

ANALYSIS OF CROP COMBINATION AND CROPPING INTENSITY: CASE OF DASPUR-I BLOCK, PASCHIM MEDINIPUR

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ABSTRACT

Analyzing the accessibility of land for crop combination and cropping intensity of Daspur-I block, district Paschim Medinipur. Crop combination the efficient role of agriculture. Crop combination is a method to produced different type of crop. Crop combination directly related to grow different crops. Combination of crops in agriculture is also practiced with a view to assess avoid risk due to climate condition and biological variability. Combination of crop provides better economic liability with grown value added agricultural products and also improvement of cropping intensity zone. Crop combination is very necessary measurement to analyze of the cropping intensity. This paper is an attempt to analyze the crop combination and cropping intensity of the study area. Crop combination is efficient matter of agricultural production, which highly controlled the entire economic status of the study area. Some villages are create monoculture. Some village use the process of Douoculture and some village are famous for multiple crop production. Different types crop production in different areas of this block create cropping intensity zone. This block consist three cropping intensity zone, because crop production various in different villages. Intensity of crop and their trend internally a modifier of economic status the study area.

KEY WORDS: Agriculture, Crop Combination, Cropping Intensity, Cropping Analysis

Crop combination and cropping intensity are closely related verities of crop grow in this time of the study area. Different types of crop grown avoid the risk of crop damages. Present day crop combination a great influence of agricultural production. Growth of crop and number of crop increasing day by day. Verities of crop create very high cropping intensity zone. Combination of crop produced different type of crop. Crop combination is most important for cropping intensity. Percentage and verities of crop create different cropping intensity zone. Intensity of crop is very important of crop production. The cropping system comprises all comprises all components required for the production of a particular crop and the interrelation ships between them and an environment by Gautam (2015) "Cropping Pattern in India". Combination of crop creates verities of crop produced to commercial

agricultural purpose, where the agriculture is the main stay of economy of the study area as well as India.

AREA STUDY

Daspur-I block is one of the agricultural prone zone of district Paschim Medinipur. This block is famous for paddy cultivation and different types of vegetable cultivation. This block situated on the lower gangetic plain and this block mainly tropical monsoon climatic region. This block has 10 Gram Panchayat and 1 Panchayat Samiti. Attitudinally the study area Daspur block-I lies between 22°4'40" north to 22°25'12" north latitude and longitudinally between 88°11'2" east to 88°15'10" east. (Figure 1) Basically this blocks multiple cropping zones.

