Universal Impact Factor 0.9285:2012; 1.2210:2013

Index Copernicus
ICV 2011: 5.09
ICV 2012: 6.42

NAAS Rating
2012 : 1.3;2013:2.69

Received on:
2nd April2014

Revised on:
24th May 2014

Accepted on:
25th May 2014

Published on:
1st June 2014

Volume No.
Online & Print
52 (2014)

Page No.
98 to 104

PRELIMINARY SURVEY ON WEED FLORA ASSOCIATED WITH AGRICULTURAL CROPS IN SABARKANTHA, DISTRICT, GUJARAT, INDIA

S.K.PATEL[1] AND VINOD PANDEY[2]

DEPARTMENT OF BIOLOGY,

GOVERNMENT SCIENCE COLLEGE,

GANDHINAGAR-382 016, GUJARAT, INDIA.

Corresponding author's e-mail: sk_8oo3@yahoo.com

ABSTRACT:

Qualitative floristic surveys were carried out during 2011-2013 in Sabarkantha district, Gujarat, India. Sabarkantha district is under cultivation of different ravi, jayad and kharif crops by a natural rain and a network of canal system. Weeds typically produce large numbers of seeds, assisting their spread. Seeds spread into natural environments, including waterways, via wind, people, vehicles, machinery, birds and other animals. Usually weeds grow faster than native plants and successfully compete for the available nutrients, water, space and sunlight. During the survey, 70 species of angiosperms belonging to 21 families and 49 genera were documented. Dominant families were Poaceae with 15 species followed by Asteraceae (13), Amaranthaceae & Euphorbiaceae (5), Solanaceae (4), Capparaceae, Commelinaceae & Scrophulariaceae (3), 6 families were represented by two species each, whereas Seven families were monospecific.

KEY WORDS: *Agricultural crops; Sabarkantha district, Gujarat, India.*

INTRODUCTION:

Weeds are unintentionally grow on cultivated soil and most widespread biological constrains to crop production. Weeds reducing the production capacity of agricultural lands. According to Parker and Fryer (1975) estimated that the world was loosing annually 11.5% of the total food production due to weeds. Due to weeds, hybrid crops require more percentage of water and fertilizer, which increases the invasiveness of weeds. For the control of the weeds, we have to study phenology, flowering and fruiting periods, general

dispersal of the weed and change the crop pattern etc. is of paramount importance. The present paper is an attempt in his direction to study the weed flora association with agricultural crops.

STUDY AREA:

The district Sabarkantha is situated in the north-eastern part of Gujarat State between 23.03°-24.30° N latitudes, and 72.43°-73.39° E longitudes. River Sabarmati flows North-South as a western boundary. It has a distinct climate characterized by hot & dry summer(April-June), Moist and hot Monsoon(July-September) and almost dry winter(November-February). Climate is subtropical with extremely hot summer and relatively moderate winter. The maximum temperature may reaches up to 46.5^{0}C.While minimum goes down up to 4^{0}C.

MATERIALS AND METHODS:

Floristic survey

An extensive floristic survey was conducted during 2011-2013. The plants specimens were collected at the different reproductive stages to prepare herbarium specimens and authenticate their correct identify. The collected specimens were identified taxonomically with the help of available monographs, taxonomic revisions and floras (Shah, 1978, Cooke, 1901-1908). Collected specimens were cross checked for correct identification at the Herbarium centre of Government Science College, Gandhinagar Gujarat, India.

RESULTS AND DISCUSSION:

Species diversity

During the survey, 70 species of angiosperms belonging to 21 families and 49 genera were documented. Dominant families were Poaceae with 15 species followed by Asteraceae (13), Amaranthaceae & Euphorbiaceae (5), Solanaceae (4), Capparaceae, Commelinaceae & Scrophulariaceae (3), 6 families such as Chenopodiaceae, Convolvulaceae, Malvaceae, Nyctaginacae, Papaveraceae, Portulacaceae, were represented by two species each, whereas Seven families such as Aristolochiaceae, Asphodelaceae, Cucurbitaceae, Cyperaceae, Sapindaceae, Tiliaceae & Zygophyllaceae were monospecific. Out of 70 species of angiosperms belonging to 21 families and 49 genera (Table-1) were found to be listed as invasive Weeds in agricultural crop fields.

