

ADVISORY ON IMPROVING SHEEP & GOATS PRODUCTION

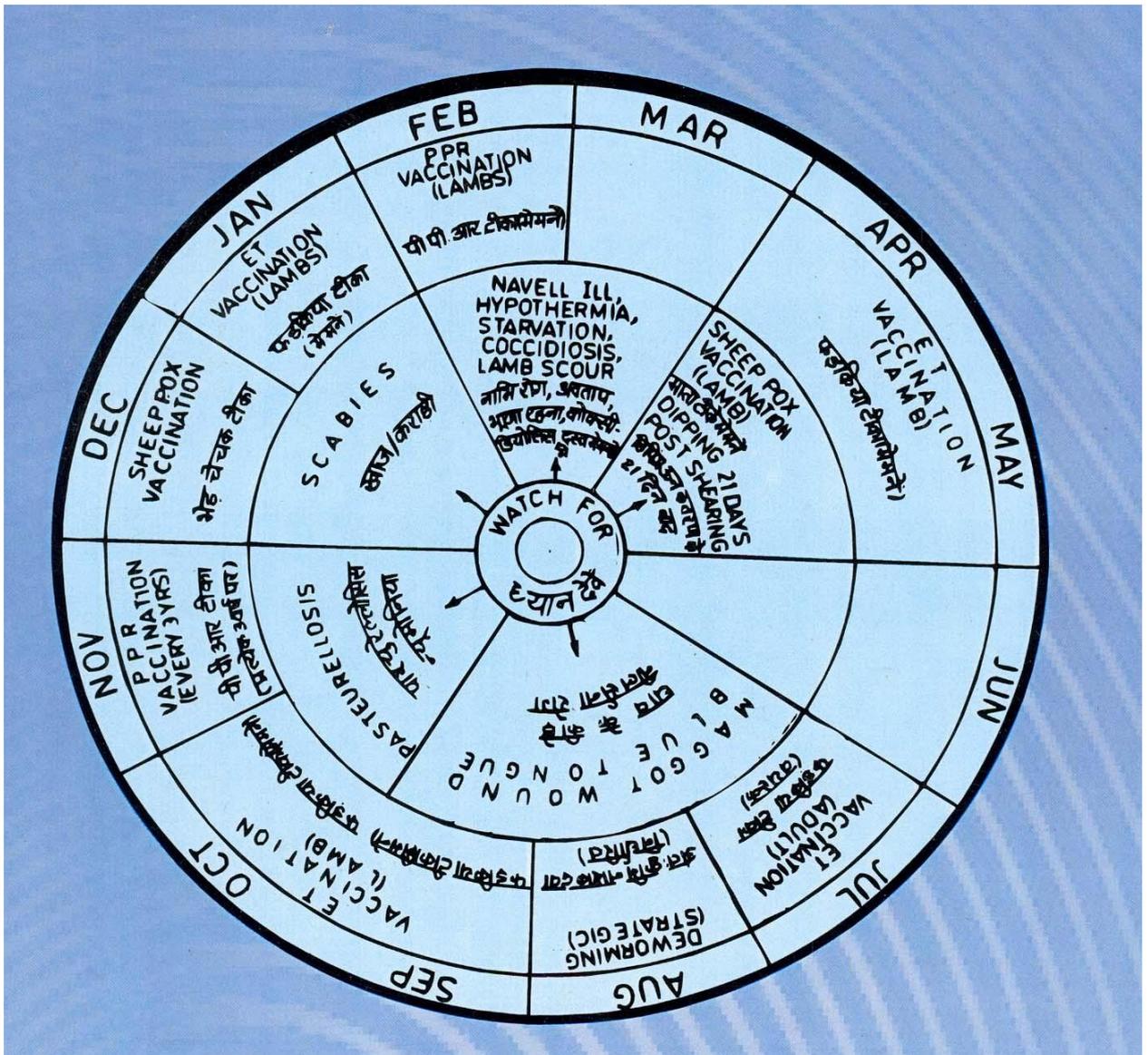
- (i) In the short term, prevention of loss should be the strategy to augment production. A number of animals die because of diseases and many of the animals do not reach desired growth because of parasitic infestations. A strategy of universal de-worming, once post-weaning, and once during last month of pregnancy and before sale for meat production will radically minimize production loss. Studies are available to indicate that such practices have the potential of enhancing weight at 8 months by almost 3 Kilos. This means enhanced production of 1½ kg meat per animal can be achieved simply through adoption of a programme of administration of anthelmintics to weaned kids and lambs as well as pregnant mothers. Cost of such de-worming per animal is expected to be less than Rs.40/- approximately, while the expected gain will be over Rs.500/-. This is to be further strengthened with vaccination programme, particularly against PPR, HS, and Enterotoxaemia, FMD, Sheep-pox, etc. total cost of which will not exceed Rs.25/- per animal approximately (**Annexure-I**). Model health schedule adopted by Central Sheep & Wool Research Institute, Avikanagar, Tonk, Rajasthan (**Annexure-II**) / Central Institute for Research on Goats, Makhdoom, Mathura, Uttar Pradesh (**Annexure-III**) may be adopted by the States after required modifications.
- (ii) Grazing resources for small ruminants are continuously shrinking. Therefore, arrangements for supply of complete feed blocks would greatly supplement nutritional inputs required for optimum production, particularly during periods of nutritional stress as in draught. Feed blocks can further be fortified with trace elements which the particular area is deficient in as per mineral mapping documents available with research organizations. It will be useful if the Panchayats are involved and MNREGA funds roped in to procure raw material which will facilitate production and distribution of complete feed blocks in a regulated manner.
- (iii) An advisory has already been issued by the Department in July, 2012, which gives the list of shrubs and trees suited to different agro-ecological regions of the country. These may be made integral part of land use planning to augment grazing resources for small ruminants (**Annexure-IV**).
- (iv) Lamb/kid survival may be increased by adopting a sound pre-breeding management program, close attention to ewes/does nutritional and health status during late gestation, keeping housing facilities clean and well ventilated, adequate colostrum intake by lambs/kids, selection of sheep/goat that are easy lambing/kidding, good mothers, heavy milking and vigorous at birth.

