

An Analysis of Crop Combination of Murshidabad District in West Bengal, India

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Abstract

Murshidabad district of West Bengal is mostly based on agriculture. In this paper an attempts has been made to delineate the crop combination regions of agronomic year 2015-2016 with the help of J. C. Weaver's (1954) minimum deviation method. Twelve crops viz. rice, wheat, maize, jute, masur, maskalai, khesari, gram, mustard, til, potato and sugarcane are found to be cultivated in twenty six CD blocks of Murshidabad distreict for the year 2015-2016. Rice, jute and wheat are dominant crops in combination. Monoculture are not found in the study area. Three CD blocks with Ten Crop Combination, five CD blocks with Eleven Crop Combination and rest eighteen CD blocks with Twelve Crop Combination are observed. The study on the crop combination of this region can be utilized by agriculturalist, agro- climatologist and even the decision makers at any level to scientifically suggest better developmental and land use planning in this area.

Keywords: Crop Combination, Minimum Deviation Method, Hypothetical Value and Crop Combination Region

I. INTRODUCTION

The concept of crops combination is a significant aspect in Agricultural Geography to study the existing relationship of crops in association with each other crops and land utilization. Crops are generally grown in combinations (Weaver, 1954). In this paper an attempt has been made to analyse the crop combination of different CD blocks in the district of Murshidabad of West Bengal. Farmers grow crops in varied physical and cultural conditions. Any study of crops on regional scale must take into consideration the combinational analysis and the relative position of crops. Combination studies are useful in many ways. Firstly they provide an adequate understanding of individual crop. Secondly, combination is in itself integrative reality that demand definition and distribution analysis and last crop combination regions are essential for the construction of still more complex structure of vivid agricultural region. Crop combination is a technique used to establish the boundaries of agricultural region based on statistical comparison of acreages. Murshidabad, where most of the population is somehow involved in agriculture, the present technique is beneficial to the planners as it entertains propulsive economic agricultural planning over uneconomical cropping system. The concept of crop combination includes growing different crops in a season from the same field. It provides area significance and strength of individual crop. The method of crop combination suggests a suitable measure for planning and improvement in the underdeveloped regions and it is helpful to introduce innovations in agriculture.

II. STUDY AREA

Murshidabad district is the northern most district of the Presidency Division of West Bengal in India, situated at a height of 19m above mean sea level lying between 23°43'30" and 24°50'20" North latitudes and 87°49'17" and 88°46'00" East longitudes. Ganga and Padma River (a distributary of Ganga) flow through the eastern boundary, separating the district from the districts of Malda and Rajshahi (Bangladesh) respectively. Burdwan and Nadia are to the southern side where as Birbhum and the Pakur (Jharkhand) are in the western side of the District.

The district lies in the moribund deltaic part of Bengal Delta Plain. Bhagirathi is the main river of the study area and other rivers are Jalangi, Bhairab, Sitalmari, Babla and Mayurakhsi etc. It is divided into two zones viz, 'Rarh' & 'Bagri' which are situated in the western and eastern side of the river Bhagirathi respectively. The district receives a mean annual rainfall varying from 989 mm. to 1,722 mm and average temperature ranges between 21^o C to 32^o C. The depth of the aquifer is 26 to 70 metres. The rich fertile clayey-loam, loam, loamy-sandy etc. soils provide a vivid scope to explore the cultivation potentialities attracting folk to stick to agriculture the healthiest form of primary activity. Based on agricultural topology, its generalization, diversification, crop rotation, cropping pattern, crop combination is totally revolving around the only land available. 770 hectares of land is under forest, 570 hectares under fallow land and 395,960 hectares are under net-cropped area out of total geographical area (532400 hectares) in the district in 2010-2011. Rice (specially Aman rice) is produced in highest quantity in this area. Jute is another very important product of the district. Vegetables and fruits are also cultivated in this area. Animal husbandry is found there. There are many rivers, bils and tanks spread over the district. So, a rich variety of fishes are found all over the district. The economy of Murshidabad district is primarily based on agriculture and agriculture related work. Beedi manufacturing, Silk, Jute, Brass and Bell metal industries are

the important industries of the district. . Cultivators and Agricultural Labourers are 14.7% and 32.5% of the Total Workers Respectively. 18% workers of total worker are engaged in household industry.

