

✦✦✦ *A quick guide*

for

Mass Plantation Drives

by,

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Scientific approach for plantations

- India has 18,500 species of flowering plants but we use very few species for plantations
- **Monoculture** i.e. plantation of single species needs to be avoided. It creates greenery on land, but it doesn't create **FOREST** !
- So more meaningful way is to do plantations which would **mimic forest** along with **ecological restoration** of natural resources like soil, water and biodiversity around it

There are five major steps :

1. **Know your region** : Forest type in your area
2. **Assess the status** of your land
3. **Plan for restoration and plantations** :
 - 3.a **Protection to land** : Conserve soil and moisture, Protect existing habitats
 - 3.b **Selection of species & numbers** : as per status of soil and resource availability
 - 3.c **Seed dispersal**
4. **Execution** : Selection of sapling and Plantation
5. **Maintenance**

1. Know your region

- What is the kind of vegetation or forest in your region. e.g. Dry deciduous, Moist deciduous, Evergreen, Semi arid etc
- Find out secondary data that will give an idea about the **species growing naturally** and easily in your area
- But most of the times the original vegetation is lost & area is **degraded** due to various external pressures
- So it is necessary to follow next step

2. Assess your land

- Is the **soil** ready to support plants ?
- Plants grow well in fertile soil and even in soft to medium hard murrum but don't grow well in hard murrum and rocks. But only fine soil is not enough
- So check if it has enough **organic matter & nutrients and microbes**
- If yes, you can go ahead with plantations.
- If not, check following points

3. Plan for Restoration and Plantation

- Generally plantations are done on barren areas or hill slopes
- Better approach is to conserve soil & moisture and then start planting

3.a Protection to land : Conserve soil and moisture, Protect existing habitats

3.b Selection of species & numbers as per status of soil and resource availability. Phase out plantations

3.a Protection to the land

- **Assure total protection** from fire, grazing and cutting
- **Conserve existing natural structure** : Retain existing native plants or shrubs or other important features and integrate them in plantations
- Do not remove grasses or clear/ level the land. Many times, lot of ground work in terms of trenches disturb the original lay of land
- **Conserve soil moisture** : Plants need soil moisture to grow. Enhance moisture holding capacity of soil. Apply **restoration techniques for initial 2 or 3 years and then do plantations**

3.b Selection of species

- **Select Diverse Native plants;** both common and rare. Include food plants for birds and butterflies
- **Select a diversity in plant habits** like trees, shrubs, climbers, herbs, grasses
- **If soil is poor, phase out plantations.**
 - First 3 years : Select more hardy and common species
 - 4th year onwards: Rare and Special species
- **Complete 'NO' to non-native plants**

Note: Please [click here](#) to download 'List Of Native Plants' for selection of plants

3.c Seed dispersal

- **Seed dispersal** : Seeds of appropriate **Native plants** can be dispersed either as is or in dung balls. e.g. Amba, Jambhul, Karwand, Beheda, Shivan, Palas, Ain, Karanj, Khair, Bahawa, Shirish, Pangara, etc
- Area for dispersal **must not be** totally barren land
- Seeds should be dispersed in existing clusters of shrubs, trees, along roads
- Dispersal can be done through last week of May till onset of monsoon

4. Execution of Plantation

- Plantation time can be planned as per resource availability
 - If irrigation is available throughout the year, plantations can be done any time of the year. But, in case of high rainfall, high elevation, open, windy areas (> 4000 mm av. annual), it is suggested to do plantations at the end of monsoon
 - If irrigation is not available, start planting at onset of monsoon

- Take pits of 2 x 2 x 2 ft at distance of 6-10 ft from each other
- Expose pits to sun for 5 - 10 days
- Sprinkle ash on the bottom & sides of pits
- Fill the pits with - Site soil (in case of poor site soils, use 30 % external good quality soil) + good composted cow dung (30 %) + compost (2 kg) + Coco peat (500 gm) + Neem cake (200 gm) + Leaf Litter & Grass or Crop residue
- Plant at least 2 to 3 years old saplings propagated in big size bag

5. Maintenance

- Heap of soil all around sapling (आळ)
- Regular watering
 - Drip irrigation system using bottles, earthen pots or drip lines
- Mulching at base of each plant
- Bamboo stick as support
- Create shade if needed
- Protect from grazing, trampling, fire



Just to summarize ...

