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SELECTION OF PLANTS FOR WEB BUILDING BY INDIAN SOCIAL SPIDER STEGODYPHUS SARASINORUM(KARSCH, 1891)

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Abstract:

Stegodyphus Sarasinorum(karsch, 1891) is also called an Indian cooperative spider or an Indian social spider. Social spiders are known for their home architecture and the skills they have developed to live cooperatively with other spiders in a colony. We investigated which plant was selected by social spiders for web building. What are the reasons behind choosing those plants? In thorny and non-thorny plants, which plants were used highest in number for web building? 216 observations were recorded for this study, and webs on different trees and different locations were observed. Both thorny and non-thorny trees were used by *S. sarasinorum* for web building, and in this case, thorny trees were given the highest priority for web building.

Keywords: *S.sarasinorum*, nocturnal, semi-arid, Acacias, ballooning, etc.

Introduction:

Spiders belonging to the Kingdom Animalia, Phylum Arthropoda, Subphylum Chelicerata, Class Arachnida, and Order Araneae (Clerck, 1757). Spiders are present everywhere on earth except the South Pole and North Pole. Spiders are classified into different groups based on their genetic and morphological characters. Most spiders weave their own webs and live in them; some species weave their webs in groups and live in groups, while some species spend their entire lives without weaving web. They live in different habitats, like semi-arid areas, arid areas, dry areas, wetland areas, and some species found in humid areas, and that makes them different than each other. All animals considered safety and comfort first when designing their home. Along with shelter, they also think about how to get food. How to get protection from other predators? Which area is good for designing homes? and many other little things. Every living organism in nature designs different type of houses to live in. One of them is referred to as "spider." *Stegodyphus sarasinorum* is also known as the Indian cooperative spider or Indian social spider. Social spiders are known for their home architecture and the skills they have developed to live cooperatively with other members in a colony. *Stegodyphus sarasinorum* is mainly active at night

(nocturnal), and in daytime they are not active as much as during the night period. These colony spiders live together in numbers of 100-1000 individuals and hunt together **[1]**.

This spider depends on the food trapped in the web rather than leaving its nest to hunt elsewhere. Food includes small insects and mainly insects like locustus, Bees, flies, bugs, cockroaches, beetles, cicadas, lepidoptera, and other small insects are seen trapped in webs. When an insect is caught in the web, the silk used to weave the web vibrates and the colony members receive messages that the food is trapped in the web and soon the colony members congregate at the food trap and feed.

Different types of plants can be seen in different places according to each terrain.For example, on arid and dry grassy plains, a variety of grasses and babul plants grow in highest numbers; it includes mainly *Acacia Nilotica subspecieses indica***[2]**, *Acacia Nilotica subspecieses subalata***[2]**, *Acacia catechu***[3]**, *Vachellia leucophloea***[4]**, *Vachellia eburnea***[5]**, *Lantana camara***[9]**, *Senna auriculata***[10],** Cactus, etc. Varieties of plants mainly seen in forest areas include *Azadirecta indica***[10]**, *Dalbergia sissoo***[11]**, *Ziziphus Mauritiana***[11]**, Acacias, *Ziziphus Mauritiana*, *Carissa carandas*, *Gliricidia sepium*, *Eucalyptus globulus*, *Senna siamea*, *Holoptelea integrifolia* and many others. Also, a variety of plants can be seen in places like river banks, orchards, and the surrounding areas of houses.Each of these trees is morphologically and genetically different from each other. As each plant is genetically different from each other, we also see differences in their morphology.Plants with thorns, plants with different leaf shapes or no leaves, plants that secrete pods, gum, or sticky secretions, plants that bear edible fruits, plants that have poisonous seeds, etc.— all organisms are seen to use them in different ways. One such organism is the *s.sarasinorum* spider. Colonies are built by supporting things like thorns, pods, clusters of love leave on trunks, and young tree tops.

In the present paper we report on that, which plants were selected by social spiders for web building? What is the reason behind choosing those plants? Which plants are given the highest priority for the web building? A study showed that both thorny and non- thorny trees are used by social spiders for web building. Thorny trees were given the highest preference for web building. Thorny trees used for web making include *Acacia nilotica subspecies Subalata***[2],** *Acacia nilotica ssp*. *Indica***[2]**, *Acacia catechu***[3]**, *Vachellia leucophloea***[4]**, *Vachellia eburnea***[5],** *Prosopis Juliflora* **[6]**, *Ziziphus Mauritiana***[11]**, and plant with short prickles on stem *Lantana camara***[9].** The highest number of non-thorny used for web building includes *Senna auriculata***[10]**, *Dalbergia sissoo***[11]**.