As per 2011 census it has an area of 5324.00 sq. km with a total population of 7103807 persons (male-3627564 and female-3476243) and population density is 1334 persons/ Km². There are 27 Police Stations (P.S.), 7 statutory towns, 65 census towns and 2166 villages in the district. It has 5 Sub-divisions, viz. Jangipur, Lalbag, Damkol, Behrampore & Kandi. There are 26 Community Development (C.D.) Blocks in the district. Jangipur Sub-division has got 7 C.D. Blocks namely, Farakka, Samderganj, Suti-I, Suti-II, Raghunathganj- I, Raghunathganj- II and Sagardighi. Lalbag sub-division has got 5 C.D. Blocks namely Lalgola, Bhagawangola- I, Bhagawangola- II, Murshidabad-Jiaganj and Nabagram. Domkol Sub-division has got 4 C.D. Blocks namely Raninagar- I, Raninagar- II, Jalangi and Domkol. Behrampore Sadar Sub-division has got 5 C.D. Blocks namely, Behrampore, Hariharpara Naoda Beldanga-I, and Beldanga –II. Kandi Subdivision has got 5 C.D. Blocks namely Khargram, Kandi, Bharatpur- I, Bharatpur- II and Barwan.

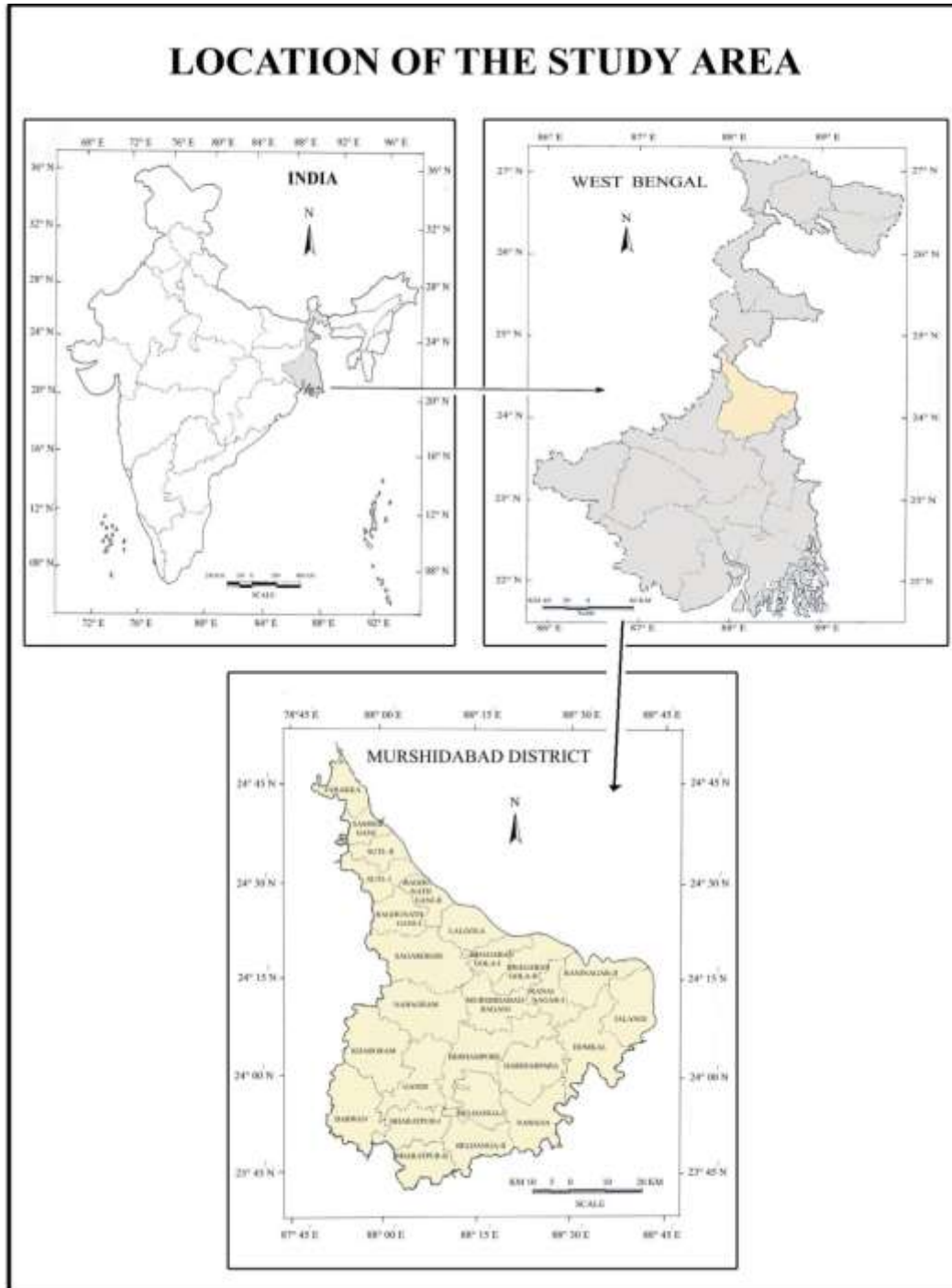


Fig. 1:

III. OBJECTIVE OF THE STUDY

- To study the crop combination of the study area.
- To find out J. C. Weaver's "Minimum Deviation Method" used to identify the crop combination regions at block level in Murshidabad district.
- To study the regional variance in the crop combination of study area.

IV. DATA BASE AND METHODOLOGY

The present study is based on primary and secondary data sources. Primary data is collected by observation and interview method through questionnaires in study area. The secondary data is obtained from District Census Handbook - 2011, District Statistical Handbook – 2016, Annual Action Plan of Agriculture Department of Murshidabad District etc. All the data have been arranged systemically by statistical techniques. The crop data has been computed with the help of J. C. Weaver's "Minimum Deviation Method" of crop combination. This is expressed as:

$$SD = \frac{\sqrt{\sum d^2}}{n}$$

Where, SD = Standard Deviation,

d = Difference between actual crop percentage in the study region and the percentage in the theoretical distribution.

n = The number of crops in the given combination.