LOCATION MAP OF THE STUDY AREA

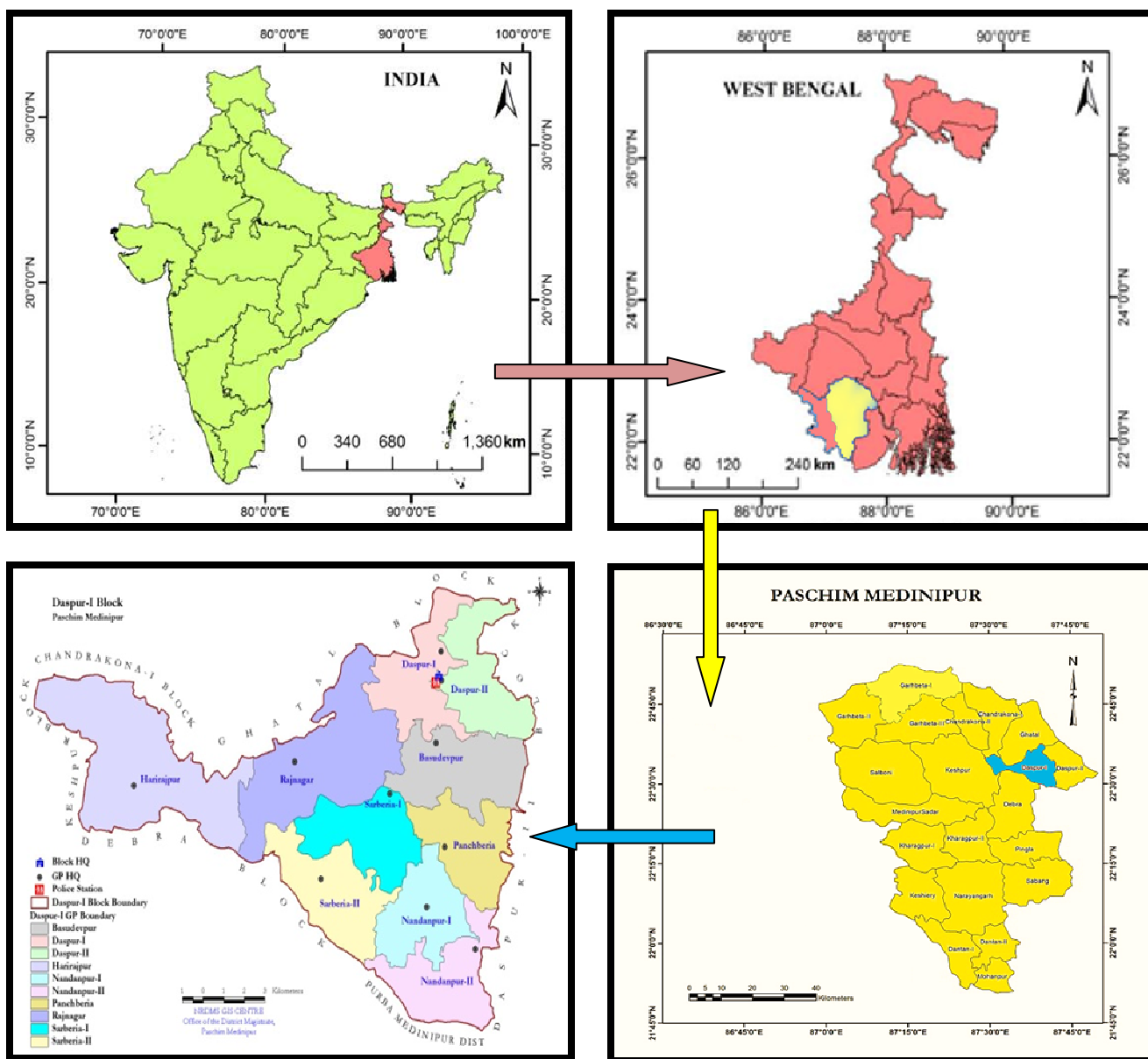


Figure 1 :Showing The Location Map Of The Study Area.

MATERIALS AND METHODS

This study examines the crop combination and cropping intensity of Daspur-I block. Presently this block grown different types of vegetable, oil seeds, potato, rice etc. Mainly this block is multiple cropping region of Paschim Medinipur district. Different Gram Panchayat offices, sub-divisional office, block development office and district

statistical hand book are help for collected data. Firstly primary data collected from field survey and obtained from secondary data different offices or statistical hand book of the district. Different article and journal flow for basic knowledge. Otherwise base map of study area, different graph, image are also be prepared.

RESULTS AND DISCUSSION

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Presently Paschim Medinipur district is one of the fastest agricultural prone zones in West Bengal as well as India. This time the study area more and more to development.

Crop combination

The study of crop combination in the region constitutes an important aspect of agriculture. Out of the many approaches to combinational study, Weaver’s method used in crop combination has been applied largely by geographers. Some have followed this method in demarcating crop and livestock combinations by Scott (1957) and Coppock (1964) .Where a region grown in different types of crops, the crops are generally grown in combination. In India, Weaver’s method as modified by Doi when applied by Siddiqui (1972) in the Deficiency Disease Combinations in Utter Pradesh.

Law

Scientist J.C. Weaver (1954) first statistically applies combination method.

This law is $C_c = \sum d^2 / N$

Where,

C_c

= Crop Combination

d

= Net Shown Area or Total Harvested Crop Land.

= No. of Crops

According to weaver method use for standard measurement, as follows.....

Single crop cultivation or monoculture

In this method one crop grows in the one time in a year of a region that is called single crop cultivation or monoculture (Table 1).

Monoculture = 100% of the total harvested crop land in one crop.

Or, single crop

cultivation = $100\% / 1 = 100\%$

Double Crop Cultivation Or Duoculture

In this method two crop grown in the year that is called double crop cultivation or Duoculture (Table 1).

Duoculture = two crop combination = 50% in each two crops

Or, Double crop =

$100\% / 2 = 50\%$

Multiple Crop Cultivation or Oligoculture

In this method block multiple crop cultivation in a year of a region that is called multiple crop cultivation or Oligoculture (Table 1).