- Assure protection from Grazing & Fire !
- Retain existing natural structure of the land
- Maintain existing diversity on land
- Work on soil & moisture for 2-3 years
- Select appropriate native plants
- Assure irrigation for first 2 years
- Ensure protection & mulching of naturally growing grass

Select your plants ...

K = Kokan, S = Sahyadri, D = Desh / Central Maharashtra, V = Vidarbha

वृक्ष / Trees						
No.	Name	Scientific Name	K	S	D	V
1	हिवर	<i>Acacia leucophloea</i>	✓		✓	✓
2	पिसा	<i>Actinodaphne angustifolia</i>	✓	✓		
3	बेल	<i>Aegle marmelos</i>	✓		✓	✓
4	महारुख	<i>Ailanthus excelsa</i>	✓		✓	✓
5	अंकोळ	<i>Alangium salvifolium</i>	✓		✓	✓
6	शिरीष	<i>Albizia lebbek</i>	✓	✓	✓	✓
7	सातवीण	<i>Alstonia scholaris</i>	✓	✓		
8	धावडा	<i>Anogeissus latifolia</i>	✓		✓	✓
9	रोहीतक	<i>Aphanamixis polystachya</i>	✓	✓		
10	नीम	<i>Azadirachta indica</i>	✓		✓	✓
11	आपटा	<i>Bauhinia racemosa</i>	✓	✓	✓	✓
12	सावर	<i>Bombax ceiba</i>	✓	✓		✓
13	सालई	<i>Boswellia serrata</i>	✓		✓	✓
14	आसणा	<i>Bridelia retusa</i>	✓	✓	✓	✓
15	चारोळी	<i>Buchanania cochinchinensis</i>	✓		✓	✓
16	पळस	<i>Butea monosperma</i>	✓	✓	✓	✓
17	उंडी	<i>Calophyllum inophyllum</i>	✓			
18	कुंभ	<i>Careya arborea</i>	✓	✓		✓
19	भेरली माड	<i>Caryota urens</i>	✓	✓		✓
20	बहावा	<i>Cassia fistula</i>	✓	✓	✓	✓

वृक्ष / Trees						
No.	Name	Scientific Name	K	S	D	V
21	गेळा	<i>Catunaregam spinosa</i>	✓	✓		
22	तमालपत्र	<i>Cinnamomum zeylanicum</i>	✓	✓		
23	भोकर	<i>Cordia dichotoma</i>	✓	✓	✓	✓
24	वरुण	<i>Crataeva adansonii</i>	✓	✓		✓
25	फाशी	<i>Dalbergia lanceolaria</i>			✓	✓
26	शिसम	<i>Dalbergia latifolia</i>	✓	✓	✓	✓
27	शिसव	<i>Dalbergia sisoo</i>	✓		✓	✓
28	टेम्भुर्णी	<i>Diospyros melanoxylon</i>	✓		✓	✓
29	मेढशिंगी	<i>Dolichandrone falcata</i>	✓		✓	✓
30	आवळा	<i>Emblica officinalis</i>	✓	✓	✓	✓
31	पांगारा	<i>Erythrina suberosa</i>	✓		✓	✓
32	पिपर	<i>Ficus amplissima</i>	✓	✓	✓	✓
33	वड	<i>Ficus benghalensis</i>	✓		✓	✓
34	नांदूक	<i>Ficus microcarpa</i>	✓	✓	✓	✓
35	उंबर	<i>Ficus racemosa</i>	✓	✓	✓	✓
36	पिंपळ	<i>Ficus religiosa</i>	✓		✓	✓
37	डिकेमाली	<i>Gardenia resinifera</i>	✓		✓	✓
38	काकड	<i>Garuga pinnata</i>	✓		✓	✓
39	शिवण	<i>Gmelina arborea</i>	✓	✓	✓	✓
40	धामण	<i>Grewia tiliifolia</i>	✓	✓	✓	✓