The result of the crop combination is presented by the choropleth method.

V. RESULT AND DISCUSSION

The study of crop combination region constitutes an important aspect of agricultural geography as it provides a good basic for agricultural regionalization for the rural planning. Owing to high density of population and ever growing population, it is necessary to produce more crops in the same field. So diversification and suitable combination of crops with short duration is necessary for an increase in the production. The study of crop combination is also helpful for the study of the comprehensive area development planning particularly for the rural areas.

Prof. John C. Weaver presented a valuable statistical method of combination analysis in 1954 in his study of crop combination regions in the Middle West, U.S.A. He takes into consideration the percentage of crop area to the total cropped area and has calculated deviation of real percentage for all the possible combination in the areal units against a theoretical standard. The theoretical standard is 100% for the gross cropped area for monoculture, 50% for two crop combination, 33.33 % for three crop combination, 25 % for four crop combination, 20 % for five crop combination and so on (Table No. 1).

Table – 1
Crop Combination and Hypothetical Value of Murshidab District (J.C. Weaver Method)

SL No.	Crop Combination	Hypothetical Value (%)
1	Single crop (one Crop)	(100 / 1) = 100
2	Double Crop(Two Crop)	(100 / 2) = 50
3	Three Crop	(100 / 3) = 33.33
4	Four Crop	(100 / 4) = 25
5	Fifth Crop	(100 / 5) = 20
6	Sixth Crop	(100 / 6) = 16.67
7	Seven Crop	(100 / 7) = 14.29
8	Eight Crop	(100 / 8) = 12.5
9	Nine Crop	(100 / 9) = 11.11
10	Ten Crop	(100 / 10) = 10
11	Eleven Crop	(100 / 11) = 9.09
12	Twelve Crop	(100 / 12) = 8.33

For the determination of the minimum deviation for each block in the District the standard deviation method as follows:

$$Cc = \frac{\sum(d)^2}{n}$$

Where,

Cc = Crop combination.

d = the difference between the actual crop percentage in a block and the appropriate percentage in the theoretical standard (Hypothetical Value-%).

n = the number of crops in a given combination.