- (v) A ram/buck is "half the flock." His genetics will be spread over many more offspring than an ewe/doe. Rams/Bucks will be the primary means by which genetic improvement will be made in a flock. To avoid inbreeding, exchange of bucks/rams between farmers may be adopted through appropriate exchange programmes/ breeding policy.
- (vi) Rams/Bucks having maximum post weaning growth rate should be selected for breeding. Rams/Bucks with any congenital abnormalities or any other abnormalities in testis should be culled. Identify and cull unproductive animals.
- (vii) Sheep/Goats consume 4 times as much water as dry matter but for lactating goats, provide additional 1.3 litres of water per litre of milk produced. Ensure availability of adequate clean water to animals.
- (viii) An external parasitic free rearing will lead to reduction in infection and increase in production. Each State with the help of nearby SAUs/ ICAR institutions must develop 'An integrated parasitic disease control programme' for their respective areas. The haphazard/injudicious use deworming in animals is derecommended and States should exercise judicious use of anthelmintics including timely rotation as well as control on the sale of anthelmintics drugs.
- (ix) Following institutes of Central Government/ICAR impart training to farmers on modern sheep/goat management practices to enhance production which may be utilized by the farmers as well as by the technical staff:
- Central Sheep Breeding Farm, Post Box No. 10, Hisar, PIN-125001, Haryana. Phone: +91-1662-264329, Fax: +91-1662-264263.
 - Central Sheep & Wool Research Institute, Avikanagar, Tehsil - Malpura, Distt.- Tonk, Rajasthan, PIN-304501. Phone: +91-1437-220162, Fax: +91-1427-220163.
 - Central Institute for Research on Goats, Makhdoom, Mathura, Uttar Pradesh, PIN-281122. Phone: +91-565-2763380, Fax: +91-565-2763246.

