarcity and rising production cost, necessity of their cultivation in farms arises. So, the drought-tolerant plant species with medicinal values have been listed. Out of these, some plant species like Adhatoda, Tribulus & Ricinus require very low maintenance and man power.

Now-a-days, good foreign market exists for species like Aloe, Withania, Cassia, Liquorice, Rouwolfia, Datura and Lowsonia. So these cash crops procured from drought prone area can fulfill their high demand in market & contributes to India's performance in terms of value. Therefore, a cultivator of these medicinal plants in drought-prone land will be sure of his investments in terms of cost-benefit ratio.

Further, average land holding in India is tiny and often split into scattered pieces which comes under marginal land holding (below 1 ha). For people below poverty line, cultivation of these drought tolerant plants provides a significant proportion of self-employment opportunities and supplements the income of most sections of India.

KEYWORDS-

Drought prone region, drought tolerant medicinal plants, cultivation

INTRODUCTION:

In India, agriculture is the main occupation of the people and about 70% of the population is engaged in this activity. The total area under cultivation is about 169.7 M ha; an additional area of 0.4M ha is under population crops. In our country, the average holding is tiny and split into dispersed pieces. Five main categories of them are:

1. Marginal- below 1 ha
2. Small- 1-2 ha
3. Semi-medium- 2-4 ha
4. Medium- 4-10 ha
5. Large- 10 ha and above ¹

Drought results in recurrent crop failure and yield reduction. Due to manpower scarcity and rising production cost, medicinal species are difficult to obtain in sufficient quantities from traditional suppliers which results in

necessity of their cultivation in farms. So, the drought-tolerant plant species with medicinal values have been discussed here and which plant species require very low maintenance, low man power and can fulfill their high demand in market are studied.

AIM AND OBJECTIVES:

1. To review the drought prone area in India
2. To review the drought tolerant medicinal plants in India

MATERIAL AND METHODS:

Drought prone areas of India:

The frequency and intensity of extreme weather events like droughts have increased during the last few decades due to global warming. Drought is defined by deviation from the traditional rainfall. Possibilities of drought occurrence in India vary from once in 2 years in western Rajasthan to once in 15 years in Assam.² In our country 1/6th of the total geographical area (51.1M ha) contributing 12% of population is drought prone. It covers 13 states including 74 districts. The areas that receive an annual rainfall up to 60 cm are the most prone.³

Maximum drought prone areas are found in arid, semi-arid and sub-humid regions of the country, which experience but average annual rainfall. These drought affected areas in India are divided in 2 tracts:

1. Desert and semi-arid regions- 0.6 million sq.m.

Rajasthan and Gujarat

Rainfall is less than 750 mm (some places <400 mm)

2. East of the western ghats up to a distance of 300 km from coast (Rain shadow area of western ghat)- Rainfall is < 750 mm

In Maharashtra 1290 km² area (0.42%) is arid; while 189580 km² (61.61%) is semi-arid.⁴

Drought tolerant medicinal plants:

Indians are fortunate to be blessed with varieties of climate, from tropical to alpine and desert to humid. It has therefore, a large array of vegetation and having more than 20000 plant species.⁵ Out of these following are some drought tolerant medicinal plants-