Table – 2
Actual Crop Area (in hectare) and Percentage of Crop Area in the Different Blocks of Murshidabad District for the Year 2015 – 2016

Sl.No	Name of Block	Rice		Wheat		Maize		Jute		Masur		Maskalai		Khesari	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1	Behrampore	21509	43.54	7935	16.06	64	0.13	5274	10.68	2273	4.60	1069	2.16	1578	3.19
2	Beldanga-I	12749	38.17	3928	11.76	4	0.01	7725	23.13	1985	5.94	572	1.71	1618	4.84
3	Beldanga-II	16523	51.09	3810	11.78	1	0.00	665	2.06	729	2.25	146	0.45	2179	6.74
4	Nowda	8039	22.10	4584	12.60	23	0.06	16776	46.13	1597	4.39	629	1.73	385	1.06
5	Hariharpara	18443	31.39	12053	20.52	9	0.02	15276	26.00	2132	3.63	730	1.24	260	0.44
6	Kandi	23960	79.47	1294	4.29	4	0.01	497	1.65	694	2.30	17	0.06	12	0.04
7	Khargram	43300	82.48	4212	8.02	21	0.04	10	0.02	4	0.01	12	0.02	5	0.01
8	Burwan	33793	77.29	1021	2.34	22	0.05	0	0.00	172	0.39	1	0.00	1329	3.04
9	Bharatpur-I	22933	64.25	2575	7.21	74	0.21	90	0.25	136	0.38	30	0.08	1387	3.89
10	Bharatpur-II	22316	77.42	1276	4.43	3	0.01	51	0.18	501	1.74	15	0.05	0	0.00
11	Farakka	1173	20.40	722	12.56	31	0.54	492	8.56	754	13.12	138	2.40	1496	26.02
12	Samsanganj	393	10.45	592	15.74	2	0.05	1441	38.31	207	5.50	0	0.00	386	10.26
13	Suti-I	6404	31.54	2332	11.48	1	0.00	5788	28.50	1998	9.84	283	1.39	1518	7.48
14	Suti-II	519	4.22	1502	12.21	48	0.39	4015	32.64	1610	13.09	218	1.77	2067	16.80
15	Raghnathganj-I	13649	60.34	2095	9.26	0	0.00	96	0.42	341	1.51	236	1.04	2013	8.90
16	Raghnathganj-II	823	12.72	2184	33.75	121	1.87	1761	27.21	162	2.50	169	2.61	77	1.19
17	Sagardighi	38345	71.04	6662	12.34	1	0.00	606	1.12	1623	3.01	12	0.02	1731	3.21
18	Lalgola	3024	9.95	3165	10.41	306	1.01	18220	59.92	117	0.38	114	0.37	140	0.46
19	Bhagwangola-I	3091	14.47	4362	20.42	46	0.22	7688	35.99	637	2.98	185	0.87	236	1.10
20	Bhagwangola-II	3242	12.76	2670	10.51	216	0.85	14391	56.66	216	0.85	220	0.87	1689	6.65
21	Murshidabad-Jiaganj	10734	24.94	4977	11.56	22	0.05	17536	40.74	1156	2.69	468	1.09	127	0.30
22	Nabagram	40806	71.05	3377	5.88	0	0.00	4014	6.99	305	0.53	1	0.00	0	0.00
23	Domkal	15206	27.24	13180	23.61	52	0.09	11517	20.63	3079	5.52	1643	2.94	552	0.99
24	Jalangi	9282	23.69	14026	35.80	122	0.31	5475	13.98	725	1.85	6579	16.79	1288	3.29
25	Raninagar-I	5447	18.98	5589	19.48	64	0.22	8933	31.13	351	1.22	419	1.46	195	0.68
26	Raninagar-II	7292	30.93	7379	31.30	0	0.00	843	3.58	1318	5.59	1307	5.54	1736	7.36
															(Contd.)

Table – 2
(Concl.)