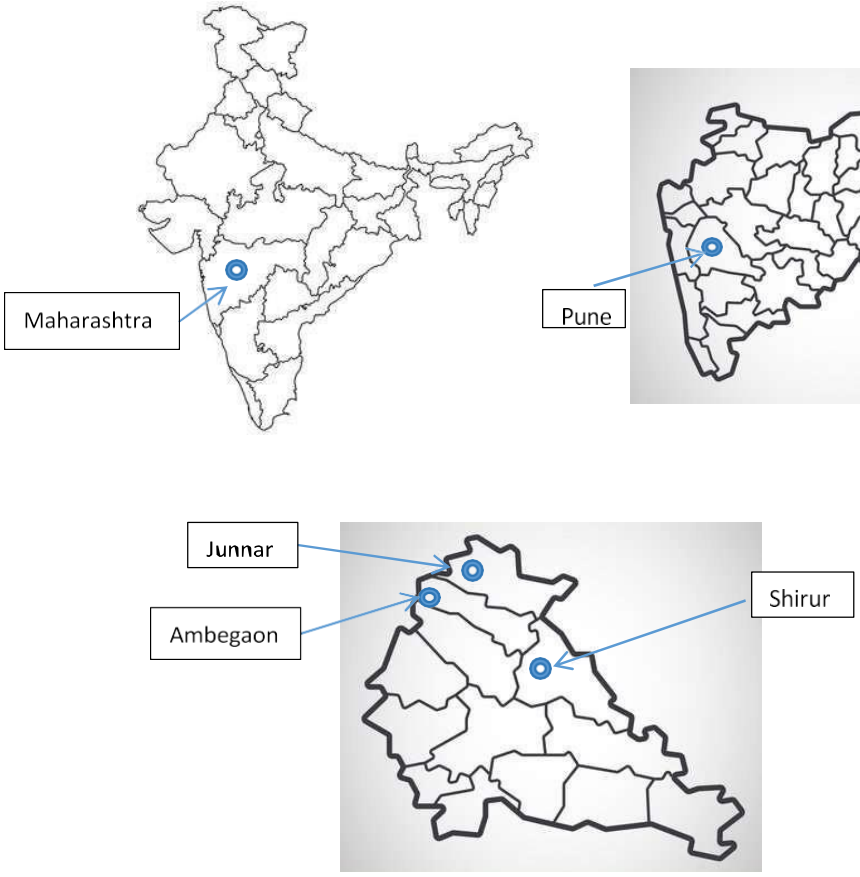
Methods:

Study area:

Pune is well known district in Maharashtra. Abundant water area, areas like forests, orchards, and grassland are widely available in Pune district, and it is favorable for spiders. Pune district includes a total of 13 talukas. Parts of Ambegaon, Junnar, and Shirur talukas were selected as study areas for the present paper.The latitude of Ambegaon region is 19°2'5"N and longitude is 73°50'11"E, while the latitude of Junnar Taluka is 19.2048° N and longitude is 73.8732° E. Dimbha Dam is situated on the Ghod River, and the capacity of Dimbha Dam is 13.5 T.M.C. Manikdoh dam situated on Kukadi river,

Pimpalgaon joga, Yedgaon, chilhewadi, and wadaj dam provide water for cultivation to Junner and Ambegaon taluka.The temperature range of Ambegaon taluka is 21°C to 38°C and humidity is 66%. The temperature range of Junnar Taluka is 25° to 38°C in the month of May and fluctuates in other seasons. Humidity of junnar taluka is close to 40%. The cultivated area of Ambegaon taluka is approximately 87851 hectares, and the agricultural area of Junnar taluka is approximately 56287.15 hectares.

Study sites of Junnar, Shirur, and Ambegaon talukas: 1) Jadhavwadi Ranjani, 2) Bhagadi 3) Nimgaon Sawa 4) Kathapur Budruk 5) Valati; 6) Nagapur; 7) Devgaon; 8) Lakhangaon; 9) Jawale; 10) Jakarwadi; 11) Pargaon tarf. Awasari Budruk 12)Pandarvasti khadaki
13)Mangrul pargaon 14)Tifanwadi 15)Pimpari kawala 16) Shingave has been selected for this study.



Source: 1) Indian map outline: Stock.adobe.com
2) Maharashtra map outline: Stock.adobe.com
3) Pune district map outline: Stock.adobe.com

Results and discussion:

Sr. No.	Scientific name of plant species	Plant Family	Longitude	Latitude
1	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.084799^0	19.041867^0
2	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.070952^0	19.032515^0
3	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.070952^0	19.032515^0