**Annual Health Calendar (Sheep & Goat) adopted by
Central Sheep Breeding Farm, Hisar, Haryana**

1	VACCINATION			
a).	Sheep Pox Vaccine Cost per dose :- Rs 1.00	Live Attenuated	December / January	All Breed At 4 Months Annually
b).	Goat Pox Vaccine Cost per dose :- Rs 2.00	Live Attenuated	October / November	All Goat At 4 Months Annually
c).	Multi Component Clostridial Vaccine Cost per dose :- Rs 1.97	Inactivated	August/October	All stock, New Born Lambs(Sheep &Goat) 1. At 1 month & Booster Dose after 21days. 2. Repeat after 9 months.
d)	Biovac (FMD +HS) Cost per dose :- Rs 5.21	Oil Adjuvant	October/June	Sheep & Goat 1. At3 months. 2. Repeat after 9 months.
e)	Contagious Ecthyma Vaccine (Farm Produce)	Formalized	Feb./March	Lambs & Kids 1. At 2 months.
f)	PPR Cost per dose :- Rs 1.00	Live Attenuated	October / November	All sheep& Goat 1. At 6months & Repeat after 3 years.
g)	Reverine 1 Br.melitensis. Cost per dose :- Rs 46.00	Live Attenuated	Before Breeding	All Sheep& Goat 1. At 3-6 months & Booster dose is not necessary.
2.	DEWORMING:			
a).	Broad Sepectrum Anthelmentic	Ivermectin / Cloental / Albendazole		At every two rotation of months/medicines
b).	Narrow Spectrum Anthelmentic	Praziqintol	April/May	All Lambs , Kids & Weaners 1. At 2&Repeat at 4-6 months.
c).	Anti Coccidial treatment	Sulphamethazine + Trimethoprim	June/July	Young animals & at the time diarrhoea 1. At 2-3months mix with feed.
3)	ECTOPARASITIC INFESTATION			
a).	Dipping	Ectomin / Butox	Sept/Oct/Mar/Apr	Post-Shearing
4)	LAMB/KID CARING			
a).	Naval dressing with Povidine /Betadine Immediately after birth.			
b)	Colostrum feeding to entire young stock.			
c).	Antibiotic treatment during change of weather			
5)	IMMUNOSTIMULENT	In. Lemasol	With vaccination (Twice in a year)	

Model health schedule adopted by Central Sheep & Wool Research Institute, Avikanagar, Tonk, Rajasthan



**Annual Goat Health Calendar adopted by Central Institute for Research on
Goats, Makhdoom, Mathura, Uttar Pradesh
(for prevention and management of important goat diseases)**

A. Vaccination:

Diseases	Primary Vaccination		Repeat vaccination
	First Injection	Booster Injection	
1. Peste-des-Petitis Ruminants (PPR)	At 3 months of age	Not required	Every 3 years
2. Foot & Mouth Disease (FMD)	At 3-4 months of age	3-4 weeks after 1 st Injection	Every 6/12 month interval*
3. Goat Pox (GP) **	At 3-4 months of age	3-4 weeks after 1 st Injection	Every 12 month interval*
4. Enterotoxaemia (ET)	At 3-4 months of age	3-4 weeks after 1 st Injection	Every 6/12 month interval*
5. Haemorrhagic Septicaemia (HS)	At 3-4 months of age	3-4 weeks after 1 st Injection (2 doses at 1 month interval)	Every 6/12 month interval*

*As per the recommendations of manufacturers

Kids are naturally protected from diseases up to 3 months by proper feeding of colostrum immediately after birth.

For optimum benefits of vaccination, deworm your animals at least 15 days before vaccination

***For sheep* – replace goat pox vaccine with *sheep pox* vaccine

B. Drenching, deworming and dipping

Diseases	Age groups	Treatment period	Recommended as feed mix
1. Drenching Coccidiosis	1 – 6 months	Anti - coccidial drug for 5-7 days	Amprolium @50-100 mg / Kg body weight
2. Deworming Endoparasitic infection	3 months and above	Two dewormings annually (pre and post monsoon)	Fenbendazole @7.5 -10 mg / Kg body weight. Additional deworming may be needed in cases of heavy parasitic load or extended rainy season
3. Dipping */ Ectoparasitic infestation	Any age	Pre & Post winter	As and when required Close monitoring and treatment of shed / soil is essential to avoid re-infection

*Avoid cold, cloudy and rainy days for dipping. Preferred time for dipping - 9am. To 11am.

C. Screenings:

Diseases	Period	Recommendations
1. Brucellosis ⁺	Once in a year	Positive animals need to be euthanized and buried
2. Johne's Disease*	6 months/ Once in a year,	Positive animals are to be removed from herd/ flock
3. Mycoplasmosis	Once in a year	Treatment with specific drugs
4. Mastitis	Early milking stage	Treatment with specific drugs
5. Endo- parasites	Regular screening of fecal samples	Monitor worm load (EPG/OPG) of the animals to decide time of deworming.

+ Screening of adult goats especially breeding bucks and breedable females. From aborted animals submit 2 serum samples (Zero day i.e., day of abortion / still births and 21 days after abortion / still birth).

