

## **Study of Parasite Hosts of the Genus *Cuscuta* and its Traditional Uses in Palanpur Taluka, Gujarat, India**

**J.N. Patel and N.K. Patel\***

**R.R. Mehta college of science, Palanpur 385001**

**\*Biology Department, Sheth M. N. Science college, Patan- 385 120**

**E-mail: [taxonomy.naren@gmail.com](mailto:taxonomy.naren@gmail.com)**

**<http://plantethnobotany.nong.com>**

**Issued: February 01, 2010**

### **Abstract**

*Cuscuta* is a parasitic plant belonging to family Cuscutaceae. The present paper is an investigation of its various host plant species and its traditional uses in Palanpur Taluka of North Gujarat during 2005-2008. Two species of *Cuscuta* occur in the Palanpur Taluka. The preservation and documentation of traditional knowledge is a matter of prime importance. This will not only provide recognition of this knowledge but will also help in conservation of such gradually vanishing endangered semi/arid plant species. The present paper provide ethnomedicinal information of 2 species of *Cuscuta*. For each plant species listed, the botanical name, family, vernacular name, part used, uses/ailments treated, preparations/administrations, use (%) and locality are given.

**Key words:** Host, *Cuscuta*, Traditional uses.

### **Introduction**

Palanpur Taluka is situated in the Banaskantha district. The Banaskantha district is situated between the parallels of latitude 23° 49' and 24° 42' and the meridians of longitude 71°.1 'and 73°.0' (Fig.1). The area covered by the district is 10,757 sq. km. The rank of the district is 4<sup>th</sup> in area of the state. It is in the north western part of the Gujarat State. The Palanpur Taluka is situated at 24° 10' to 24° 17' N and 72° 26' to 72° 43' E at the Banaskantha district of North Gujarat. Out of the total area of 10577 sq. km. of the district an area of about 1,108 sq km is covered by forest, out of which 51967.29.41.Ha. Area is Reserve forest, 1303,39,19 area is protected forest and Unclassified forest is 57385,21,37 in the district. The main products of these forest are timber, kher, neem, charcoal, timru and firewood. This area has dry deciduous and scrub type of forest. Saxton and Sedgwick (1918), Sutaria (1941-42), Yogi (1970), Patel (1970), and Shah (1978) have carried out floristic studies of North Gujarat in Palanpur Taluka. Bharti (1959) and Narula (1971) have made the floristic work. *Cuscuta* has three species in Gujarat state (Shah, 1978) viz. *Cuscuta reflexa* Roxb; *Cuscuta chinensis* Roxb. and *Cuscuta hyaline* Roth; out of three species *Cuscuta hyaline* Roth is not observed in Palanpur Taluka.

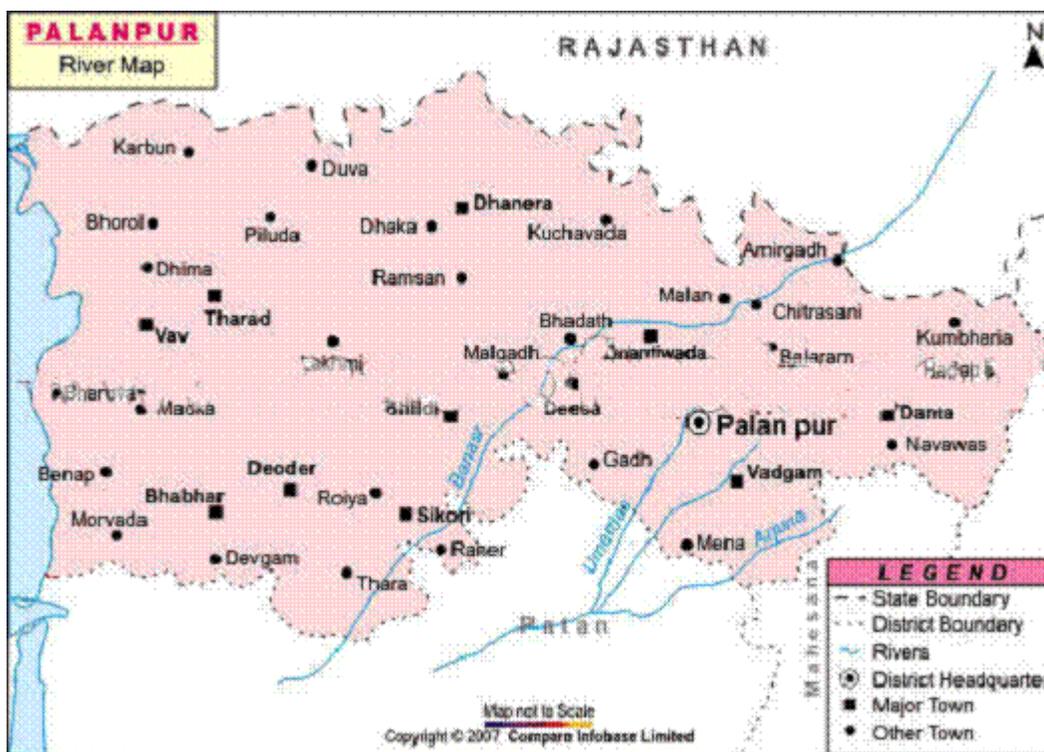


Fig.1. Map of Palanpur Taluka.