Oligoculture = three crop combination = 33.33% in each of three crops

Or, multiple crop

$100\% / 3 = 33.33\%$

Table 1 : Crop Combination and Hypothetical Percentage of Daspur-I Block (J.C. Weaver Method)

Crop combination	Hypothetical percentage
Single Crop (One Crop)	$(100 / 1) = 100 \%$
Double Crop (Two Crop)	$(100 / 2) = 50 \%$
Three Crop (Three Crop)	$(100 / 3) = 33.33 \%$
Four Crop (Four Crop)	$(100 / 4) = 25 \%$
Fifth Crop (Five Crop)	$(100 / 5) = 20 \%$
Sixth Crop (Six Crop)	$(100 / 6) = 16.66 \%$

Table 2a: Actual Crop Area And Percentage Of Crop Area In Different G. P. Under Daspur –I Block

Name of the Gram Panchayat	Rice (Hectares.)	%	Potato (Hectares.)	%	Jute (Hectares.)	%	Vegetable (Hectares.)	%
Harirajpur (Nij Narajole)	1799	84.54	200	9.40	60	2.82	60	2.82
Rajnagar	853	37.98	765	34.06	625	27.83	2	0.09
Sarberia-I	479.2	51.2	275	39.29	75	7.99	84	8.95
Sarberia-II	539	47.95	287.5	25.58	50	4.45	50	4.45
Nandanpur-I	645.3	66.05	250.7	25.66	20	2.05	60	6.14
Nandanpur-II	618.1	53.52	350.5	30.35	98.9	8.56	85	7.56
Panchberia	565.2	52.19	462.3	42.66	50	4.62	3	0.28
Basudevpur	774	69.29	299	26.77	40	3.58	2	0.18
Daspur-I	953	84.04	118	10.41	23	2.03	29.5	2.60
Daspur-II	600	52.91	325.9	28.74	43.1	3.80	160	14.11

Table 2b :Actual Crop Area And Percentage Of Crop Area In Different G. P. Under Daspur –I Block

Name of the Gram Panchayat	Oil seed (Hectares.)	%	Pulses (Hectares.)	%	Total (Hectares.)	%
Harirajpur (Nij Narajole)	5	0.23	4	0.19	2128	100
Rajnagar	0.5	0.022	0.5	0.022	2246	100
Sarberia-I	13.8	1.47	12	1.28	939	100
Sarberia-II	1	0.09	0.5	0.04	1124	100
Nandanpur-I	0.5	0.05	0.5	0.05	977	100
Nandanpur-II	1.5	0.13	1	0.09	1155	100
Panchberia	1.5	0.14	1	0.09	1083	100
Basudevpur	1	0.09	1	0.09	1117	100
Daspur-I	6	0.53	4.5	0.40	1101	100
Daspur-II	3	0.26	2	0.18	1134	100

Source

- i) Annual Agricultural Report, 2106-2017 (Daspur-I).
- ii) The Deputy Director of Agriculture, Paschim Medinipur, 09.06.2017
- iii) The Assistant Director of Agriculture, Ghatal, Paschim Medinipur, 09.06.2017.
- iv) Field survey, January 2017.

Table 3: Crop Combination Gram Panchayat Of Daspur –I Block

Sl. No.	Name of the Gram Panchayat	No. of Crop Combination
1	Harirajpur (Nij Narajole)	One Crop
2	Rajnagar	Three Crop
3	Sarberia-I	Two Crop
4	Sarberia-II	Two Crop
5	Nandanpur-I	Two Crop
6	Nandanpur-II	Two Crop
7	Panchberia	Two Crop
8	Basudevpur	Two Crop
9	Daspur-I	One Crop
10	Daspur-II	Two Crop

CROP COMBINATION REGION OF DASPUR-I BLOCK IN DIFFERENT GRAM PANCHAYAT AREAS.