4	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.070952^0	19.032515^0
5	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.089251^0	19.045211^0
6	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.089582^0	19.045377^0
7	*Lantana camara* (L.)	Verbenaceae	74.089582^0	19.045377^0
8	*Senna auriculata*(L.) Roxb.	Fabaceae	74.244894^0	18.908381^0
9	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097377^0	19.051704^0
10	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097377^0	19.051704^0
11	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097377^0	19.051704^0
12	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.097358^0	19.05165^0
13	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
14	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
15	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
16	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
17	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
18	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
19	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
20	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
21	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
22	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097468^0	19.051656^0
23	*Senna auriculata (L.) Roxb*	Fabaceae	74.097236^0	19.051747^0
24	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097236^0	19.051747^0
25	*Senna auriculata(L.) Roxb.*	Fabaceae	74.097205^0	19.051743^0
26	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.09694^0	19.051866^0
27	*Senna auriculata(L.) Roxb.*	Fabaceae	74.096904^0	19.052059^0
28	*Senna auriculata(L.) Roxb.*	Fabaceae	74.096904^0	19.052059^0
29	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.097291^0	19.051796^0
30	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.107898^0	18.950028^0
31	*Senna auriculata(L.) Roxb.*	Fabaceae	74.107897^0	18.950063^0
32	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.107897^0	18.950063^0
33	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.10783^0	18.950075^0
34	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.108223^0	18.949773^0
35	*Lantana camara* (L.)	Verbenaceae	74.108239^0	18.949866^0
36	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.108215^0	18.949887^0
37	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.108294^0	18.950156^0
38	*Dalbegia sissoo(*Roxb.)	Fabaceae	74.108282^0	18.949727^0

39	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.110548^0	18.948847^0
40	*Lantana camara* (L.)	Verbenaceae	74.110504^0	18.94884^0
41	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.110504^0	18.94884^0
42	*Acacia nilotica ssp. Subalata* (Vatke)	Fabaceae	74.110414^0	18.948936^0
	Brenan			
43	*Dalbegia sissoo (*Roxb.)	Fabaceae	74.107486^0	18.947625^0
44	*Lantana camara* (L.)	Verbenaceae	74.106206^0	18.947386^0
45	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.106206^0	18.947386^0
46	*Senna auriculata*(L.) Roxb.	Fabaceae	74.106022^0	18.947275^0
47	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.10596^0	18.94722^0
48	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.105886^0	18.947256^0
49	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.091147^0	18.952904^0
50	*Lantana camara* (L.)	Verbenaceae	74.091147^0	18.952904^0
51	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.091131^0	18.952914^0
52	*Lantana camara* (L.)	Verbenaceae	74.080498^0	19.038768^0
53	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.080498^0	19.038768^0
54	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.083974^0	19.060725^0
55	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.083974^0	19.060725^0
56	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.083928^0	19.060699^0
57	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.083928^0	19.060699^0
58	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.080498^0	19.038768^0
59	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.080393^0	19.066642^0
60	*Lantana camara* (L.)	Verbenaceae	74.080393^0	19.066642^0
61	*Dalbergia sissoo(*Roxb.)	Fabaceae	74.080393^0	19.066642^0
62	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.085748^0	19.06961^0
63	*Lantana camara* (L.)	Verbenaceae	74.085748^0	19.06961^0
64	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.083931^0	19.066642^0
65	*Lantana camara* (L.)	Verbenaceae	74.08614^0	19.058626^0
66	*Acacia nilotica ssp. Subalata*(Vatke) Brenan	Fabaceae	74.08614^0	19.058626^0
67	*Lantana camara* (L.)	Verbenaceae	74.088226^0	19.059052^0
68	*Lantana camara* (L.)	Verbenaceae	74.087463^0	19.052913^0
69	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.087463^0	19.052913^0
70	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.087419^0	19.052823^0
71	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.086896^0	19.05133^0
72	*Lantana camara* (L.)	Verbenaceae	74.086975^0	19.051326^0
73	*Senna auriculata*(L.) Roxb.	Fabaceae	74.087001^0	19.051295^0
74	*Lantana camara*(L.)	Verbenaceae	74.087008^0	19.051343^0
75	*Acacia nilotica ssp. Subalata*(Vatke) Brenan	Fabaceae	74.08652^0	19.051289^0
76	*Lantana camara*(L.)	Verbenaceae	74.063609^0	19.017797^0
77	*Lantana camara*(L.)	Verbenaceae	74.063609^0	19.017797^0
78	*Lantana camara*(L.)	Verbenaceae	74.063609^0	19.017797^0