K = Kokan, S = Sahyadri, D = Desh / Central Maharashtra, V = Vidarbha

No.	Name	Scientific Name	K	S	D	V
41	हेदू	<i>Haldina cordifolia</i>	✓	✓		✓
42	अंजन	<i>Hardwickia binata</i>			✓	✓
43	वारस	<i>Heterophragma roxburghii</i>	✓	✓	✓	✓
44	कुडा	<i>Holarrhena pubescence</i>	✓	✓	✓	✓
45	वावळ	<i>Holoptelea integrifolia</i>	✓		✓	✓
46	खुरी	<i>Ixora brachiata</i>	✓	✓		
47	राय कुडा	<i>Ixora parviflora</i>			✓	✓
48	नाणा	<i>Lagerstroemia microcarpa</i>	✓	✓		✓
49	तामण	<i>Lagerstroemia speciosa</i>	✓	✓		
50	मोई	<i>Lannea coromandelica</i>	✓	✓	✓	✓
51	कवठ	<i>Limonia acidissima</i>	✓		✓	✓
52	चांदवा	<i>Macaranga peltata</i>	✓	✓		
53	मोह	<i>Madhuca latifolia</i>	✓		✓	✓
54	पेटारी	<i>Mallotus repandus</i>	✓			
55	आंबा	<i>Mangifera indica</i>	✓	✓	✓	✓
56	खिरणी	<i>Manilkara hexandra</i>	✓	✓	✓	✓
57	लिंबारा	<i>Melia dubia</i>	✓	✓		
58	अंजनी	<i>Memecylon umbellatum</i>	✓	✓		
59	नागचाफा	<i>Mesua ferrea</i>	✓	✓		
60	बकुळ	<i>Mimusops elengi</i>	✓	✓		
61	कळम	<i>Mitragyna parvifolia</i>	✓	✓	✓	✓

No.	Name	Scientific Name	K	S	D	V
62	बार्तोडी	<i>Morinda pubescens</i>	✓	✓	✓	✓
63	पांढर	<i>Murraya paniculata</i>		✓		
64	कदंब	<i>Neolamarckia cadamba</i>	✓	✓		
65	नरक्या	<i>Nothapodytes nimmoniana</i>		✓		
66	पारिजातक	<i>Nyctanthes arbor-tristis</i>	✓		✓	
67	पारजांभूळ	<i>Olea dioica</i>	✓	✓		
68	टेटू	<i>Oroxylum indicum</i>	✓	✓		
69	काळा पळस	<i>Ougeinia oojeinensis</i>		✓		✓
70	शिंदी	<i>Phoenix sylvestris</i>	✓	✓	✓	✓
71	करंज	<i>Pongamia pinnata</i>	✓	✓	✓	✓
72	बिजा	<i>Pterocarpus marsupium</i>	✓	✓	✓	✓
73	रक्तचंदन	<i>Pterocarpus santalinus</i>	✓		✓	✓
74	मुचकुंद	<i>Pterospermum acerifolium</i>	✓	✓		
75	पुत्रंजीवा	<i>Putranjiva roxburghii</i>	✓	✓		
76	खडशिंगी	<i>Radermachera xylocarpa</i>	✓	✓		✓
77	वाळूज	<i>Salix tetrasperma</i>		✓	✓	
78	पीलू	<i>Salvadora persica</i>	✓		✓	
79	चंदन	<i>Santalum album</i>	✓		✓	✓
80	रिठा	<i>Sapindus laurifolius</i>	✓	✓	✓	✓
81	सीताअशोक	<i>Saraca asoca</i>	✓	✓		

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No.	Name	Scientific Name	K	S	D	V
82	कुसुम	<i>Schleichera oleosa</i>	✓	✓	✓	✓
83	मोखा	<i>Schrebera swietenoides</i>	✓			✓
84	बिब्बा	<i>Semecarpus anacardium</i>	✓		✓	✓
85	अंबाडा	<i>Spondias pinnata</i>	✓	✓		
86	कुकेर	<i>Sterculia guttata</i>		✓		
87	करू	<i>Sterculia urens</i>	✓		✓	✓
88	पाटल	<i>Stereospermum chelonoides</i>			✓	✓
89	पाडळ	<i>Stereospermum colais</i>	✓	✓		
90	जांभूळ	<i>Syzygium cumini</i>	✓	✓	✓	✓
91	पेंढरा	<i>Tamilnadia uliginosa</i>	✓			✓
92	साग	<i>Tectona grandis</i>	✓		✓	✓
93	अर्जुन	<i>Terminalia arjuna</i>			✓	✓
94	बेहडा	<i>Terminalia bellirica</i>	✓	✓	✓	✓
95	हिरडा	<i>Terminalia chebula</i>	✓	✓		
96	किंजळ	<i>Terminalia paniculata</i>	✓	✓		
97	ऐन	<i>Terminalia tomentosa</i>	✓	✓	✓	✓
98	भेंड	<i>Thespesia populnea</i>	✓	✓	✓	✓
99	खरळ	<i>Trema orientalis</i>	✓	✓	✓	✓
100	काळा कुडा	<i>Wrightia tinctoria</i>	✓	✓	✓	✓
101	तिरफळ	<i>Zanthoxylum rhetsa</i>	✓	✓		