Plants have always played a major role in the treatment of human traumas and diseases worldwide. They have been used as sources of modern drugs, either by providing pure compounds, starting materials for partial synthesis of useful compounds or models for synthesis of new drugs. Ethnomedicinal information is an important tool in drug discovery.

Information about medicinal plants is still passing from one generation to another by oral communication, posing the danger of losing some knowledge. There is, therefore, a need to document medicinal plants in Palanpur before both the provider of information disappear. Meanwhile most of these plants was already endangered by the arid/semi arid climatic conditions and man-made activities.

## Materials and Methods

Regular visits almost parts of Palanpur Taluka were made to collect all host plant specimens which were affected by the two species of *Cuscuta*. The information was gathered from urban and rural inhabitants knowledgeable on indigenous herbal medicine by personal interviews. Questions about the use of medicinal plants were asked using classical means of ethnobotanical analysis. The interviews were in the form of group discussions, in groups of three or four people, except for the traditional healers who preferred confidentiality.

Plant materials of all the taxa reported were collected either by author and shown to the informants, or by the informants and shown to us or by the informants, or by us together. During fieldwork plant materials were collected for preparation of herbarium specimens and for biological and chemical testing. The plants were identified using the Flora and also by comparison with herbarium specimens. Voucher specimens were deposited in the Botany Department, R.R.Mehta College of Science, Palanpur.

All the data obtained have been integrated and analysed. The results have been structured according to these categories: number of plants mentioned (with scientific Latin name, botanical families and vernacular(popular) names; part used; uses/ailments treated; preparations/administrations; host species and parts of host species. To assess the degree of originality and novelty of the uses claimed by the informants, these were

compared with those reported in several works on ethnobotany, medicinal plants and phytotherapy.

## Result and Discussion

Of the 289 angiospermic plant species found in Palanpur Taluka, only seven species are partial / total parasites. Among the seven species only the two species of *Cuscuta* e.g. *C. chinensis* Roxb. and *C. reflexa* Roxb. are total parasites. The frequency of total parasite plants is only 2.8 %. The effect of parasite on vegetation was found at 27 locations in study area. The collected data are summarized in tables I and II.



### (1) *Cuscuta reflexa* Roxb.

**Vernacular Name:** AMARVEL

**Family:** Cuscutaceae

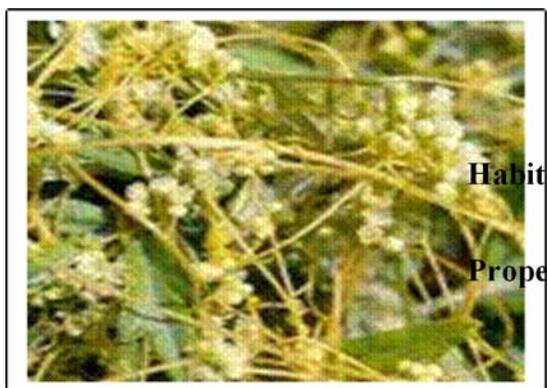
**Habit:** A perennial, parasitic. The flowers are hermaphrodite (have both male and female organs).

**Properties:** *Alterative; Anthelmintic; Carminative; Purgative.*

**Traditional uses:** The seeds are used in the treatment of bilious disorders.

The stems are used in the treatment of bilious disorders. The

whole plant is purgative. It is used internally in treating protracted fevers and externally in the treatment of itchy skin. The plant is employed in Ayurvedic medicine to treat difficulty in urinating, jaundice, muscle pain and coughs.



### (2) *Cuscuta chinensis* Roxb.

**Vernacular Name:** AMARVEL

**Family:** Cuscutaceae

**Habit:** A perennial, parasitic. The flowers are hermaphrodite (have both male and female organs).

**Properties:** *Aphrodisiac; Demulcent; Diaphoretic; Hepatic; Kidney; Ophthalmic; Tonic.*

**Traditional uses:** A lotion made from the stems is used in the treatment of sore heads and inflamed eyes. In particular, it is used

in the treatment of impotence, nocturnal emissions, vertigo, lumbago, leucorrhoea, frequent micturation, decreased eyesight, threatened abortion and chronic diarrhoea.