Sl.No.	Name of Block	Gram		Mustard		Til		Potato		Sugarcane		TOTAL AREA	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
(1)	(2)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
1	Behrampore	1014	2.05	6943	14.05	1224	2.48	481	0.97	37	0.07	49401	100
2	Beldanga-I	731	2.19	3699	11.07	68	0.20	210	0.63	115	0.34	33404	100
3	Beldanga-II	722	2.23	6677	20.65	153	0.47	175	0.54	560	1.73	32340	100
4	Nowda	317	0.87	3020	8.30	383	1.05	606	1.67	10	0.03	36369	100
5	Hariharpara	475	0.81	5334	9.08	3551	6.04	471	0.80	16	0.03	58750	100
6	Kandi	117	0.39	2608	8.65	390	1.29	474	1.57	83	0.28	30150	100
7	Khargram	3	0.01	3929	7.48	633	1.21	322	0.61	49	0.09	52500	100
8	Burwan	245	0.56	1961	4.49	1846	4.22	3228	7.38	102	0.23	43720	100
9	Bharatpur-I	189	0.53	3652	10.23	4287	12.01	207	0.58	136	0.38	35696	100
10	Bharatpur-II	644	2.23	2862	9.93	441	1.53	321	1.11	394	1.37	28824	100
11	Farakka	37	0.64	758	13.18	14	0.24	130	2.26	4	0.07	5749	100
12	Samsanganj	37	0.98	543	14.44	0	0.00	12	0.32	148	3.94	3761	100
13	Suti-I	34	0.17	1868	9.20	35	0.17	30	0.15	16	0.08	20307	100
14	Suti-II	166	1.35	2057	16.72	47	0.38	53	0.43	0	0.00	12302	100
15	Raghnathganj-I	104	0.46	3695	16.33	254	1.12	137	0.61	1	0.00	22621	100
16	Raghnathganj-II	69	1.07	821	12.69	80	1.24	63	0.97	141	2.18	6471	100
17	Sagardighi	63	0.12	4423	8.19	352	0.65	141	0.26	16	0.03	53975	100
18	Lalgola	120	0.39	3700	12.17	1414	4.65	84	0.28	1	0.00	30405	100
19	Bhagwangola-I	392	1.83	4252	19.90	265	1.24	210	0.98	0	0.00	21364	100
20	Bhagwangola-II	157	0.62	1911	7.52	310	1.22	228	0.90	151	0.59	25401	100
21	Murshidabad-Jiaganj	613	1.42	6263	14.55	980	2.28	149	0.35	20	0.05	43045	100
22	Nabagram	1	0.00	8320	14.49	257	0.45	312	0.54	37	0.06	57430	100
23	Domkal	283	0.51	7521	13.47	1623	2.91	1102	1.97	64	0.11	55822	100
24	Jalangi	169	0.43	452	1.15	400	1.02	408	1.04	251	0.64	39177	100
25	Raninagar-I	390	1.36	5440	18.96	1384	4.82	438	1.53	44	0.15	28694	100
26	Raninagar-II	79	0.34	2497	10.59	649	2.75	473	2.01	0	0.00	23573	100

Sources: 1) B.A.E & S., Govt. of W.B. 2) Directorate of Agri., Govt. of W. B.

Table – 3

Block wise Variance Values with the help of J. C. Weaver's "Minimum Deviation Method" of crop combination.

Sl. No.	Name of Block	Mo no	2	3	4	5	6	7	8	9	10	11	12	Crop Combination Index
		Cul ture	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	Crop Comb inatio n	
1	Behrampore	318 7.7 8	596.7 5	257.9 8	187.1 5	185.8 1	182.0 6	175.4 7	167.2 7	158.5 2	151.6 6	145.8 9	139.9 4	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
2	Beldanga-I	382 3.4 3	431.1 3	197.6 0	136.5 3	137.0 0	135.6 9	138.6 1	137.3 2	135.6 2	132.3 7	128.2 3	123.8 4	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
3	Beldanga-II	239 2.0 4	431.4 2	313.5 7	301.9 9	305.0 9	289.9 1	271.1 4	253.1 0	238.6 5	224.7 7	211.8 0	200.4 6	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
4	Nowda	290 2.2 8	396.5 9	239.7 8	221.7 9	224.4 4	226.2 9	218.3 5	208.8 3	197.9 6	187.4 0	178.5 1	169.9 0	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
5	Hariharpara	470 7.0 1	461.0 8	73.89	78.86	96.02	109.8 7	121.0 6	124.8 7	124.1 2	121.8 5	118.9 8	115.3 6	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
6	Kandi	421 .51	1289. 13	1193. 72	1044. 57	912.4 3	803.5 5	716.3 3	647.5 7	590.2 6	542.2 1	501.1 1	465.6 4	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
7	Khargram	307 .08	1408. 39	1241. 28	1116. 18	986.4 9	876.8 9	785.4 0	709.4 5	645.9 9	592.4 8	546.8 7	507.6 0	R,W,M,J,M2, Mk,K,G,Mu,T, P,S.
8	Burwan	515 .56	1280. 57	1146. 03	974.4 0	843.8 2	742.7 0	667.5 3	604.8 9	552.4 6	508.2 1	470.2 7	0.00	R,W,J,M2,Mk, K,G,Mu,T,P,S.

