

# Thorny Appendages and its Modification in Some Plant Species of Sabarmati Ravine Vegetation, Gujarat.india



## BOTANY

KEYWORDS : Thorn , Ravine Vegetation , Sabarmati.

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### ABSTRACT

Plant species have an important role in Earth environmental condition . It shows adaptation as per surrounding environment. Vegetation types and Forest types classified according to its adaptations. The present study give information about Semi-arid region vegetation and some adaptation mostly found in Xerophytes or Deciduous type forest area which have modification of some appendages like Thorn. Spine, Prickle etc in different part of plant species. These are all for protection from animal and also decrease the rate of Transpiration. the study show different kind of plant species having thorn types and its modification on different parts. Sabarmati ravine vegetation having 63 Genera and 83 species of 38 Angiosperm plant families.

### INTRODUCTION:

The typically thorny type vegetation occurs in the semi arid region where about 500 mm annual rainfall . Mostly thorny ,spiny and prickly plants live in dry places where water is soon drained in the soil. Mostly in moist conditions few or no spines appear and normal leaves are produced . The disappearance of leaves altogether, with the subsequent development of other photosynthetic structures is also an advantage in dry conditions. Such structures, usually possessing far more mechanical tissue than leaves, are not so likely to shrink on drying. the woody spines do afford protection. Spines structures occur in a wide variety of ecologies, and their morphology also varies greatly. They occur as sharpened branches , spiky inflorescences ,a tiny point at the tip of the leaf, Leaves fully converted to spines ,stipules converted to spines, prickles on stems, and bristles. Thorns of some species are branched. **Thorns, spines, prickles**, are all hard structures with sharp, stiff ends, generally with the same function of physically deterring animals from eating the plant material. thorns are derived from shoots so they can be branched or not, they can have leaves or not, and they arise from a bud, spines are derived from leaves, and prickles are derived from the epidermis so they can be found anywhere on the plant, and don't have vascular bundles inside so they can be removed more easily and cleanly than thorns and spines<sup>[6][7]</sup> Leaf margins also may have teeth, and if those teeth are sharp, they are called spinose teeth on a spinose On a leaf apex, if there is an apical process (generally an extension of the midvein), and if it is specially sharp, stiff, and spinelike.<sup>[9][10]</sup> **Thorns** are modified branches or stems .Pointing or spinose processes can broadly be divided by the presence of vascular tissue: **thorns and spines** are

derived from shoots and leaves respectively, and have vascular bundles inside, whereas **prickles** don't have vascular bundles inside, so they can be removed more easily. **Spines** are modified leaves , stipules or parts of leaves, such as extensions of leaf veins. **Prickles** are comparable to hairs .Some plants are equipped with tough, sharp-pointed structures capable of inflicting irritating, even painful, wounds – the prickles, needles, thorns, and spines. The true leaves in other plants that are modified into spines. the stipules, usually tiny outgrowths at the base of a leaf stalk, are modified into spines.<sup>[1]</sup> According to that The present research paper give the information regarding plant species with Thorny appendages grow in the area of Sabarmati riverside at Gandhinagar, Gujarat state , India. I enumerate and prepare a list of various Plant species. These plant species described in various Flora. Plant species of an area listed and tabulate .I categorized it according to their Modifications

### STUDY AREA:

The geographical situation of the Gandhinagar district is between 22° 30' to 24° 30' North latitude and 72° 30' to 73° 30' East longitude. It originates from Arvalli hills, near Vekaria in Rajasthan State and enters in the Gujarat state at the boundary

of the Sabarkantha district. It passing through across the Northern to central part of the Gujarat state. it flows from North-east to South -west direction. It has an extensive catchments area and many tributaries like Hathmati, Vatrak, Meshwo, Khari etc. It flows through seven districts of the Gujarat state , namely Banaskantha, Sabarkantha , Mehsana ,Gandhinagar, Ahmedabad , Kheda and Anand and finally enters into the Gulf of Khambhat (Cambay). Sabarmati river is one of the longest river in the state and its length is about 418 km. It has total 5475 sq.km catchments area . The Sabarmati river reservoir project at Dharoi , in Mehsana district . Total length of the Dharoi dam is 1208 meter and height of the Dharoi dam is 45.88 meter .The storage capacity at the dam site is 9080 lac cubicmeter water. The other dam built near Vasna at Ahmedabad and length of Vasna barrage is 610.51 meter . [4]