79	*Acacia nilotica ssp. Subalata*(Vatke) Brenan	Fabaceae	74.073965^0	19.017116^0
80	*Lantana camara*(L.)	Verbenaceae	74.073856^0	19.017386^0
81	*Dalbergia melanoxylon*(Guill. & Perr.)	Fabaceae	74.073094^0	19.017656^0
82	*Lantana camara*(L.)	Verbenaceae	74.072817^0	19.017658^0
83	*Lantana camara*(L.)	Verbenaceae	74.072681^0	19.017584^0
84	*Lantana camara*(L.)	Verbenaceae	74.072681^0	19.017584^0
85	*Lantana camara*(L.)	Verbenaceae	74.072681^0	19.017584^0
86	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.07276^0	19.017685^0
87	*Acacia nilotica ssp. Subalata* (Vatke) Brenan	Fabaceae	74.072912^0	19.017838^0
88	*Acacia nilotica ssp. Subalata*(Vatke) Brenan	Fabaceae	74.072912^0	19.017838^0
89	*Lantana camara*(L.)	Verbenaceae	74.072772^0	19.017781^0
90	*Lantana camara*(L.)	Verbenaceae	74.072772^0	19.017781^0
91	*Lantana camara*(L.)	Verbenaceae	74.063609^0	19.017797^0
92	*Dalbergia sissoo(*Roxb.)	Fabaceae	74.063609^0	19.017797^0
93	*Senna auriculata*(L.) Roxb.	Fabaceae	74.07337^0	19.018461^0
94	*Acacia nilotica ssp. Subalata*(Vatke) Brenan	Fabaceae	74.07349^0	19.018459^0
95	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.073441^0	19.018495^0
96	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.064561^0	19.015007^0
97	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.064531^0	19.014927^0
98	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.064427^0	19.014679^0
99	*Lantana camara*(L.)	Verbenaceae	74.038642^0	19.048432^0
100	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.038642^0	19.048432^0
101	*Lantana camara*(L.)	Verbenaceae	74.038642^0	19.048432^0
102	*Lantana camara*(L.)	Verbenaceae	74.039825^0	19.014749^0
103	*Lantana camara*(L.)	Verbenaceae	74.063609^0	19.017797^0
104	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.039619^0	19.014639^0
105	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.039566^0	19.01546^0
106	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.039572^0	19.015471^0
107	*Lantana camara*(L.)	Verbenaceae	74.039572^0	19.015471^0
108	*Lantana camara*(L.)	Verbenaceae	74.038706^0	19.016876^0
109	*Lantana camara*(L.)	Verbenaceae	74.038706^0	19.016876^0
110	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.038468^0	19.017084^0
111	*Senna auriculata*(L.) Roxb.	Fabaceae	74.038468^0	19.017084^0
112	*Lantana camara*(L.)	Verbenaceae	74.038032^0	19.017753^0
113	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.12747^0	18.97157^0
114	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.129988^0	18.97018^0
115	*Lantana camara*(L.)	Verbenaceae	74.134604^0	18.966483^0
116	*Senna auriculata*(L.) Roxb.	Fabaceae	74.134762^0	18.966427^0
117	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134808^0	18.966738^0
118	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134808^0	18.966738^0
119	*Acacia nilotica ssp. subalata*	Fabaceae	74.134801^0	18.966745^0
120	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134799^0	18.966746^0
121	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.143998^0	18.959166^0
122	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.1349^0	18.969003^0
123	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.1349^0	18.969003^0

124	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134902^0	18.969016^0
125	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134919^0	18.96911^0
126	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134913^0	18.969166^0
127	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134948^0	18.966827^0
128	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.134786^0	18.966541^0
129	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.135108^0	18.966132^0
130	*Senna auriculata*(L.) Roxb.	Fabaceae	74.130502^0	18.961579^0
131	*Senna auriculata*(L.) Roxb.	Fabaceae	74.130502^0	18.961579^0
132	*Dalbergia sissoo(*Roxb.)	Fabaceae	74.092979^0	18.972747^0
133	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.116954^0	18.947921^0
134	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.051653^0	18.990624^0
135	*Lantana camara*(L.)	Verbenaceae	74.051153^0	18.990956^0
136	*Dalbergia sissoo(*Roxb.)	Fabaceae	74.051175^0	18.990939^0
137	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.050752^0	18.99067^0
138	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.050604^0	18.990695^0
139	*Lantana camara*(L.)	Verbenaceae	74.076459^0	18.978875^0
140	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.062049^0	18.963272^0
141	*Lantana camara*(L.)	Verbenaceae	74.065094^0	18.961963^0
142	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.066514^0	18.962035^0
143	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.066517^0	18.962016^0
144	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.06955^0	18.96144^0
145	*Acacia nilotica ssp. Indica*	Fabaceae	74.68523^0	18.961865^0
146	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.069979^0	18.960841^0
147	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.070058^0	18.960864^0
148	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.070243^0	18.960928^0
149	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.070243^0	18.960928^0
150	*Lantana camara*(L.)	Verbenaceae	74.08253^0	18.958572^0
151	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.055165^0	18.974841^0
152	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.08218^0	18.96045^0
153	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.082411^0	18.960498^0
154	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.08298^0	18.963806^0
155	*Vitex negundo* L.	Verbenaceae	74.083838^0	18.969648^0
156	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.083798^0	18.969526^0
157	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.08394^0	18.969664^0
158	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052016^0	18.990584^0
159	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052016^0	18.990584^0
160	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052842^0	18.995624^0
161	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.052674^0	18.995625^0
162	*Lantana camara*(L.)	Verbenaceae	74.052643^0	18.995543^0
163	*Lantana camara*(L.)	Verbenaceae	74.05278^0	18.995517^0
164	*Lantana camara*(L.)	Verbenaceae	74.052757^0	18.99538^0
165	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052695^0	18.995225^0

