

Major Weed Flora of Wheat and Rice Fields of Goalpara District, Assam

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Abstract

A detailed study was done in wheat and rice fields of Goalpara district (Assam, India). It is important to note that farmers sometimes have to face dangerous problems for the dominance of some weed species. So it is equally important to study the weed flora of a region. The study revealed that in wheat fields 25 species and in rice fields 23 species were associated with these two cultivated crops. The dominant weeds of wheat fields were *Xanthium strumarium* (7.91), *Spilanthes paniculata* (5.82), and *Ricinus communis* (5.18). Whereas in rice fields the dominant weeds were *Marsilea quadrifolia* (4.81), *Salvinia cuculata* (4.98) and *Alternanthera philoxeroides* (4.81).

Key words : Weed, Dominant, Rice, Wheat, Flora.

Weeds are usually unwanted plants that grow along with cultivated plants or crops. They cause severe effects on cultivated crops by utilizing nutrients and water from the field. They also occupy space thus hindering the growth of the crop plants. Thus ultimately the weeds reduce the yield of crop fields. (Kanjilal et al. 1932—1940, Jain et al. 1996, Champion et al. 1998, Anmed 1993).

Many kinds of weeds of course having certain limited uses. However, this is rather an anomalous situation for it or plant has a reputed use by definition it cannot be placed as a weed plant. In the char areas of the district of Goalpara growing wheat and rice crop is a common practice among the farmers. In the study of a community was done to obtain a general picture of the crops, their weed vegetation and to record a comparison and classification of different weed flora and their degree of predominance in wheat and in rice fields of the district.

Methods

Survey of the weed plant was done during March to June 2006 at some-wheat fields in different areas of the district of Goalpara (Assam). But for rice fields survey was carried out during July to November 2006. The weed survey was made by Census quadrat method using 50×50 cm quadrat and the size of the quadrat was decided by species area curve method (Kondap and Upadhyay 1985). The quadrates were

placed randomly in various wheat crop fields of the study area. To get the dominance or degree of occurrence of the wheat plants some qualitative parameters were estimated :

$$\text{Frequency (\%)} = \frac{\text{Number of quadrates of occurrence of the species}}{\text{Total number of quadrates studied}} \times 100$$

$$\text{Relative density} = \frac{\text{Number of individuals of the species}}{\text{Total number of individuals of all species}} \times 100$$

$$\text{Relative frequency} = \frac{\text{Number of occurrence of species}}{\text{Total number of occurrence of all the species}} \times 100$$

$$\text{Relative abundance (\%)} = \frac{\text{Absolute abundance for a species}}{\text{Total of the absolute abundance for all species}} \times 100$$

$$\text{Here absolute abundance} = \frac{\text{Number of individual species}}{\text{Number of quadrates of occurrence}}$$

Study Area

Goalpara district with an area of 1,958 sq km, lies between 25°33' – 26°12' N latitude and 90°7' E-91°5' E longitude and it is located in the extreme south west-

Table 1. Quantitative parameters of dominant weeds of wheat crop.

Name of the species	No. of Quadrates	No. of species	Density	Frequency	Relative density	Relative frequency	Absolute abundance	Relative abundance
1 <i>Cyperus brevifolius</i>	82	120	1.2	82	6.11	6.96	1.46	3.2
2 <i>Cynodon dactylon</i>	93	145	1.45	93	7.39	7.89	1.55	3.4
3 <i>Spilanthus paniculata</i>	20	53	0.53	20	2.7	1.69	2.65	5.82
4 <i>Eragrostis uniloides</i>	30	65	0.65	30	3.31	2.54	2.16	4.74
5 <i>Phylla nodiflora</i>	25	45	0.45	25	2.29	2.12	1.8	3.95
6 <i>Lathyrus sativus</i>	20	40	0.4	20	2.03	1.69	2	4.39
7 <i>Oldanlandia corymbosa</i>	45	70	0.7	45	3.56	3.82	1.55	3.4
8 <i>Physalis minima</i>	40	82	0.82	40	4.18	3.39	2.05	4.5
9 <i>Oplismenus burwanii</i>	70	98	0.98	70	4.99	5.94	1.4	3.07
10 <i>Aster</i> sp.	15	32	0.32	15	1.63	1.27	2.13	4.68
11 <i>Xanthium strumerium</i>	20	72	0.72	20	3.67	1.69	3.6	7.91
12 <i>Elephantopus scaber</i>	35	50	0.5	35	2.54	2.97	1.42	3.12
13 <i>Centella asiatica</i>	30	60	0.6	30	3.05	2.54	2	4.39
14 <i>Solanum nigrum</i>	20	42	0.42	20	2.14	1.69	2.1	4.61
15 <i>Euphorbia hitra</i>	52	82	0.82	52	4.18	4.41	1.57	3.45
16 <i>Ricinus communis</i>	25	59	0.59	25	3	2.12	2.36	5.18
17 <i>Emilia sonchifolia</i>	55	82	0.82	55	4.18	4.66	1.49	3.27
18 <i>Echinochloa colona</i>	95	162	1.62	95	8.26	8.06	1.7	3.73
19 <i>Alocasia</i> sp.	70	105	1.05	70	5.35	5.94	1.5	3.29
20 <i>Mazus pumilus</i>	65	82	0.82	65	4.18	5.51	1.26	2.76
21 <i>Hygrophilla phlomoides</i>	75	105	1.05	75	5.35	6.36	1.4	3.07
22 <i>Chenopodium album</i>	63	95	0.95	63	4.84	5.34	1.5	3.29
23 <i>Eclipta alba</i>	50	90	0.9	50	4.58	4.24	1.8	3.95
24 <i>Phyllanthus niruri</i>	55	80	0.8	55	4.07	4.66	1.45	3.18
25 <i>Polygonum gratissimum</i>	28	45	0.45	28	2.29	2.37	1.6	3.51