9	Bharatpur-I	127 8.4 0	823.0 9	647.9 6	560.8 6	508.0 2	473.0 6	436.1 2	402.1 7	371.7 1	345.0 3	321.5 4	300.9 3	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
10	Bharatpur-II	509 .78	1178. 81	1109. 02	979.1 7	858.0 6	757.7 8	676.3 7	610.2 2	557.3 4	512.6 0	474.2 5	0.00	R, W, M, J, M2, Mk, G, Mu, T, P, S.
11	Farakka	547 2.7 6	725.4 5	208.7 8	75.75	37.13	34.81	50.69	58.57	65.49	68.81	70.37	70.71	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
12	Samsernaj	380 5.1 3	655.1 3	230.3 8	146.5 7	114.1 0	113.1 2	113.5 3	118.1 0	119.5 1	118.5 6	0.00	0.00	R, W, M, J, M2, K, G, Mu, P, S.
13	Suti-I	468 7.3 3	401.5 3	167.9 3	116.8 8	99.56	95.82	109.4 0	117.2 5	119.1 2	117.9 8	115.3 7	112.0 6	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
14	Suti-II	453 7.7 8	701.7 9	183.1 7	84.00	57.83	73.79	87.53	93.78	97.38	97.82	96.51	0.00	R, W, M, J, M2, Mk, K, G, Mu, T, P.
15	Raghunathganj-I	157 3.0 9	620.1 2	532.5 2	457.7 0	444.2 2	415.6 5	384.4 5	356.2 0	330.6 7	307.7 9	288.0 6	0.00	R, W, J, M2, Mk, K, G, Mu, T, P, S.
16	Raghunathganj-II	438 8.9 9	391.6 3	154.1 4	95.98	129.9 9	138.7 9	138.9 7	135.6 7	131.7 7	126.7 5	121.4 9	116.2 9	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
17	Sagaridighi	838 .56	930.4 2	831.4 9	759.3 6	674.8 1	609.4 2	553.0 4	505.2 3	464.1 8	428.8 1	398.0 5	371.1 9	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
18	Lalgola	160 6.0 6	764.8 4	560.1 3	455.9 6	416.7 9	394.2 4	368.7 9	343.1 6	319.2 1	297.5 2	278.2 4	261.3 6	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
19	Bhagwan-gola-I	409 7.8 2	535.7 6	118.0 3	69.65	115.1 9	134.9 8	141.8 7	141.7 4	138.4 7	133.8 3	129.5 4	0.00	R, W, M, J, M2, Mk, K, G, Mu, T, P.
20	Bhagwan-gola-II	187 8.7 7	715.4 3	495.9 2	416.7 9	363.9 8	345.8 0	323.6 8	301.2 4	280.2 8	261.2 8	244.6 0	229.6 6	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
21	Murshidabad-Jiaganj	351 1.8 9	356.9 7	159.3 4	134.3 7	171.0 3	180.1 6	180.7 0	176.3 7	171.1 3	164.4 6	157.6 8	150.7 8	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
22	Nabagram	837 .90	852.2 0	823.9 8	730.3 5	676.8 1	615.5 0	559.4 4	511.6 0	470.1 8	434.2 7	0.00	0.00	R, W, J, M2, Mk, G, Mu, T, P, S.
23	Domkal	529 3.9 9	607.2 0	97.60	39.72	63.65	83.11	90.11	93.84	95.99	96.35	95.63	93.84	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
24	Jalangi	412 1.4 3	446.8 4	124.1 5	76.82	117.8 4	136.8 9	143.7 0	143.3 9	139.7 5	135.3 4	130.4 8	125.4 5	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
25	Raninagar-I	474 2.8 1	643.8 0	134.1 8	35.20	71.33	99.55	110.2 2	113.1 2	112.4 2	110.7 4	108.5 1	105.5 5	R, W, M, J, M2, Mk, K, G, Mu, T, P, S.
26	Raninagar-II	471 9.3 1	356.5 6	175.6 1	148.3 8	140.6 1	131.2 7	127.8 6	124.2 6	120.6 6	118.9 7	0.00	0.00	R, W, J, M2, Mk, K, G, Mu, T, P.