166	*Azadirecta indica* (A.Juss.,1830)	Meliaceae	74.052683^0	18.995167^0
167	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052715^0	18.995163^0
168	*Vachellia eburnea* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	74.052643^0	18.995086^0
169	*Lantana camara*(L.)	Verbenaceae	74.052556^0	18.995069^0
170	*Lantana camara*(L.)	Verbenaceae	74.052556^0	18.995069^0
171	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052578^0	18.994826^0
172	*Calotropis procera*(Aiton) W.T.Aiton	Apocynaceae	74.052578^0	18.994826^0
173	*Zizipus mauritiana*(Lam.)	Rhamnaceae	74.052323^0	18.993976^0
174	*Lantana camara*(L.)	Verbenaceae	74.052388^0	18.993967^0
175	*Lantana camara*(L.)	Verbenaceae	74.052388^0	18.993967^0
176	*Senna auriculata*(L.) Roxb.	Fabaceae	74.052285^0	18.993908^0
177	*Lantana camara*(L.)	Verbenaceae	74.052285^0	18.993908^0
178	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052163^0	18.99385^0
179	*Lantana camara*(L.)	Verbenaceae	74.052163^0	18.99385^0
180	*Senna auriculata*(L.) Roxb.	Fabaceae	74.052202^0	18.993803^0
181	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.052246^0	18.993831^0
182	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.052044^0	18.993484^0
183	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.052044^0	18.993484^0
184	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.052091^0	18.993625^0
185	*Senna auriculata*(L.) Roxb.	Fabaceae	74.052091^0	18.993625^0
186	*Senna auriculata*(L.) Roxb.	Fabaceae	74.05297^0	18.993553^0
187	*Vachellia leucophloea*(Roxb.) Maslin, Seigler & Ebinger	Fabaceae	74.052097^0	18.993553^0
188	*Lantana camara*(L.)	Verbenaceae	74.052204^0	18.993475^0
189	*Senna auriculata*(L.) Roxb.	Fabaceae	74.051939^0	18.993534^0
190	*Acacia catechu*(L. f.) P.J.H.Hurter & Mabb	Fabaceae	74.051816^0	18.993655^0
191	*Senna auriculata*(L.) Roxb.	Fabaceae	74.051816^0	18.993655^0
192	*Senna auriculata*(L.) Roxb.	Fabaceae	74.051858^0	18.993679^0
193	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.006671^0	19.000863^0
194	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.006703^0	19.000804^0
195	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.006732^0	19.000766^0
196	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.006742^0	19.000721^0
197	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.006713^0	19.000713^0
198	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.00669^0	19.000703^0
199	*Holoptelea integrifolia* (Roxb.) Planch	Ulmaceae	74.087881^0	19.058929^0
200	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.091405^0	19.072718^0
201	*Senna auriculata*(L.) Roxb.	Fabaceae	74.092322^0	19.072705^0
202	*Holoptelea integrifolia*(Roxb.) Planch	Ulmaceae	74.092268^0	19.072799^0
203	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.15519^0	19.041059^0
204	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.17528^0	19.018486^0
205	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.175544^0	19.018462^0
206	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.17443^0	19.014702^0
207	*Zizipus mauritiana* (Lam.)	Rhamnaceae	74.174235^0	19.014518^0
208	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.174222^0	19.014479^0
209	*Acacia nilotica ssp. Indica*(Benth.) Kyal. & Boatwr.	Fabaceae	74.174256^0	19.014817^0
210	*Prosopis juliflora*(Sw.) DC	Fabaceae	74.174256^0	19.014817^0
211	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.172232^0	19.011767^0
212	*Lantana camara*(L.)	Verbenaceae	74.17219^0	19.01171^0

213	*Lantana camara*(L.)	Verbenaceae	74.172787^0	19.011691^0
214	*Acacia nilotica ssp. subalata*(Vatke) Brenan	Fabaceae	74.172124^0	19.011699^0
215	*Lantana camara*(L.)	Verbenaceae	73.743593^0	18.998636^0
216	*Zizipus mauritiana* (Lam.)	Rhamnaceae	73.74368^0	18.995875^0

Table number 1: The table above lists a total of 216 thorny and non-thorny trees along with their family on which colonies of S.sarasinorum have been reported. It includes 1)Rhamnaceae 2) verbenaceae 3) fabaceae 4) Ulmaceae 5) Meliaceae 6) Apocyanceae.