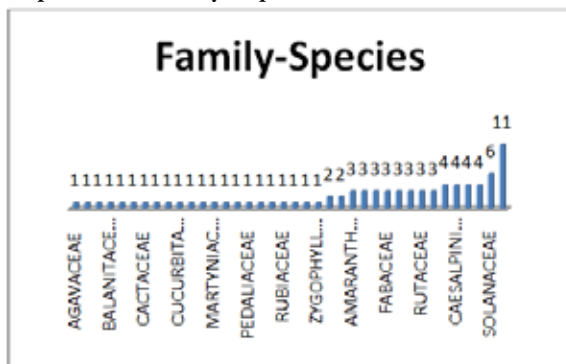
### MATERIAL AND METHODS

The study of Thorny appendages having plant species from the Sabarmati river of Gujarat, the results obtained from exploration of the vegetation of an area. Field survey was carried out during Research work and continued after completion of research work. I often Observe and collect the plant species. Identification of plant species during field work was done by compiling different available Flora<sup>[2][3][5][8]</sup> and authenticated by experts from University department and research institutes. The collected plants data were categorized according to their Genera ,Scientific name, Vernacular name and Habit represent in description, and also describe Thorn ,Spine and prickle morphology .

### RESULT :

I observed and collected data regarding to present subject in the study area ,result shows Thorny appendages in different part of the plant .After anylized the data its found there are 63 Genera and 83 species of 38 Angiosperm plant families. The plant list with Scientific names vernacular names ,families ,habit and kind of thorn appendages tabulated.( Table :2)

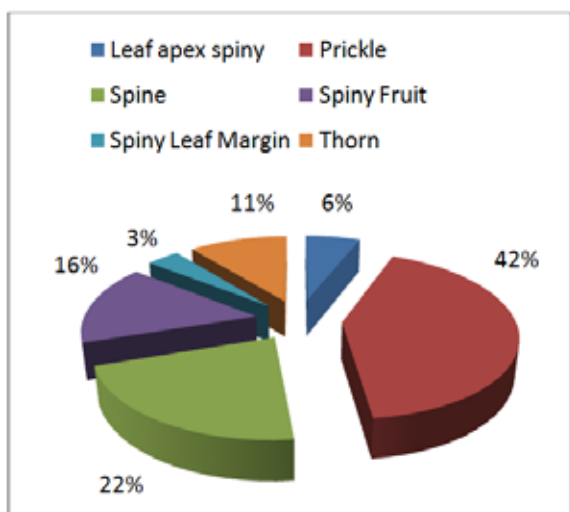
Graph-1 PLANT Family & Species



**Table : 1 Thorny Appendages & Species**

THORNY STRUCTURE	PLANT SPECIES No.
Leaf apex spiny-	5
Prickle	35
Spine	18
Spiny Fruit	13
Spiny Leaf Margin	3
Thorn	9

**Graph-2 Thorny Appendages & Species**



**DISCUSSION & CONCLUSION:**

The analysis of the plant species in the area give the result that the total 83 species belong to 63 genera of 38 angiosperms family including naturalized and indigenous plants. The dominance of the plant species presence of habit like 25 herbs , 26 Shurbs ,23 trees, 07 Climbers , 02 Undershrubs.

There are 35 plant species (42%) with **prickles** , 18 plant species (22%) with **Spines** , 13 plant species (16%) with **Spiny fruits** , 09 plant species (11%) with **Thorn** , 03 plant species (03%) with **Spiny leaf margin**, 05 plant species (06%)with **Spiny leaf apex**. Maximum 11 plant species from familyMimosaceae,06 plant species from Solanaceae.

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**Table :2**

**Plant list with Scientific Name ,local name (Gujarati) Family ,Habit and Appendages Types :**

H-Herb, T-Tree , S-Shrub,Us-Undershrub, Cl-Climber,]

Sl. No.	Scientific Name	Local Name (Gujarati)	Family	Habit	Appendage Type
1	<i>Barleria prionitis L.</i>	Pilo Kantasheliyo	ACANTHACEAE	H	Spine
2	<i>Asteracantha longifolia (L.) Nees</i>	Ekharo	ACANTHACEAE	H	Spine
3	<i>Agave americana L.</i>	Ketki	AGAVACEAE	H	Spiny Leaf Margin