Note: R= Rice, W= White, M=Maize, J=Jute, M2=Masur, Mk=Maskalai, K=Khesari, G=Gram, Mu=Mustard, T=Til, P=Potato and S=Sugarcane.

Source: Computed by author with the help of J. C. Weaver's "Minimum Deviation Method" of crop combination.

Table - 4

Crop Combination Regios of Murshidabad District in 2015-2016

SL No.	No. of Crops	No. of Blocks	Name of Blocks
1	Monoculture		
2	2 Crop Combination		
3	3 Crop Combination		
4	4 Crop Combination		
5	5 Crop Combination		
6	6 Crop Combination		

7	7 Crop Combination		
8	8 Crop Combination		
9	9 Crop Combination		
10	10 Crop Combination	3	Samsorganj, Nabagram & Raninagar-II
11	11 Crop Combination	5	Burwan, Bharatpur-II, Suti-II, Raghunathganj-I & Bhagwangola-I
12	12 Crop Combination	18	Berhampore, Beldanga-I, Beldanga-II, Nowda, Hariharpara, Kandi, Khargram, Bharatpur-I, Farakka, Suti-I, Raghunathganj-II, Sagardighi, Lalgola, Bhagwangola-II, Msd-Jiaganj, Domkal, Jalangi & Raninagar-I.

Source: The result derived from the calculation table no.3

VI. COMPUTING CROP COMBINATION REGIONS IN MURSHIDABAD DISTRICT

The study of crop combination regions is significant aspect of agricultural geography as it provides a good basis agricultural regionalization. The delineation of the regions of agricultural homogeneity is always based upon the spatial distribution of crops. Crops are not grown in isolation but they generally have grown in combinations. In the present paper an attempt has been made to analyze and delineate crop combination regions. Weaver's minimum deviation method is worked out to bring out the various crop combination regions in Murshidabad district.

Monoculture or one crop, Two crop, Three crop, Four crop, Five crop, Six crop, Seven crop, Eight crop and Nine crop combination are not found in Murshidabad District. Ten crop, Eleven Crop and Twelve crop combination have identified in the study area in 2015-2016.

A. Ten Crop Combinations:

Three blocks have ten crop combination among twenty six blocks of the district for the year 2015-2016 (Table No.4). Ten crops mainly rice, wheat, jute, masur, khesari, gram, mustard, potato, sugarcane etc (Table No.3) are grown just one time in a year. It is grown on 84764 hectares or about 10% area of total area.