Plant species	Frequencies	Frequencies × $\frac{360^0}{\text{Total}}$	Final value in degrees
Ziziphus mauritiana(Lam.)	40	40 × 1.6666	66.664^0
Lantana camara(L.)	51	51× 1.6666	84.9966^0
Vachellia eburnae(L.f.) P.J.H.Hurter & Mabb.	22	22× 1.6666	36.6652^0
Vachellia leucophloea(Roxb.) Maslin, Seigler & Ebinger	12	12× 1.6666	19.9992^0
Acacia nilotica ssp. subalata(Vatke) Brenan	32	32× 1.6666	53.3312^0
Acacia nilotica ssp. Indica(Benth.) Kyal. & Boatwr.	17	17× 1.6666	28.3322^0
Acacia catechu(L. f.) P.J.H.Hurter & Mabb	1	1× 1.6666	1.6666^0
Dalbergia melanoxylon(Guill. & Perr.)	1	1× 1.6666	1.6666^0
Prosopis juliflora(Sw.) DC	8	8× 1.6666	13.3328^0
*Dalbergia sissoo(*Roxb.)	6	6× 1.6666	9.9996^0
Holoptela integrifolia(Roxb.) Planch	2	2× 1.6666	3.3332^0
Senna auriculata(L.) Roxb.	21	21×1.6666	34.9986^0
Azadiracta indica(A.Juss.,1830)	1	1× 1.6666	1.6666^0
Calotropis procera(Aiton) W.T.Aiton	1	1× 1.6666	1.6666^0
Vitex negundo L.	1	1× 1.6666	1.6666^0
Total	216		$359.9^0 \approx 360^0$

Note:

$\frac{360^0}{\text{Total}} = \frac{360^0}{216} = 1.6666$

Table no:2 The table above shows a total of 15 trees and the frequency of *S.sarasinorum* colony presence on each tree and their distribution in a 360-degree pie chart. A total of 216 observations were made by counting the presence of colonies on specific trees and data given in the frequency column. To show the distribution of the total 216 colonies in 360 degrees following the formula, use: **(360 ° ÷ total number of observation)**

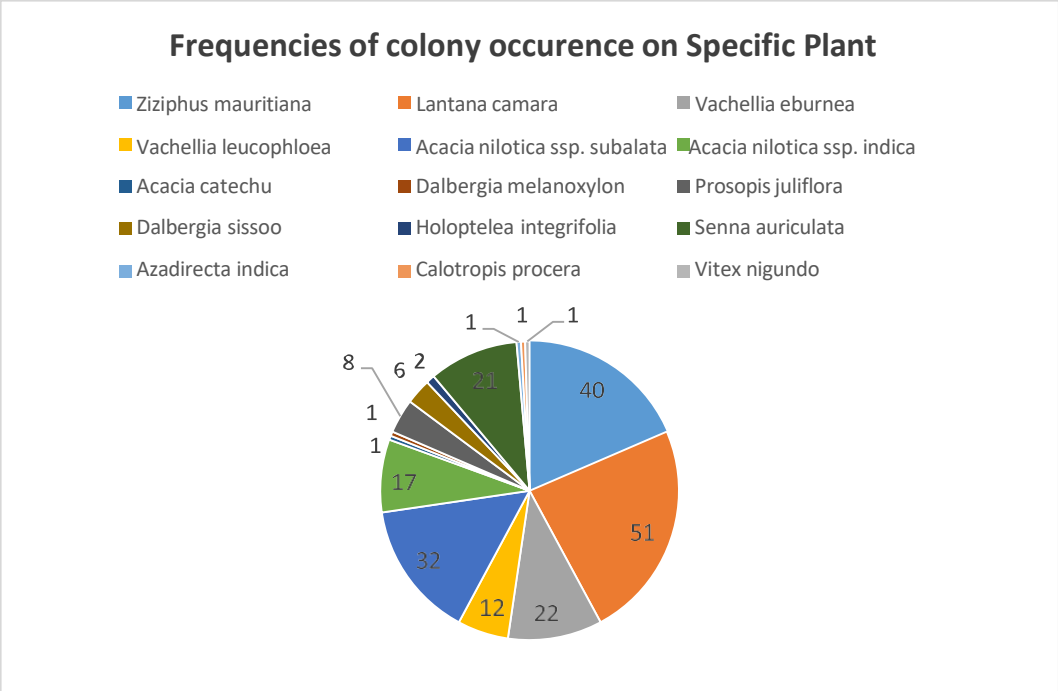


Figure number 1: The above Pie chart showing the frequency distribution of each plant in 360-degree angle.

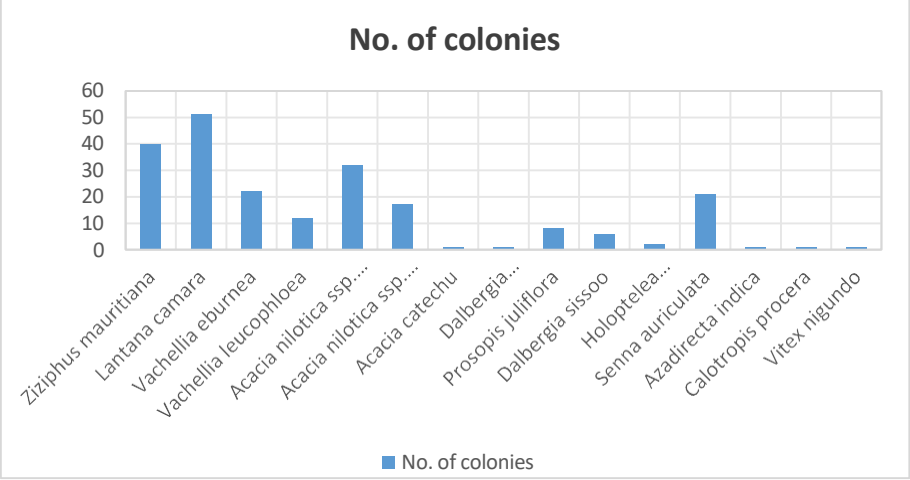


Figure number 2: The above Figure showing that the number of colonies present on specific tree.