**Table 1: Various hosts of *Cuscuta chinensis* Roxb.**

Sr No.	Name of Host Plant	Local Name	Family	Habit	On which part parasite		
					St	Lf	
1.	<i>Abutilon indicum</i>	KANSHKI	Malvaceae	S	St		
2.	<i>Acanthospermum hispidum</i>	-	Acanthaceae	H	St		
3.	<i>Acacia nilotica</i>	BAVAL	Mimosaceae	T	St	Lf	
4.	<i>Achyrenthus aspera</i>	ANDHADO	Amarantaceae	S	St	Lf	
5.	<i>Blainvillea acmella</i>	FULDO	Asteraceae	H	St	Lf	
6.	<i>Boerhavia diffusa</i>	SATODI	Nyctaginaceae	H	St		

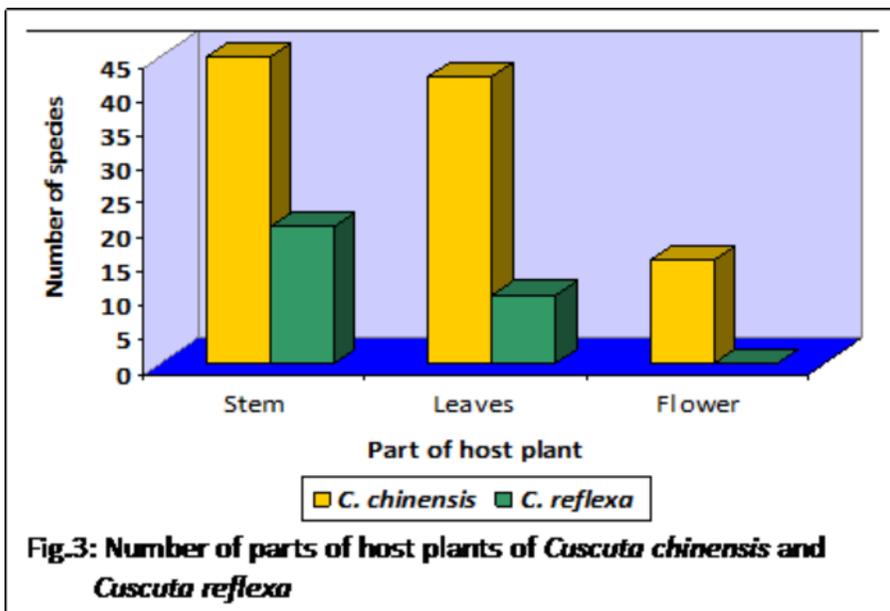
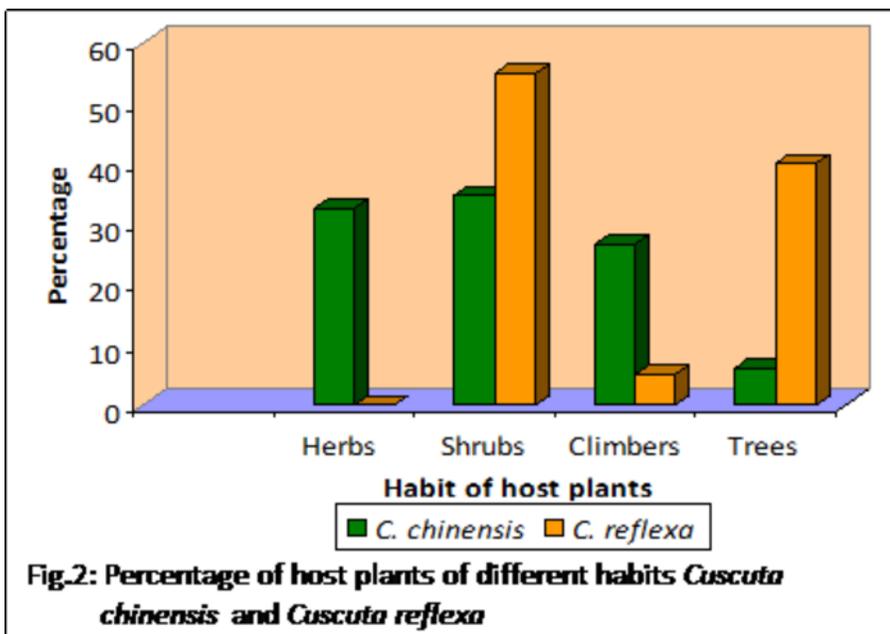
7.	<i>Caesalpinia crista</i>	KACHKA	Caesalpinaceae	S	St		
8.	<i>Calotropis procera</i>	AKADO	Asclepiadaceae	S	St	Lf	
9.	<i>Capparis deciduas</i>	KERDO	Capperaceae	S	St		
10.	<i>Capparis spinosa</i>	KANTHERO	Capperaceae	S	St		
11.	<i>Cardiospermum halicacabum</i>	KAGDOLI	Sapindaceae	C	St	Lf	
12.	<i>Cassia auriculata</i>	AVAL	Caesalpinaceae	S	St	Lf	
13.	<i>Cassia occidentalis</i>	KASUNDRO	Caesalpinaceae	S	St		
14.	<i>Cassia tora</i>	KUVADIO	Caesalpinaceae	S	St	Lf	
15.	<i>Cissampelos pareira</i>	VENI VEL	Menispermaceae	C	St		
16.	<i>Clerodendrum inerme</i>	VAD MEHNDI	Verbinaceae	S	St	Lf	
17.	<i>Coccinia grandis</i>	GHILODA	Cucurbitaceae	C	St	Lf	
18.	<i>Coccinia indica</i>	GHILODI	Cucurbitaceae	C	St	Lf	
19.	<i>Cocculus hirsutus</i>	VEVADI	Menispermaceae	C	St	Lf	
20.	<i>Cocculus pendulus</i>	VEVADI	Menispermaceae	C	St	Lf	
21.	<i>Commelina benghalensis</i>	MOTU	Commelinaceae	H	St	Lf	Fl