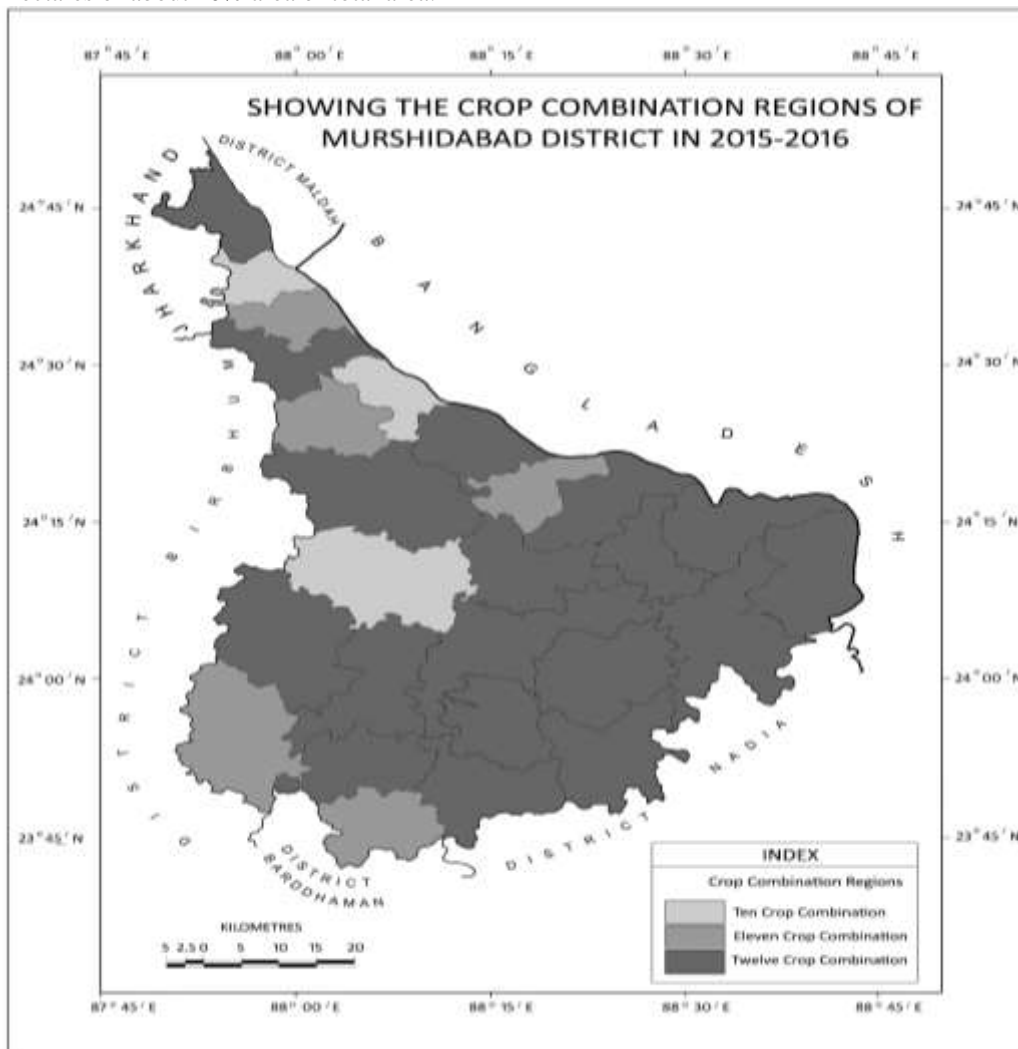


Fig. 2:

B. Eleven Crop Combinations:

The eleven crop combinations are found in five blocks namely Burwan, Bharatpur-II, Suti-II, Raghunathganj-I & Bhagwangola-I blocks (Table No. 4). Under this block area's all Gram Panchayat are grown eleven crops just one time in the year, Crops mainly rice, mustard, jute, wheat, potato, musur, maskalai, gram, sugarcane etc. (Table No. 3). It is grown on 128831 hectares or about 15% area of total area.

C. Twelve Crop Combination:

The twelve crop combination is observed in 18 blocks of the study area (Table No. 4). Most of the blocks are experienced by twelve crop combinations. 637656 hectares or 75% land of the study area have combination of rice, wheat, maize, jute, masur, maskalai, khesari, gram, mustard, til, potato and sugarcane.

The rice is the dominant crop, the largest coverage of rice stands as first, followed by jute, mustard, potato, sugarcane etc. Seven blocks that is Samserganj, Suti-II, Lalgola, Bhagwangola-I, Bhagwangola-II, Murshidabad-Jiaganj, Raninagar-I have dominance of jute followed by rice, wheat, khesari, mustard etc. Three blocks, namely Raghunathganj-II, Jalajgi and Raninagar-II have dominance of wheat and followed by rice, jute, mustard etc. The favourable environmental condition has been found to be suitable for this predominant crop. The plain topography, alluvial types of soil, irrigation facilities are also favourable for the cultivation of rice, jute, wheat, mustard, potato, sugarcane etc. in this region.

VII. CONCLUSION

The study area is one of the agro-based districts of West Bengal. The study of crop combination has great significance in Agricultural Geography. Weaver's Minimum deviation method gives a clear and vivid picture of crop combination. There are found twelve crops namely rice, wheat, maize, jute, masur, maskalai, khesari, gram, mustard, til, potato and sugarcane in twenty six CD blocks of Murshidabad district for the year 2015-2016. The study reveals that rice, jute and wheat are the principal crops grown throughout the district. Rice in sixteen CD blocks, jute in seven CD blocks and wheat in three CD blocks have dominance in crop combination. Monoculture or one crop, Two crop, Three crop, Four crop, Five crop, Six crop, Seven crop, Eight crop and Nine crop combination are not found in Murshidabad District. Ten Crop Combination in three CD blocks, Eleven Crop Combination in five CD blocks, and Twelve crop combination in eighteen CD blocks have identified in the study area in 2015-2016. Due to the fertile land, proper irrigation facilities, soil, rainfall and temperature are favourable for cultivation of rice, jute, wheat, potato, mustard, musur, sugarcane, til etc. in this study area. In recent years, the concept of crop combination gains much attention and became an important fact among Geographers and Agricultural land use planners.

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