Plant name	Family	Frequencies of colony
Ziziphus mauritiana	Rhamnaceae	40
Lantana camara	Verbenaceae	51

Vachellia eburnae	Fabaceae	22
Vachellia leucophloea	Fabaceae	12
Acacia nilotica ssp. subalata	Fabaceae	32
Acacia nilotica ssp. Indica	Fabaceae	17
Acacia catechu	Fabaceae	1
Dalbergia melanoxylon	Fabaceae	1
Prosopis juliflora	Fabaceae	8

Dalbergia sissoo	Fabaceae	6
Holoptela integrifolia	Ulmaceae	2
Senna auriculata	Fabaceae	21
Azadiracta indica	Meliaceae	1
Calotropis procera	Apocynaceae	1
Vitex nigundo	Verbenaceae	1

Rhamnaceae = 40
Verbebaceae = 52
Fabaceae = 120
Ulmaceae = 2
Meliaceae = 1
Apocynaceae = 1

Total = 216

Table no.3: The about table show that number of colony frequencies on specific plant family.

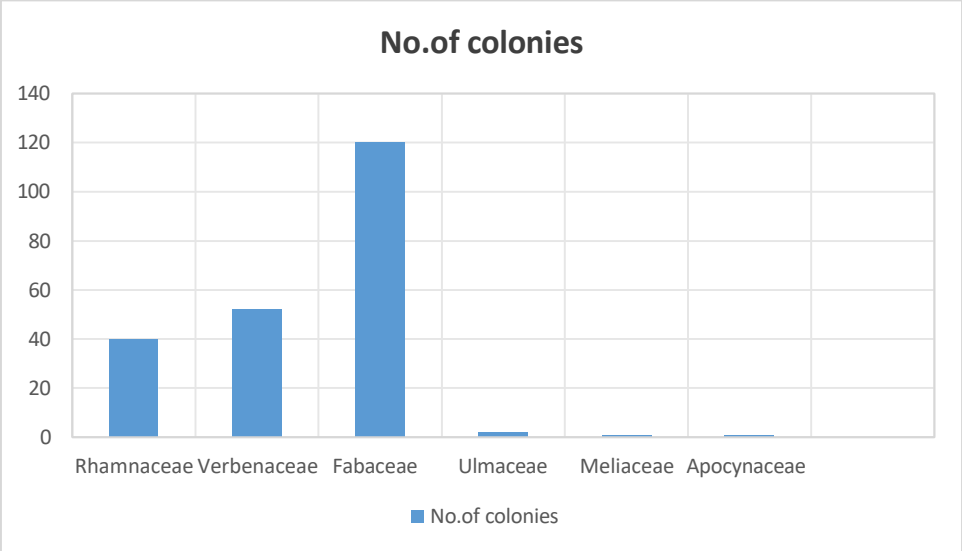


Figure no. 3; A total of six plant families are shown in the figure above, and the families given the highest and lowest priority for the web building by colony spiders are shown.

The highest number of colonies in the above figure are on plants like *Lantana camera*, *Ziziphus Mauritiana*, *A. nilotica ssp. Subalata*, and *Vachellia eburnea*. The percentage of occurrence of those (thorny plants) in the pie chart is 51%, 40%, 32%, and 22%, respectively. While *Senna auriculata* (a non-thorny plant) showed the highest colony percent compared to the other thornless tree. The percentage of occurrence of these plants is 21%. The least number of colonies were seen on the thornless trees, including *C.*

procera, *V. nigundo*, and *A. indica*, and on the thorny trees, including *D. melanoxylon* and *A. catechu*.

Conclusion:

A total of 216 observations from 17 locations of 4 talukas were recorded in this study. A total of 6 plant families are included in these 260 observations. These observations include thorny and non-thorny trees. Repeated observations were made in all three seasons of summer, monsoon, and winter, and the following conclusions were drawn from this.

The seeds of thorny and non-thorny trees such as *Acacia nilotica subspecies subalata*, *Acacia nilotica ssp. Indica*, *Acacia catechu*, *Vachellia leucophloea*, *Vachellia eburnea*, *Prosopis Juliflora*, *Ziziphus Mauritiana*, *Senna auriculata*, *Dalbergia sissoo* & plant with short prickles on stem *lantana camara* are dispersed by air, birds and animals droppings, cracking in the sun, and take root there. As a result, there is a formation of trees belonging to the same class. Observation showed that *S. sarasinorum* showed a preference for thorny and thornless trees of similar and dissimilar classes grown in those sites and was observed to form colonies there. As the populations in a colony begin to grow, some of its members are dispersed by ballooning to nearby trees and creating new colonies there or increasing the surface area of old colonies by adding some new threads of silk.