22.	<i>Commelina nudiflora</i>	SISMULIU	Commelinaceae	H	St	Lf	Fl
23.	<i>Corchorus aestuans</i>	SISMULIU	Tiliaceae	H	St	Lf	Fl
24.	<i>Desmostachya bipinnata</i>	CHUNCH	Poaceae	H		Lf	
25.	<i>Eragrostis cynosuroides</i>	DARBH	Poaceae	H		Lf	
26.	<i>Euphorbia neriifolia</i>	KUTRA GHAS	Euphorbiaceae	S	St	Lf	
27.	<i>Grass sp-1</i>	THURIA	Poaceae	H		Lf	Fl
28.	<i>Holoptelia integrifolia</i>	-	Urticaceae	T	St	Lf	
29.	<i>Ipomoea fistulosa</i>	KANAJO	Convolvulaceae	S	St	Lf	
30.	<i>Lablab purpureus</i>	NAFAT VEL	Papilionaceae	C	St	Lf	Fl
31.	<i>Luffa acutangula</i>	VAL	Cucurbitaceae	C	St	Lf	Fl
32.	<i>Luffa echinata</i>	TURIA	Cucurbitaceae	C	St	Lf	
33.	<i>Momordica charantia</i>	KUKUD VEL	Cucurbitaceae	C	St	Lf	Fl
34.	<i>Momordica dioica</i>	KARELA	Cucurbitaceae	C	St	Lf	Fl
35.	<i>Mukia maderaspanata</i>	KANKODA	Cucurbitaceae	C	St	Lf	
36.	<i>Pennisetum typhoides</i>	CHIBHDI VEL	Poaceae	H	St	Lf	Fl
37.	<i>Phyllanthus fraternus</i>	BAJARO	Euphorbiaceae	H	St	Lf	Fl
38.	<i>Physalis minima</i>	BHOY AMALI	Solanaceae	H	St	Lf	Fl
39.	<i>Polyalthia longifolia</i>	SARPOPATO	Annonaceae	T	St	Lf	
40.	<i>Rhynchosia minima</i>	ASOPALAV	Papilionaceae	C	St	Lf	Fl
41.	<i>Ruellia tuberosa</i>	DARIA VEL	Acanthaceae	H	St	Lf	Fl
42.	<i>Seyaria glauca</i>	BANDHUKADI	Poaceae	H		Lf	
43.	<i>Sida acuta</i>	ZIPTI	Malvaceae	S	St	Lf	
44.	<i>Sida cordifolia</i>	BALA	Malvaceae	S	St	Lf	
45.	<i>Tribulus terrestris</i>	BALA	Zygophyllaceae	H	St	Lf	
46.		GHOKHRU	Tiliaceae	S	St	Lf	
47.		ZIPTI	Tiliaceae	S	St	Lf	