*Preferably one month after kidding

Annexure-IV

LIST OF FORAGE GRASSES, LEGUMES, SHRUBS AND TREES FOR GRASSLAND/GRAZING LAND IMPROVEMENT ON AGRO-ECOLOGICAL BASIS

Agro-eco Regions	Grasses	Legumes	Shrubs/Trees
Western Himalaya, cold arid with shallow skeletal soils	<i>Agrostis spp.</i> , <i>Poa alpina</i> , <i>Trisetum spicatum</i>	<i>Medicago sativa</i> /subsp <i>sativa</i> , <i>M. sativa</i> , subsp <i>fslcuta</i>	<i>Hippophae rhamonides</i>
Western plains and Kaccha Peninsula, hot arid with desert and saline soils	<i>Cenchrus ciliaris</i> , <i>C. setigerus</i> (Sandy plains), <i>Lasiurus scindicus</i> (Sandy interdunal plains), <i>Panicum turgidum</i> (Sand dunes) <i>Chloris gayana</i> , <i>Sporobolus marginatus</i> (salt affected lands)	<i>Cassia rotundifolia</i>	<i>Acacia nilotica</i> , <i>A. tortilis</i> , <i>Albizia lebbek</i> , <i>Ailanthes excelsa</i> , <i>Dichrostachys cinerea</i> , <i>Prosopis cineraria</i> , <i>Ziziphus nummularia</i> , <i>p. juliflora</i> , <i>Salvadora oleoides</i> , <i>S. persica</i> (Saline soil)
Deccan Plateau, hot arid with red and black soils	<i>Andropogon gayanus</i> , <i>Chrysopogon fulvus</i> (Red soil), <i>Dichanthium annulatum</i> , <i>Bothriochloa intermedia</i> (Black soil)	<i>Clitoria ternatea</i> , <i>Stylosanthes hamata</i> , <i>S. scabra</i>	<i>Acacia nilotica</i> , <i>Albizia amara</i> , <i>A.lebbek</i> , <i>Desmanthus virgatus</i> , <i>Leucaena leucocephala</i> , <i>Tamarindus indica</i>
Northern plains and central highlands including Aravallis, hot semi-arid with Alluvium	<i>Bothriochloa intermedia</i> , <i>Cenchrus ciliaris</i> , <i>Chrysopogon fulvus</i> , <i>Dichanthium annulatum</i> , <i>Sehima neroosum</i>	<i>Macroptilium atropurpureum</i> , <i>Stylosanthes hamata</i> , <i>S. scabra</i>	<i>Acacia nilotica</i> , <i>A. holosericea</i> , <i>Albizia amara</i> , <i>A.lebbek</i> , <i>A. procera</i> , <i>Azairachta indica</i> , <i>Dichrostachys cinerea</i> , <i>Hardwickia binata</i> , <i>Leucaena leucocephala</i> , <i>Sesbania grandiflora</i> , <i>S. sesban</i>
Central (Malwa) highlands, Gujarat plains & Kathiawar Peninsula, hot semi-arid with red loamy soils	<i>Bothriochloa intermedia</i> , <i>Chloris gayana</i> , <i>Cynodon dactylon</i> , <i>Dichanthium annulatum</i> , <i>Panicum maximum</i>	<i>Arachis hagenbackii</i> , <i>Clitoria ternatea</i> , <i>Stylosanthes hamata</i> , <i>S.scabra</i>	<i>Albizia lebbek</i> , <i>Artocarpus lackoocha</i> , <i>Dendrocalamus strictus</i> , <i>Gliricidia sepium</i> , <i>Faidherbia albida</i> , <i>Holoptelia integrifolia</i> , <i>Pithecellobium dulce</i>
Deccan Plateau, hot semi-arid with shallow and medium black soils	<i>Bothriochloa intermedia</i> , <i>Brachiaria decumbens</i> , <i>Cenchrus setigerus</i> , <i>Dichanthium annulatum</i> , <i>Pennisetum pedicellatum</i> , <i>Panicum maximum</i>	<i>Arachis hagenbackii</i> , <i>Stylosanthes hamata</i> , <i>S. scabra</i>	<i>Acacia nilotica</i> , <i>Albizia procera</i> , <i>Anogeissus pendula</i> , <i>Bauhinia variegata</i> , <i>B. purpurea</i> , <i>Leucaena leucocephala</i> , <i>Moringa oleifera</i> , <i>Pterocarpus marsupium</i> , <i>Sesbania sesban</i> , <i>Terminalia arjuna</i>
Deccan (Telangan) Plateau and Eastern	<i>Andropogon gayanus</i> , <i>Bothriochloa intermedia</i> ,	<i>Atylosia scrabaeoides</i> ,	<i>Albizia lebbek</i> , <i>Gliricida sepium</i> , <i>Faidherbia albida</i> , <i>Holopteaia</i>