4	<i>Alangium salvifolium (L.f.) Wang.</i>	Ankol, Ankoli	ALANGIACEAE	T	Prickle
5	<i>Achyranthes aspera var.aspera</i>	Anghedi	AMARANTHACEAE	H	Prickle
6	<i>Amaranthus spinosus L.</i>	Kantalo dambho	AMARANTHACEAE	H	Prickle
7	<i>Pupalia lappacea (L.) Juss.</i>	Dholo zipto	AMARANTHACEAE	H	Spiny Fruit
8	<i>Carissa congesta Wt.</i>	Karamdi	APOCYNACEAE	S	Prickle
9	<i>Cocos nucifera L.</i>	Nariel	ARECACEAE	T	Leaf apex spiny
10	<i>Phoenix sylvestris (L.) Roxb.</i>	Khajuri	ARECACEAE	T	Leaf apex spiny
11	<i>Roystonea regia (H.B.&amp;K.)</i>	Bottle palm	ARECACEAE	T	Leaf apex spiny
12	<i>Caryota urensL.</i>	Shivjata	ARECACEAE	T	Leaf apex spiny
13	<i>Acanthospermum hispidum Dc.</i>	Acanthospermum	ASTERACEAE	H	Spiny Fruit
14	<i>Echinops echinatus Roxb.</i>	Kanta Sutiyo	ASTERACEAE	H	Spine
15	<i>Xanthium strumarium L.</i>	Gadariyu	ASTERACEAE	H	Spiny Fruit
16	<i>Balanites aegyptiaca (L.) Del.</i>	Ingorio	BALANITACEAE	T	Prickle
17	<i>Bombax ceiba L.</i>	Rato Simlo	BOMBACACEAE	T	Prickle
18	<i>Commiphora wightii (Arn.)</i>	gugal	BURSERACEAE	T	Prickle
19	<i>Opuntia elatior Mill. Gard.</i>	Phaphadathor	CACTACEAE	S	Prickle
20	<i>Caesalpinia pulcherrima L.</i>	Galtoro	CAESALPINIACEAE	S	Prickle
21	<i>Caesalpinia crista L.</i>	Kachka	CAESALPINIACEAE	T	Prickle
22	<i>Parkinsonia aculeata L.</i>	rambaval	CAESALPINIACEAE	S	Prickle
23	<i>Tamarindus indica L.</i>	Khati Amlī	CAESALPINIACEAE	T	Prickle
24	<i>Cadaba fruticosa (L.) Druce</i>	Telio Hemkand	CAPPARACEAE	S	Spine
25	<i>Capparis decidua (Forsk.) Edgeo</i>	Kerado	CAPPARACEAE	S	Spine
26	<i>Capparis sepiaria L.</i>	Kanthar	CAPPARACEAE	S	Spine
27	<i>Maytenus emarginata (Willd.) D.Hon</i>	Vicklo	CELASTRACEAE	S	Prickle
28	<i>Quisqualisindicus L.</i>	Madhumalti	COMBRETACEAE	Cl	Prickle
29	<i>Luffa echinata Roxb.</i>	Kukadvel	CUCURBITACEAE	Cl	Spiny Fruit
30	<i>Euphorbia nerifolia L.</i>	Bhungro Thor	EUPHORBIACEAE	S	Prickle
31	<i>Euphorbia nivulia Buch -Ham.</i>	Thor	EUPHORBIACEAE	S	Spine
32	<i>Ricinus communis L.</i>	Arandi	EUPHORBIACEAE	S	Spiny Fruit
33	<i>Securinega leucopyrus (Willd.)</i>	Thumari	EUPHORBIACEAE	S	Prickle
34	<i>Alhagi pseudalhagi (M.Bieb.) Desv.</i>	Javaso	FABACEAE	S	Prickle
35	<i>Sesbania bispinosa (Jacq.) W.F.</i>	Ikad	FABACEAE	Us	Prickle
36	<i>Erythrena indica L.</i>	Panaravo	FABACEAE	T	Prickle
37	<i>Flacourtia indica (Burm.f.) Mer</i>	Gargugal	FLACOURTIACEAE	S	Prickle
38	<i>Aloe barbadensis Mill.</i>	Kuvarpathu	LILIACEAE	H	Spiny Leaf Margin
39	<i>Asparagus racemosus Willd.</i>	Shatavari	LILIACEAE	Cl	Spine
40	<i>Yucca gloriosa L</i>	Yucca	LILIACEAE	S	Spiny leaf apex
41	<i>lawsonia inermis L.</i>	Gul mehandi	LYTHRACEAE	Us	Prickle
42	<i>Martynia annua L.</i>	Vinchudo	MARTYNIACEAE	H	Spiny Fruit