ern part of Assam. Topographically the district exhibits a remarkable diversity as the Garo Hills of Meghalaya form its southern boundary and the greater part of the district constitutes the Brahmaputra plains, which is flowing in the northern side, in the eastern side it is the district of Kamrup and in the

west it is Dhubri district along with which Bangladesh border is attached.

Results and Discussion

Weed Flora in Wheat Fields

On the basis of relative abundance the most domi-

Table 2. Quantitative parameters of dominant weeds of rice crop.

Name of the species	No. of quadrates	No. of species	Density	Frequency	Relative density	Relative frequency	Absolute abundance	Relative abundance
1 <i>Cyperus rotundus</i>	72	120	1.2	72	6.99	6.44	1.66	4.7
2 <i>Echinochloa colona</i>	65	92	0.92	65	5.36	5.81	1.41	3.99
3 <i>E. crusgalii</i>	60	90	0.9	60	5.24	5.36	1.5	4.24
4 <i>Eclipta alba</i>	70	115	1.15	70	6.7	6.26	1.64	4.64
5 <i>Ludwigia perennis</i>	55	72	0.72	55	4.19	4.91	1.3	3.68
6 <i>L. adscendens</i>	53	79	0.79	53	4.6	4.74	1.49	4.22
7 <i>Marsilia quadrifolia</i>	97	165	1.65	97	9.62	8.67	1.7	4.81
8 <i>Monocharia hastate</i>	45	50	0.5	45	2.91	4.02	1.11	3.14
9 <i>Eichhornia crassipes</i>	35	40	0.4	35	2.33	3.13	1.14	3.22
10 <i>Salvinia cuculata</i>	85	150	1.5	85	8.74	7.6	1.76	4.98

Table 2. Continued.

	Name of the species	No. of quadrates	No. of species	Density	Frequency	Relative density	Relative frequency	Absolute abundance	Relative abundance
11	<i>Alternanthera philoxeroides</i>	82	140	1.4	82	8.16	7.33	1.7	4.81
12	<i>Sagittaria sagittifolia</i>	30	55	0.55	30	3.2	2.68	1.83	5.18
13	<i>Ipomea aquatica</i>	20	45	0.45	20	2.62	1.78	2.25	6.37
14	<i>Hydrolea zeylenica</i>	25	30	0.3	25	1.74	2.23	1.2	3.39
15	<i>Rotala rotundifolia</i>	15	40	0.4	15	2.33	1.34	2.6	7.36
16	<i>Cynodon dactylon</i>	28	30	0.3	28	1.74	2.5	1.07	3.03
17	<i>Enhydra fluctuens</i>	68	110	1.1	68	6.41	6.08	1.61	4.56
18	<i>Veronica anagalis aquatica</i>	39	60	0.6	39	3.49	3.48	1.53	4.33
19	<i>Amania baccifera</i>	21	35	0.35	21	2.04	1.87	1.66	4.7
20	<i>Gagrea maderspetana</i>	52	65	0.65	52	3.79	4.65	1.25	3.54
21	<i>Mazus pumilus</i>	40	55	0.55	40	3.2	3.57	1.37	3.88
22	<i>Lindernia anagalii</i>	31	35	0.35	31	2.04	2.77	1.12	3.17
23	<i>L. crustacea</i>	30	42	0.42	30	2.44	2.68	1.4	3.96

nant weed species of crop fields were *Xanthium strumarium* (7.91) of the family Asteraceae which is followed by *Spilanthus paniculata* (5.82), *Ricinus communis* (5.18), *Solanum nigrum* (4.61), *Centella asiatica* (4.39) and *Physalis minima* (4.5). The frequency percentage of these weed species ranged from 95 to 15% (Table 1). All the dominant weed had no resemblance with the wheat crop so it was not difficult for the farmers in hand weeding at primary stage.

It was found that some of the weeds are of medicinal value. The weeds in wheat fields having medicinal values are *Cynodon dactylon* (Poaceae), *Physalis minima* (Solanaceae), *Xanthium strumarium* (Asteraceae), *Solanum nigrum* (Solanaceae), *Ricinus communis* (Euphorbiaceae), *Eclipta alba* (Asteraceae) and *Phyllanthus niruri* (Euphorbiaceae). Leaves with tender shoots of the weeds like *Chenopodium album* (Chenopodiaceae) and *Solanum nigrum* (Solanaceae) are often used as green vegetable. There are five species of grasses found in the wheat crop fields.

Weed Flora of Rice Fields

Among various species of weeds identified dur-

ing the survey *Marsilea quadrifolia* dominated the population with 4.81 (Table 2). It is followed by *Salvinia cuculata* (4.98), *Alternanthera philoxeroides* (4.81), *Cyperus rotundus* (4.7), *Eclipta alba* (4.64), and *Enhydra fluctuens* (4.56). Other weeds did not pose any threats, which is evident from their lesser percentage of occurrence.

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