Ghats, hot semi-arid with red and black	<i>Chrysopogon fulvus</i> , <i>Pennisetum pedicellatum</i> , <i>Dichanthium annulatum</i>	<i>Macrotyloma axillare</i> , <i>Macroptilium atropurpureum</i> , <i>Stylosanthes scabra</i>	<i>integrofolia</i> , <i>Leucaena leucocephala</i>
Eastern Ghats, TN uplands and Deccan (Karnataka) Plateau, hot semi-arid with red and black soils	<i>Brachiaria decumbens</i> , <i>B. ruziziensis</i> , <i>Cynodon dactylon</i> , <i>Dichanthium annulatum</i> , <i>Bothriochloa intermedia</i>	<i>Arachis hagenbackii</i> , <i>A. glabrata</i> , <i>Stylosanthes guinensis</i> , <i>S. hamata</i>	<i>Ailanthus malabarica</i> , <i>albizia falcataria</i> , <i>Erythrina variegata</i> , <i>E. poppygyana</i>
Northern plains, hot sub-humid (dry with Alluvium derived soils)	<i>Bothriochloa intermedia</i> , <i>Cynodon dactylon</i> , <i>Chloris gayana</i> , <i>Dichanthium annulatum</i> , <i>Pennisetum pedicellatum</i>	<i>Clitoria ternatea</i> , <i>Macroptilium atropurpureum</i> , <i>Stylosanthes hamata</i>	<i>Albizia stipulata</i> , <i>Desmanthus virgatus</i> , <i>Azadirachata indica</i> , <i>Ficus racemosa</i> , <i>Leucaena leucocephala</i> , <i>Robinia</i> , <i>pseudoacacia</i>
Central Highlands (Malwa, Bundelkhand & Satpura) north sub-humid with black and red soils	<i>Andropogon gayanus</i> , <i>Pennisetum pedicellatum</i> (red soil), <i>Bothriochloa intermedia</i> , <i>Chrysopogon fulvus</i> , <i>Sehima nervosum</i> , <i>Dichanthium annulatum</i> (black soil)	<i>Atylosia scarabaeoides</i> , <i>Macroptilium atropurpureum</i> , <i>Stylosanthes hamata</i> , <i>S. scabra</i>	<i>Albizia amara</i> , <i>A. lebbeck</i> , <i>Anogeissus latifolia</i> , <i>A. pendula</i> , <i>Dichrostachys cinera</i> , <i>Hardwickia binata</i> , <i>Leucaena leucocephala</i>
Eastern Plateau (Chhatisgarh), hot sub-humid with red	<i>Bothriochloa intermedia</i> , <i>Cynodon dactylon</i> <i>dichanthium annulatum</i> , <i>Panicum maximum</i> , <i>Pennisetum pedicellatum</i> , <i>Setaria sphacelata</i>	<i>Arachis hagenbackii</i> , <i>Stylosanthes hamata</i>	<i>Bauhinia variegata</i> , <i>Dalbergia sissoo</i> , <i>Leucaena leucocephala</i> , <i>Moringa oleifera</i>
Eastern (Chhotangapur) Plateau and Eastern Ghats hot sub-humid with red and laterite soils	<i>Andropogon gayanus</i> , <i>Bothriochloa intermedia</i> , <i>chrysopogon fulvus</i> , <i>Pennisetum pedicellatum</i> , <i>Urochloa mosambicensis</i>	<i>Atylosia scarabaeoides</i> , <i>Macroptilium atropurpureum</i> , <i>Macrotyloma axillare</i> , <i>Stylosanthes hamata</i>	<i>Artocarpus heterophyllus</i> , <i>A. lakoocha</i> , <i>Leucaena leucocephala</i> , <i>Moringa oleifera</i>
Eastern plain, hot sub-humid (moist) with Alluvium derived soils	<i>Brachiaria brizantha</i> , <i>B. decumbens</i> , <i>B. mutica</i> , <i>Cynodon dactylon</i> , <i>Paspalum notatum</i>	<i>Arachis glabrata</i> , <i>A. hagenbackii</i>	<i>Bauhinia variegata</i> , <i>Dalbergia latifolia</i> , <i>D. sissoo</i> , <i>Desmanthus virgatus</i> , <i>Pterocarpus marsupium</i>