ACKNOWLEDGEMENT:

ACKNOWLEDGMENT

Authors are grateful to Principal of Government Science College, Gandhinagar for providing all type of lab facility and also thankful all the farmer friends for the co-operation during the survey of the weed flora.

REFERENCES:

Bhatt R P and Sabnis S D, Contribution to the ethnobotany of Khedbrahma region of north Gujarat, *J. Econ. Tax. Bot.* 9 (1987): 139-145.

Cooke, T. 1901-1908. *The Flora of the Presidency of Bombay.* London (B.S.I. Reprint, Calcutta, Vol.I-III.

Ishnava Kalpesh, Rama Rao V, Parabia F M, Kothari I L amd Parabia M H, Ethnobotany of Little Rann of Kachchh, Gujarat, *Ethnobotany* 16 (2004): 40-43.

Parker, C. and J.D. Fryer 1975: Weed Control problems causing Major Reduction in World Food supplies. FAO Plant Protection Bull.**23**:83-95

Patel,S.K. 2003. A Contribution to the flora of Meghraj and Malpur Talukas of Sabarkantha District of North Gujarat, Ph.D thesis submitted to North Guj.Uni.Patan, Gujarat, India.

Shah, G. L. 1978. *Flora of Gujarat State*. Part **I** and **II**, Sardar Patel University, VallabhVidyanagar.

Table 1. List of Weeds with associated agricultural crops

Sr. No.	Scientific name	Family	Local name	FLS & FRS	Closely Associated Crops
1	*Abutilon indicum* (L.) Sw.	MALVACEAE	*Khapat*	Aug.-Feb.	Aeranda, Cotton.
2	*Abutilon pannosum* (G.Forst.) Schlecht.	MALVACEAE	*Khapat*	Aug.-Feb.	Aeranda, Cotton
3	*Acalypha ciliata* Forsk.	EUPHORBIACEAE	*Dadari*	Aug.-Dec.	All crops
4	*Acalypha indica* L.	EUPHORBIACEAE	*Dadari*	Aug.-Dec.	All crops
5	*Achyranthes aspera* L. var. *aspera.*	AMARANTHACEAE	*Anghedi*	Throught Year	Amla, Aeranda, Chiku, Tuberose, Tuver & Others
6	*Ageratum conyzoides* L.	ASTERACEAE	*Dholi Saddi*	Aug.-Apr.	Groundnut, Tuberose, Pomogranate, Chiku, Sugarcane
7	*Alternanthera sessillis* (L.) DC.	AMARANTHACEAE		June-Apr.	Tuberose, Soyabeen Pomogranate, Chiku
8	*Amaranthus viridis* L.	AMARANTHACEAE		Aug.-Dec.	Bajra, Tuberose, Chili, Brinjal. Tomato
9	*Antirrhinum orontium* L.	SCROPHULARIACEAE		Aug.-Feb.	Tuberose, Chili, Brinjal. Tomato
10	*Argemone mexicana* L.	PAPAVERACEAE	*Darudi*	Feb.-June	Bajra, Sugarcane, Tuberose, Chili, Brinjal. Tomato
11	*Argemone ochroleuca* Sweet.	PAPAVERACEAE	*Darudi*	Feb.-June	Tuberose, Chili, Brinjal. Tomato
12	*Aristida adscensionis* L.	POACEAE	*Unth-lampdo*	Sep.-Dec.	Bajra, Tuberose, Chili, Karela, Brinjal, Tomato
13	*Aristolochia bracteolata* Lam.	ARISTOLOCHIACEAE		Jul.-Nov.	Galka, Karela, Pandola
14	*Asphodelus tenuifolius* Cav.	ASPHODELACEAE	*Dungro*	Nov.-Mar.	Wheat
15	*Bidens bipinnata* L.	ASTERACEAE		Aug.-Oct.	All crops
16	*Boerhavia diffusa* L.	NYCTAGINACAE	*Punarnavel, Satodi*	Throught Year	Pomogranate, Jamfal, Galka, Karela, Pandola
17	*Boerhavia erecta* L.	NYCTAGINACAE	*Satodi*	Sep.-Dec.	Bajra, Tuberose, Chili, Karela, Brinjal, Tomato
18	*Brachiaria eruciformis* (Sm.) Griseb.	POACEAE		Throught Year	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal. Tomato
19	*Brachiaria ramosa* (L.) Stapf	POACEAE		Aug.-Oct.	Wheat, Karela, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal. Tomato
20	*Cardiospermum halicacabum* L.	SAPINDACEAE	*Kagdodiyu, Kagvelo*	Jul.-Dec.	Pomogranate, Jamfal, Galka, Karela, Pandola
21	*Celosia argentea* L.	AMARANTHACEAE	*Lambdi, Lampdi*	Sep.-Mar.	Cotton, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal. Tomato
22	*Chenopodium album* L.	CHENOPODIACEAE	*Chil ni bhaji*	Jan.-Mar.	Wheat, Juvar, Bajra, Soyabeen, Tuberose, Chili,