बांबू / Bamboo						
No.	Name	Scientific Name	K	S	D	V
1	बांबू-कलक	<i>Bambusa arundinacea</i>	✓	✓	✓	✓
2	बांबू-मेस	<i>Dendrocalamus strictus</i>	✓	✓	✓	✓

K	Kokan	2500-3500 mm	Thane, Raigad, Ratnagiri, Sindhudurga, Mumbai, Palghar
S	Sahyadri	3500-7000 mm	West side of - Nashik, Pune, Satara, Kolhapur
D	Desh/ Madhya Maharashtra	300-800 mm	Dhule, Nashik, Nagar, Pune, Satara, Kolhapur, Aurangabad, Beed, Solapur, Yavatmal, Buldhana, Akola, Amravati, Vashim, Jalna, Latur, Nanded, Usmanabad, Hingoli, Parabhani, Jalgaon, Nandurbar, Sangali
V	Vidarbha (East)	1000-1500 mm	Bhandara, Gondiya, Nagpur, Chandrapur, Gadchiroli, Vardha

*Note: This categorization of districts is not done accurately as per standard rainfall zones but it is broadly based on similar vegetation pattern

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झुडपं / Shrubs

No.	Name	Scientific Name	K	S	D	V
1	पाचुंदा	<i>Capparis grandis</i>			✓	
2	करवंद	<i>Carissa congesta</i>	✓	✓	✓	✓
3	कारवी	<i>Carvia callosa</i>		✓		
4	तरवड	<i>Cassia auriculata</i>			✓	✓
5	भारंगी	<i>Clerodendrum serratum</i>	✓	✓	✓	✓
6	पांढरफळी	<i>Flueggea spp.</i>	✓	✓	✓	✓
7	रामेठा	<i>Gnidia glauca</i>	✓	✓		
8	मुरुडशेंग	<i>Helicteres isora</i>	✓	✓	✓	✓
9	अडुळसा	<i>Justicia adhatoda</i>	✓	✓		✓
10	कढीपत्ता	<i>Murraya koenigii</i>	✓	✓	✓	✓
11	फापट	<i>Pavetta crassicaulis</i>		✓		
12	चित्रक	<i>Plumbago zeylanica</i>	✓	✓	✓	✓
13	निर्गुडी	<i>Vitex negundo</i>	✓	✓	✓	✓
14	धायटी	<i>Woodfordia fruticosa</i>	✓	✓	✓	✓

वेली / Climbers

No.	Name	Scientific Name	K	S	D	V
1	गुंज	<i>Abrus precatorius</i>	✓	✓	✓	✓
2	समुद्रशोक	<i>Argyrea nervosa</i>	✓	✓	✓	✓
3	शतावरी	<i>Asparagus racemosus</i>	✓	✓	✓	✓
4	पळसवेल	<i>Butea superba</i>	✓			✓
5	सागरगोटा	<i>Caesalpinia bonducella</i>	✓	✓	✓	✓
6	पिळूकी	<i>Combretum albidum</i>	✓	✓	✓	✓
7	कावळी	<i>Cryptolepis dubia</i>	✓	✓	✓	✓
8	अम्बुळकी	<i>Elaeagnus conferta</i>		✓		
9	वावडिंग	<i>Embelia tsjeriam-cottam</i>		✓		
10	गारंबी	<i>Entada rheedei</i>		✓		
11	उक्षी	<i>Getonia floribunda</i>	✓	✓		
12	मधुनाशिनी	<i>Gymnema sylvestre</i>	✓	✓	✓	✓
13	अनंतमूळ	<i>Hemidesmus indicus</i>	✓	✓	✓	✓
14	माधवीलता	<i>Hiptage benghalensis</i>		✓		
15	वाकेरी	<i>Moullava spicata</i>		✓		

Restore **soil** ! Restore moisture !
Plant **Natives** !



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