Neemba- Margosa tree (*Azadiracta indica*)⁶ – Meliaceae

Gambhari- Coomb teak (*Gmelia arborea*)⁷- Verbenaceae

Karanja (*Pongamia pinnata*)- Leguminosae⁸

Arjuna- Arjun tree (*Terminalia arjuna*)- Combretaceae⁹

Haritaki- Chebulic myrobalan (*Terminalia chebula*)- Combretaceae¹⁰

Bibhitaka- Belleric myrobalan (*Terminalia bellerica*)- Combretaceae¹¹

Eranda- Castor (*Ricinus communis*)- Euphorbiaceae¹²

Dhatura (*Datura metel*)- Solanaceae¹³

Methika -Fenugreek- (*Trigonella fenugraecum*)¹⁴

Chandana- sandalwood (*Santalum album* Linn.)¹⁵

Ashwagandha- Winter cherry (*Withania somnifera*)- Solanaceae¹⁶

Agnimantha (*Clerodendrum phlomidis* Linn.f.)- Verbenaceae¹⁷

Kashthadaru (*Polyalthia longifolia* Benth & Hook.f.)- Annonaceae¹⁸

Gunja (*Abrus precatorius*) –Fabaceae¹⁹

Apamarga (*Achyranthes aspera*) –
Amaranthaceae²⁰

Ingudi (*Balanites aegyptica*) –
Balanitaceae²¹

Shallaki (*Boswellia serrata*) –
Burseraceae²²

Chakramarda (*Cassia tora*) –Fabaceae²³

Dhattur (*Datura metel*) –Solanaceae²⁴

Laangali (*Gloriosa superba*) –Liliaceae²⁵

Sariva (*Hemidesmus indicus*) –
Asclepideaceae²⁶

Kutaja (*Holarrhena antidysenterica*) –
Apocynaceae²⁷

Chitraka (*Plumbago zeylanica*) –
Plumbaginaceae²⁸

Bijaka (*Pterocarpus marsupium*) –
Fabaceae²⁹

Guduchi (*Tinospora cordifolia*)
Menispermaceae³⁰

Gokshura (*Tribulus terrestris*) –
Zygophyllaceae³¹

DISCUSSION-

Drought results in recurrent crop failure and yield reduction. Besides this, medicinal species are difficult to obtain in sufficient quantities from traditional suppliers due to manpower scarcity and rising production cost. Owing to this, necessity of their cultivation in farms arises. So, the drought-tolerant plant species with medicinal values have been

listed above. Out of these, some plant species like *Adhatoda*, *Tribulus* & *Ricinus* require very low maintenance and man power.

Now-a-days, good foreign market exists for species like *Aloe*, *Withania*, *Cassia*, *Liquorice*, *Rouwolfia*, *Datura* and *Lowsonia*. So these cash crops procured from drought prone area can fulfill their high demand in market & contributes to India's performance in terms of value. The medicinal plant industry is on the verge of entering into a high growth phase in botanicals required for production of Ayurvedic medicines. Medicinal castor oil (*Eranda taila*), Sandalwood oil (*Chandan taila*) and cassia leaves (*sanay patra*) are substantial contributors to India's economy. *Arka* (*Clerodendrum phlomidis*), *Shankhpushpi* (*Convolvulus pluricaulis*) and *Jeevanti* (*Leptadenia reticulata*) have good demand in market and they could be integrated with millet and legume crops with minimum efforts. Therefore, a cultivator of these medicinal plants in drought-prone land will be sure of his investments in terms of cost-benefit ratio and which is related to his selection of crops, its agro technology of growing, proper harvesting techniques, post-harvest management and marketing prospects of his produce.

Developing country like India is the leading supplier of following plants:

Medicinal plants- Eg. *Cinchona* species (*Kasani*), *Rouwolfia* species (*Sarpagandha*), *Glycyrrhiza* (*Yashtimadhu*)³²

Commercial crops- *Vrukshamla*- *Kokum* (*Garcinia indica* Choisy)

Export potential plants- *Madhukari* (*Stevia rebaudiana*)

Long gestation plants- *Bael*, *Shinshapa*, *Saptaparna*, *Gambhari*, *Guggulu*, *Raktachandan*, *Shweta-Chandan*

CONCLUSION:

A cultivator of these medicinal plants in drought-prone land will be sure of his investments in terms of cost-benefit

ratio. For people below poverty line, cultivation of these plants provides a significant proportion of self-employment opportunities and supplements the income of most sections of India.

REFERENCES:

1. Bimal K. Misri, Country pasture/ Forage Resource Profiles INDIA
2. Drought management strategies 2009- National rainfall Area Authority, Ministry of Agriculture- GOI, New Delhi
3. www.nih.ernet.in/rbis/india.../drought.ht..
4. Negi Mehta, Drought Prone Areas of India- Geography
5. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.17
6. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.57
7. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.71
8. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.73
9. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.78
10. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.78
11. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.78
12. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.127
13. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.36
14. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.102
15. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.196

16. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.54
17. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.189
18. Amal Bhusan Chaudhari, 'Endangered medicinal plants'. Page no.195
19. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 149.
20. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 149.
21. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 150.
22. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 150.
23. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 150.
24. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 151.
25. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 151.
26. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 152.
27. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 152.
28. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 152.
29. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 153.
30. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 154.
31. R. P. Singh & m. Osman, Sustainable alternate land use systems for Dry lands, Oriental enterprises, Page 154.
32. S. K. Chatterjee, 'Cultivation of medicinal and aromatic plants in India'- a common approach.

Conflict of Interest: Non

Source of funding: Nil

Cite this article:

REVIEW ON DROUGHT TOLERANT MEDICINAL PLANTS

Prachi A. Khair

Ayurlog: National Journal of Research in Ayurved Science- 2020; (8) (3): 01- 07