					Brinjal. Tomato
23	*Chenopodium murale* L.	CHENOPODIACEAE	*Bilaro*	Jan.-Mar.	Wheat, Juvar, Bajra, Soyabeen, Tuberose, Chili, Brinjal. Tomato
24	*Chloris barbata* Sw.	POACEAE	*Mindadiu*	Aug.-Jan.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
25	*Cleome gynandra* L.	CAPPARACEAE	*Ghandhatu*	Aug.-Feb.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato.
26	*Cleome simplicifolia* (Camb.) Hk. f. & Th.	CAPPARACEAE		Aug.-Feb.	Wheat, Juvar, Bajra, Soyabeen, Tuberose, Chili, Brinjal. Tomato
27	*Cleome viscosa* L.	CAPPARACEAE	*Pilitilvan*	Aug.-Jan.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato.
28	*Commelina benghalensis* L.	COMMELINACEAE	*Motu shisamuliyu*	June-Dec.	Tuberose, Bajra, Soyabean, Juvar, Pomogranate, Chili, Karela, Tomato, Chiku
29	*Commelina diffusa* Burm. f.	COMMELINACEAE	*Shisamuliyu*	July-Feb.	All crops
30	*Convolvulus arvensis* L.	CONVOLVULACEAE	*Khetrau phudardi*	July-Mar.	Wheat, Bajra, Karela, Tindola, Pomogranate, Chiku.
31	*Corchorus triocularis* L.	TILIACEAE	*Ubhi munderi*	Aug.-Feb.	Aeranda, Wheat, Juvar, Bajra, Soyabeen, Tuberose, Chili, Brinjal. Tomato
32	*Cyanotis axillaris* (L.) D. Don ex Sweet	COMMELINACEAE		June-Dec.	Tuberose, Bajra, Soyabean, Juvar, Chili, Karela, Tomato.
33	*Cyanthillium cinerarium* (L.) H. Rob.	ASTERACEAE	*Sahadevi*	Throught Year	Tuberose, Soyabean, Juvar, Pomogranate, Chiku.
34	*Cynodon dactylon* (L.) Pers.	POACEAE	*Darbh*	Throught Year	All crops
35	*Cyperus rotundus* L. subsp. *rotundus*	CYPERACEAE		June-Nov.	All crops
36	*Dactyloctenium aegyptium* (L.) P. Beauv.	POACEAE		Aug.-Jan.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato.
37	*Dinebra retroflexa* (Vahl) Panz.	POACEAE		Aug.-Feb.	Aeranda, Cotton, Wheat, Juvar, Bajra, Soyabeen, Tuberose, Chili, Brinjal. Tomato
38	*Echinochloa colona* (L.) Link	POACEAE	*Samo*	July-Feb.	All crops
39	*Eleusine indica* (L.) Gaertn.	POACEAE	*Adhan nagli*	July-Jan.	All crops
40	*Eragrostis cilianensis* (All.) Link ex Vignolo-Lutati	POACEAE		Oct.-Jan.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal

41	*Eragrostis ciliaris* (L.) R. Br. var. *ciliaris*	POACEAE		Oct.-Jan.	All crops
42	*Eragrostis japonica* (Thunb.) Trin.	POACEAE		Throught Year	Cotton, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
43	*Eragrostis tenella* (L.) P. Beauv.	POACEAE		Throught Year	All crops
44	*Eragrostis unioloides* (Retz.) Nees ex Steud.	POACEAE		July-Dec.	Cotton, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
45	*Euphorbia heterophylla* L.	EUPHORBIACEAE		Sep.-Mar.	All crops
46	*Euphorbia hirta* L.	EUPHORBIACEAE	*Dudheli*	Throught Year	All crops
47	*Gomphrena celosioides* Mart.	AMARANTHACEAE		June-Jan.	Aeranada, Sugarcane, Soyabean, Cotton
48	*Ipomoea obscura* (L.) Ker-Gawl.	CONVOLVULACEAE	*Vad fudardi*	Dec.-Apr.	Aeranada, Tuver, Sugarcane, Soyabean, Cotton
49	*Lagascea mollis* Cav.	ASTERACEAE		Throught Year	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato.
50	*Launaea capitata* (Spreng.) Dandy	ASTERACEAE		Oct.-Feb.	Juvar, Bajra, Tuberose, Chili, Brinjal, Karela, Tomato.
51	*Launaea procumbens* (Roxb.) Ramayya & Rajgopal	ASTERACEAE	*Moti bhonpatri*	Oct.-Feb.	Juvar, Bajra, Tuberose, Chili, Brinjal, Karela, Tomato.
52	*Mukia maderaspatana* (L.) M. Roem.	CUCURBITACEAE	*Chanak-Chibhdi*	Sep.-Dec.	Tuberose, Karela, Pandola, Pomogranate, Chiku.
53	*Oligochaeta ramosa* Wagenitz.	ASTERACEAE	*Bhonyadandi*	Throught Year	Aeranada, Tuver, Sugarcane, Soyabean, Cotton
54	*Parthenium hysterophorus* L.	ASTERACEAE	*Congress grass*	Throught Year	All crops
55	*Phyllanthus maderaspatensis* L.	EUPHORBIACEAE	*Kanochha*	June-Dec.	Cotton, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
56	*Physalis angulata* L.	SOLANACEAE	*Popti*	Oct.-Mar.	Wheat, Soyabean, Tuberose, Karela, Tomato, Brinjal
57	*Physalis pruinosa* L.	SOLANACEAE	*Popti*	Oct.-Mar.	Wheat, Soyabean, Tuberose, Karela, Tomato, Brinjal
58	*Physalis virginiana* Mill. var. *sonorue* (Torr.) Water f.	SOLANACEAE	*Popti*	Oct.-Mar.	Wheat, Soyabean, Tuberose, Tuver, Tomato, Brinjal

59	*Portulaca oleracea* L.	PORTULACACEAE	*Luni*	Sep.-Mar.	Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
60	*Portulaca quadrifida* L.	PORTULACACEAE	*Ziniluni*	Aug.-Dec.	All crops
61	*Setaria intermedia* (Roth) Roem & Schult.	POACEAE		Aug.-Jan.	All crops
62	*Solanum americanum* Mill.	SOLANACEAE	*Piludi*	June-Oct.	Wheae, Juvar, Bajra, Sugarcane, Tuberose, Chili, Brinjal, Karela, Tomato, Chiuku, Pomogranate, Jamphal
63	*Sonchus asper* (L) Hill.	ASTERACEAE		June-Oct.	Juvar, Wheat, Bajra, Soyabean, Tuberose, Chili, Brinjal, Karela, Tomato
64	*Sonchus oleraceus* L.	ASTERACEAE	*Dudhali Sonki*	Sep.-Feb.	Juvar, Wheat, Bajra, Soyabean, Tuberose, Chili, Brinjal, Karela, Tomato.
65	*Sonchus wightianus* DC.	ASTERACEAE		June-Oct.	Juvar, Wheat, Bajra, Soyabean, Tuberose, Chili, Brinjal, Karela, Tomato.
66	*Striga angustifolia* (D. Don) Saldhana	SCROPHULARIACEAE	*Dholo agio*	Sep.-Dec.	All crops
67	*Striga gesneroides (Willd.)* Vatke	SCROPHULARIACEAE	*Rato agio*	Sep.-Dec.	Aeranda, Juvar.
68	*Tribulus terrestris* L.	ZYGOPHYLLACEAE	*Bethu Gokhru*	Apr.-Nov.	Tuberose, Bajra, Soyabean, Juvar, Chili, Karela, Tomato.
69	*Tridax procumbens* L.	ASTERACEAE	*Kalariyu*	Throught Year	Groundnut, Tuberose, Pomogranate, Chiku, Sugarcane
70	*Xanthium strumarium* L.	ASTERACEAE	*Gadariyu*	Sep.-Dec.	Aeranda, Tuver, Sugarcane, Soyabean, Cotton