48.	GOLZIPI	Asteraceae	H	St	Lf	Fl
49.	SAHDEVI	Asteraceae	S	St	Lf	Fl

**Table 2: Various hosts of *Cuscuta reflexa* Roxb.**

Sr. No	Name of host plant	Local Name	Family	Habit	On which part parasite		
					St	Lf	Fl
1.	<i>Accacia nilotica</i>	BAVAL	Mimosaceae	T	St		
2.	<i>Azadirachta indica</i>	LIMDO	Meliaceae	T	St	Lf	
3.	<i>Capparis spinosa</i>	KANTHERO	Capparaceae	S	St	Lf	
4.	<i>Cassia occidentalis</i>	KASUNDO	Caesalpiniaceae	S	St		
5.	<i>Cassia siamea</i>		Caesalpiniaceae	T	St		
6.	<i>Clerodendrum multiflorum</i>	ARANI	Verbinaceae	S	St	Lf	
7.	<i>Cordia dichotoma</i>	VAD GUNDA	Ehretiaceae	T	St	Lf	
8.	<i>Cordia perrottetii</i>	NANI GUNDI	Ehretiaceae	T	St	Lf	
9.	<i>Grewia tenax</i>	GENGATI	Tiliaceae	S	St		
10.	<i>Holoptelea integrifolia</i>	KANAJI	Urticaceae	T	St		
11.	<i>Ipomoea fistulosa</i>	NAFAT VEL	Convolvulaceae	S	St	Lf	
12.	<i>Ipomoea pes-tigridis</i>	VAGPADINI	Convolvulaceae	C	St		
13.	<i>Maytenus emarginata</i>	VEL	Celastraceae	S	St	Lf	
14.	<i>Melia azadirachta</i>	VICKDO	Meliaceae	S	St		
15.	<i>Morus alba</i>	BAKAN	Moraceae	S	St		
16.	<i>Murraya koenigri</i>	SHETUR	Rutaceae	S	St	Lf	
17.	<i>Nerium indicum</i>	MITHO	Apocynaceae	S	St	Lf	
18.	<i>Salvadora oleoides</i>	LIMDO	Salvadoraceae	S	St		
19.	<i>Salvadora persica</i>	LAL KAREN	Salvadoraceae	T	St		
20.		VAKDO	Rhamnaceae	T	St	Lf	

*Cuscuta chinensis* Roxb. is parasitic on 49 host plants whereas *C. reflexa* Roxb is parasitic on 20 plant species. *Cuscuta chinensis* attacks herbs and shrub while *C. reflexa* affect only shrubs. It is a most common parasite on host *Salvadora persica* in almost all



locations of study area. Various parts of host plants viz. stem, leaf and flower are severely affected by both the species.

Fig.2 reveals that of the total 49 host plants affected by , *C. chinensis*, their habits are; 32.6% herbs, 34.6% shrubs , 26.5% climbers and 6.12% small trees. of the 20 hosts affected by *C. reflexa*, 55% are shrubs, 5% climbers and 40% trees. Both parasitic species were observed on the following host plant species: *Holoptelea integrifolia*, *Cassia occidentalis*, *Acacia nilotica*, *Ipomoea fistulosa*, *Capparis spinosa*. Fig.3 reveals that of the *C. chinensis* found on stem of 45 plant species , leaves of 42, flower of 15 plant species and *C. reflexa* found on stem of 20 plant species and, leaves of 10 plant species.

### Acknowledgement

We are very much thankful to M. K .Makawana, I/C Principal, R.R .Mehta College of Science Palanpur, North Gujarat for providing laboratory facility during the work.

### References

- Bharthi, S.G. 1959. A brief account of the flora of Visnagar, North Gujarat and its environs. J. Bombay Nat Hist. Soc. 56:588-610.
- Champion, H. G. and S.K.Seth, 1968. A revised Survey of the forest types of India Press, Nasik.
- Chopra. R. N., Nayar. S. L. and Chopra. I. C. 1986. *Glossary of Indian Medicinal Plants (Including the Supplement)*. Council of Scientific and Industrial Research, New Delhi.
- Narula, S.B. 1971. Record of angiospermic plants of Visnagar, Seminar and workshop in Botany, Souvenir: 1-8.
- Patel, R.I. 1970. Forest flora of Gujarat, forest Department, Vadodara.
- Sexton, W.T. and L.J.Sedgwick, 1918. Plants of North Gujarat records. Bot. Survey of India 6:242-323
- Shah, G.L. 1978. Flora of Gujarat state Vols.I&II, S.P. University, Vallabh Vidyanagar, Anand.
- Sutaria, R.N. 1941-42. The Vegetation of Viresher, Prakruti, J.Gujarat nat.Hist. Soci.8:36-42.
- Yogi, D.V. 1970. A contribution to the flora of North Gujarat, Ph.D. thesis S.P.Univ. Vallabh Vidyanagar, Anand.