43	<i>Acacia chundra</i> (Roxb.) Willd.	Khair	MIMOSACE-AE	T	Spine
44	<i>Acacia jacquemontii</i> Bth.	Rato Baval	MIMOSACE-AE	T	Spine
45	<i>Acacia leucophloea</i> (Roxb.) Willd.	Hermo Baval	MIMOSACE-AE	T	Spine
46	<i>Acacia nilotica</i> (L.) Del.	Desi Baval,	MIMOSACE-AE	T	Spine
47	<i>Acacia senegal</i> (L.) Willd.	Gorad Baval	MIMOSACE-AE	T	Prickle
48	<i>Dichrostachys cinerea</i> (L.) W. & A.	Mor Dhundhiyu	MIMOSACE-AE	S	Prickle
49	<i>Mimosa hamata</i> Willd.	Kai Baval	MIMOSACE-AE	S	Prickle
50	<i>Mimosa pudica</i> L.	Lajamani	MIMOSACE-AE	H	Prickle
51	<i>Pithecellobium dulce</i> (Roxb.) Bth.	Goras Amla	MIMOSACE-AE	T	Spine
52	<i>Prosopis chilensis</i> (Sw.)DC.	Gando baval	MIMOSACE-AE	S	Spine
53	<i>Prosopis cineraria</i> (L.) Druces	Khijdo	MIMOSACE-AE	T	Prickle
54	<i>Bougainvillea spectabilis</i> Willd.	Boganvel	NYCTAGINACEAE	Cl	Prickle
55	<i>Bougainvillea glabra</i> DC.	Boganvel	NYCTAGINACEAE	Cl	Prickle
56	<i>Bougainvillea peruviana</i> willd	Boganvel	NYCTAGINACEAE	Cl	Prickle
57	<i>Pandanus odoratissimus</i> L.	kevdo	PANDANACE-AESC	S	Spiny Leaf Margin
58	<i>Argemone mexicana</i> L.	Darudi	PAPAVERACEAE	H	Prickle
59	<i>Pedaliium murex</i> L.	Ubhu Gokharu	PEDALIACEAE	H	Spiny Fruit
60	<i>Punica granatum</i> L.	Dadam	PUNICACEAE	T	Prickle
61	<i>Zizyphus mauritiana</i> Lam.Bor,	Bordi	RHAMNACE-AE	T	Spine
62	<i>Zizyphus nummularia</i> (Burm.f) W.& A.	Chani Bor	RHAMNACE-AE	S	Spine
63	<i>Zizyphus oenoplia</i> (L.) Mill.Gard.	Boyadi no velo	RHAMNACE-AE	S	Spine
64	<i>Zizyphus xylopyra</i> (Retz.) Willd.	Ghat Bor	RHAMNACE-AE	S	Spine
65	<i>Rosa indica</i>	Gulab	ROSACEAE	H	Prickle
66	<i>Xeromphis spinosa</i> (Thumb.) Keay	Mindhal	RUBIACEAE	T	Prickle
67	<i>Aegle marmelos</i> (L.) Corr	Bili	RUTACEAE	T	Prickle
68	<i>Citrus limon</i> (L.) Burm.f.	Limbu	RUTACEAE	S	Prickle
69	<i>Limonia acidissima</i> L.	Kothu, Kothi	RUTACEAE	T	Prickle
70	<i>Smilax zeylanica</i> L.	Sarsaparilla	SMILACACE-AE	Cl	Prickle
71	<i>Datura innoxia</i> Mill.	KaloDhanturo	SOLANACEAE	H	Spiny Fruit
72	<i>Datura metel</i> L.	Dhanturo	SOLANACEAE	H	Spiny Fruit
73	<i>Solanum indicum</i> L.	Ubhi Ringni	SOLANACEAE	H	Prickle

74	<i>Solanum melongena</i> L.	Ringana	SOLANACEAE	H	Prickle
75	<i>Solanum nigrum</i> L.	Bhony Piludi	SOLANACEAE	H	Prickle
76	<i>Solanum surattense</i> Burm.f.	Bhony Ringni	SOLANACEAE	H	Prickle
77	<i>Triumfetta rhomboidea</i> Jacq	Zipti	TILIACEAE	H	Spiny Fruit
78	<i>Triumfetta rotundifolia</i> Lam.	Zipti, Golzipti	TILIACEAE	H	Spiny Fruit
79	<i>Trapa natans</i> L.	Shinghoda	TRAPACEAE	H	Spiny Fruit
80	<i>Clerodendrum multiflorum</i> Burm.f.)	Arani	VERBENACEAE	S	Prickle
81	<i>Clerodendrum inerme</i> (Burm.f) O.Ktze	Arani	VERBENACEAE	S	Prickle
82	<i>Duranta pulmeri</i> L.	Damyanti	VERBINACEAE	S	Prickle
83	<i>Tribulus terrestris</i> L.	Bethu Gokharu	ZYGOPHYLLACEAE	H	Spiny Fruit

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