Western Himalayas, warm sub-humid with brown forest and Podzolic soils	<i>Dactylis glomerata</i> , <i>Festuca rubra</i> , <i>Lolium perenne</i> , <i>Poa spp.</i>	<i>Trifolium pratense</i> , <i>T. repens</i> , <i>Lotus comiculatus</i>	<i>Quercus incana</i> , <i>Robinia pseudoacacia</i> , <i>Grewia optiva</i> , <i>Celtis australis</i> , <i>Fagus sylvatica</i> , <i>Celtis australis</i> , <i>Morus alba</i>
Bengal and Assam plains, hot sub-humid (moist) to humid with Alluvium derived soils	<i>Brachiaria decumbens</i> , <i>B. mutica</i> , <i>Paspalum notatum</i>	<i>Desmodium uncinatum</i> , <i>D. heterophyllum</i>	<i>Artocarpus heterophyllus</i> , <i>A. lakoocha</i> , <i>Ficus hookeri</i> , <i>F. nermoralis</i> , <i>Parkia roxburghii</i> , <i>Morus alba</i>
Eastern Himalayas, warm per-humid with brown and red soils	<i>Coix lacryma-jobi</i> , <i>Pennisetum clandestinum</i> , <i>Tripsacum dactyloides</i>	<i>Desmodium spp.</i> , <i>Pueraria phaseoloides</i>	<i>Celtis australis</i> , <i>Ficus hookeri</i> , <i>F. nemoralis</i> , <i>F. semicordata</i>
North-eastern Hills (Purvanchal), warm per-humid with red and laterite soils	<i>Brachiaria decumbens</i> , <i>Pennisetum clandestinum</i> , <i>Tripsacum dactyloides</i>	<i>Arachis spp.</i> <i>Desmodium uncinatum</i>	<i>Dendrocalamus hamiltonii</i> , <i>Parkia roxburghii</i> , <i>Morus alba.</i> , <i>Robinia pseudoacacia</i>
Eastern Coastal plain, hot sub-humid to semi-arid with coastal Alluvium derived soils	<i>Chloris gayana</i> , <i>Cynodon dactylon</i> , <i>Dichanthium annulatum</i> , <i>Pennisetum pedicellatum</i> , <i>Stenotaphrum dimidiatum</i> , <i>Urochloa mosambicensis</i>	<i>Stylosanthes guinensis</i>	<i>Ailanthes malabarica</i> , <i>Erythrina variegata</i> , <i>E. poeppigiana</i> , <i>Ficus retusa</i>
Western Ghats and Coastal Plain, hot humid per humid laterite and Alluvium derived soils	<i>Cynodon dactylon</i> , <i>Dichanthium annulatum</i> , <i>Panicum maximum</i> , <i>Pennisetum clandestinum</i> , <i>P. polystachyon</i> , <i>Setaria sphacelata</i>	<i>Clitoria ternatea</i> , <i>Desmodium heterophyllum</i> , <i>Pueraria thunbergiana</i> , <i>Stylosanthes hamata</i> , <i>S. guinensis</i>	<i>Ailanthes malabarica</i> , <i>Erythrina variegata</i>
Islands of Andman Nicobar and Lakshdweep hot humid to per humid island with red loamy and sandy soils	<i>Andropogon gayanus</i> , <i>Cynodon dactylon</i> , <i>Cenchrus ciliaris</i> , <i>Pennisetum pedicellatum</i> , <i>p. polystachyon</i> , <i>Brachiaria ruziziensis</i> , <i>Tripsacum laxum</i>	<i>Centrosema pubescens</i> , <i>Clitoria ternatea</i> , <i>Macroptilium atropurpureum</i> , <i>Stylosanthes guianensis</i> , <i>S. scabra</i>	<i>Bauhinia purpurea</i> , <i>Erythrina variegata</i> , <i>Leucaena leucocephala</i> , <i>Trema tomentosa</i> , <i>Pithecellobium dulce</i> , <i>Gliricidia sepium</i>