Clusters of webs were seen in a large number of similar thorny plants: *Ziziphus Mauritiana*, *Acacia nilotica ssp. Indica*, *Acacia nilotica subspecies subalata*, *Vachellia leucophloea*, and plants with short prickles like *lantana camara*. Non-similar thorny and non-thorny tree groups like *Acacia nilotica subspecies subalata*, *Acacia nilotica ssp. Indica*, *Acacia catechu*, *Vachellia leucophloea*, *Vachellia eburnea*, *Prosopis Juliflora*, *Ziziphus Mauritiana*, *Senna auriculata*, *Dalbergia sissoo*, *lantana camara*, and *Holoptelea integrifolia*.
S. sarasinorum has been found to build nests by relying on any other trees and inanimate objects available nearby if it is inconvenient to find a place to build a colony. The study showed that colonies were built on electric wires as well as on trees of some rare species of our Maharashtra, like African black wood *(Dalbergia melanoxylon)*, as well as rarely built webs on trees with large numbers everywhere. Trees include such plants as *Phycus benghalensis***[14]**, *Santalum album***[9]**, *Anmona squmaosal***[11]**, *Tamarindus indica* L.1753, *Psidium guajava* L**.,** *Ficus racemosa* L., *Manilkara zapota* (L.)P.Royen, *Phyllanthus emblica L.*, and many other plants.

The spider builds a colony by considering all three seasons: monsoon, summer, and winter. This spider's built a colony on the eastern side of the tree to protect them from the summer heat. As the colony is built in the east direction, the early morning sun rays enter the house, and in the midday the sun goes west and shadows fall on the webs. Also, due to building the colony mostly in the east, the first morning rays of the sun fall on the webs, and heat is created in the colony, and they get protection from the winter cold. Also, during the rainy seasons, bugs are attracted towards those trees to eat the leaves. The number of insects attracted toward these plants is higher than other plant species. Therefore, one of the reasons observed is that web building on such trees leads to abundant availability of food.

The majority of *S. sarasinorum* spider webs were observed in dry, arid regions.The main reason for building nests in arid areas is that building nests in wetland increases the

weight of the colony due to the evaporation of water molecules, increasing the chances of colonies breaking up.

The colony gains weight from the weight of its members. Trees of Babul class and their branches can easily support the weight of the colony and air pressure. So, while selecting trees, tough trees are given first priority. During nest building, the colony is built on the periphery region of the tree that is on the tops of the branches. Since the colony is built on the soft tops of the branches, it remains hanging by the weight of the colony, thus reducing the number of predators sitting on the hanging branches and protecting the spiders, and as the hanging colony continuously moves according to the air pressure, the chances of colonies breaking are reduced**. (figure no. 6)**

The support of thorns helps to expand the web, thus providing space for a maximum number of members. Colony expansion also increases the amount of food trapped in the wave, so while selecting trees, thorny, spiny or prickly trees are given first priority. the wave, so while selecting trees, thorny, spiny or prickly trees are given first priority. (Figure no. 4, 5)

Figure no.4 & 5: The above figure showing that the support of thorns helps to expand the web.

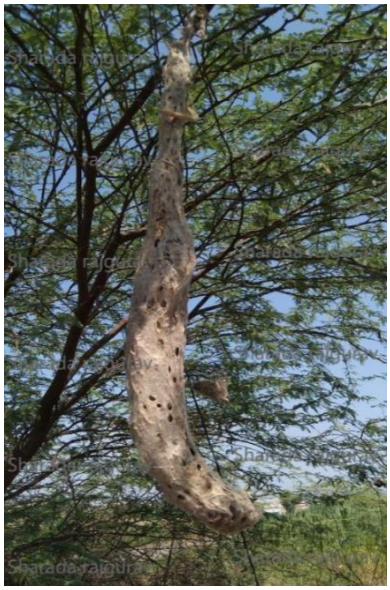


Figure no. 6: colony is built on the soft tops of the branches

Also, nests are rarely seen on plants that are common in forest areas or dry areas such as Euphorbia tirucalli L. and Capparis decidua(Forssk.) Edgew. The reason is that those plants have no leaves (figure no.7 & 8) and the spiders have to suffer from the heat in the afternoon sun. Also, the webs of these spiders were observed in large numbers on Carissa carandas L. (Grossulariaceae family plant) and cactus Elaphorbia neriifolia L.(euphorbiaceae family plant) growing in some areas.

Figure no. 7 & 8: The above figure show that rarely build nests on plants that are

common in forest areas or dry areas such as Euphorbia tirucalli and Capparis decidua respectively.

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