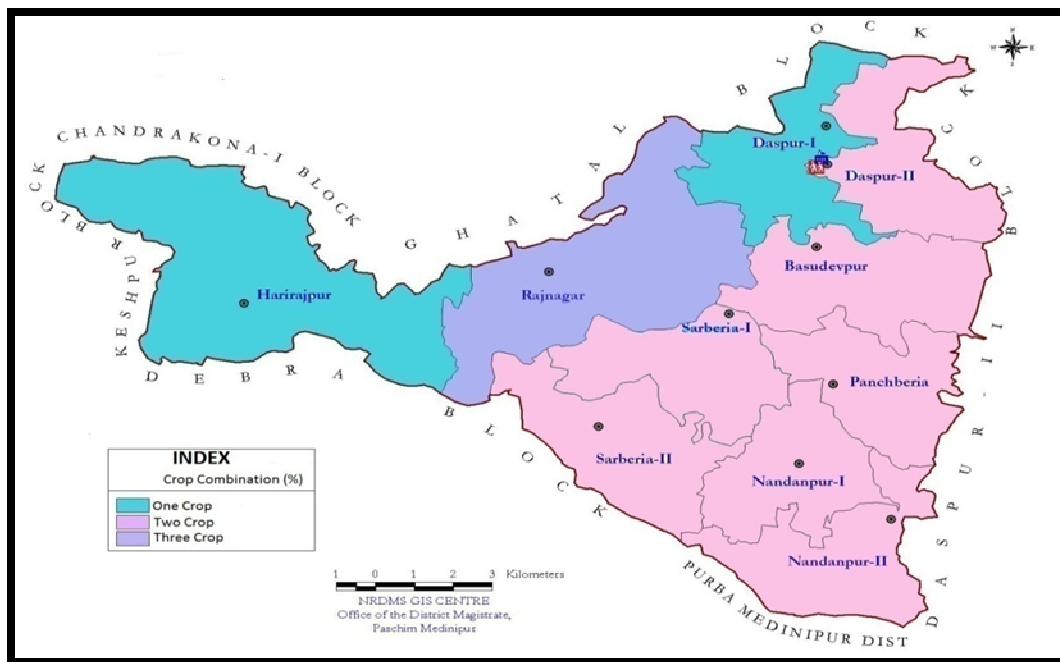


Figure 2: Showing The Crop Combination Region Of Daspur-I Block.

Crop Combination Region In Daspur-I Block

According to weaver method use for standard measurement, as follows.....

Monoculture

In this block Monoculture followed only Harirajpur (Nij Narajole) and Daspur-I Gram panchayat areas (Table 2a, Table 2b, Table 3). Under this Gram Panchayat area’s all villages are grown one crop just one time in the year, crop only for rice (Figure 2).

Duoculture

In this method two crop grown in the year, that is called double crop cultivation or Duoculture (Table 2a, Table 2b, Table 3). In this block double crop cultivation Gram Panchayat are Sarberia-I, Sarberia-II, Nandanpur-I, Nandanpur-II, Daspur-II, Basudevpur, Panchberia (Figure 2). All those Gram Panchayat area’s all villages are grown two crops in a year. Crops mainly rice and jute.

Oligoculture

In this method block multiple crop cultivation only Rajnagar Gram Panchayat areas (Table 2a, Table 2b, Table 3). Under this Gram Panchayat all villages’ areas cultivated multiple crops in a year. Crops are mainly rise, jute and different vegetable, pulses and oil seed (Figure 2).

Cropping Intensity

Intensity of cropping depends on a number of factors: (a) the land should be level and fertile, (b) goods quality of seeds particularly HYV of seeds should be available, (c) assured supply of water, (d) measures to save the crops from pests, and (e) facility for complete or partial marketability by Shafi (2006) Agricultural Geography, Delhi, Dorling Kindersley (India) Pvt. Ltd. 111-112. The cropping intensity has direct correlation with assured irrigation which enables farmers to go for multiple cropping and use higher dose of fertilizers and HYV seeds. Cropping system in irrigated areas can be developed to make

the best use of all the resources available in a particular situation by Shafi (2006) Agricultural Geography, Delhi, Dorling Kindersley (India) Pvt. Ltd. 111-112.

Cropping intensity means,

$$A \text{ region} = \frac{\text{Grass Cropped Area}}{\text{Net Sown Area}}$$

LAW

The govt. of India’s agricultural department has created a law to measure cropping intensity.

This formula is $C_1 = \frac{GCA}{NCA} \times 100$

Where,

C_1 = Cropping Intensity

GCA = Grass Cropped Area

NCA = Net Sown Area

Cropping Intensity Region In Daspur-I Block

In this block cropping intensity region are three types and all this villages divided to three cropping intensity zone. The zone are-

Table 4 :Cropping Intensity In Different Gram Panchayat Under Daspur –I Block

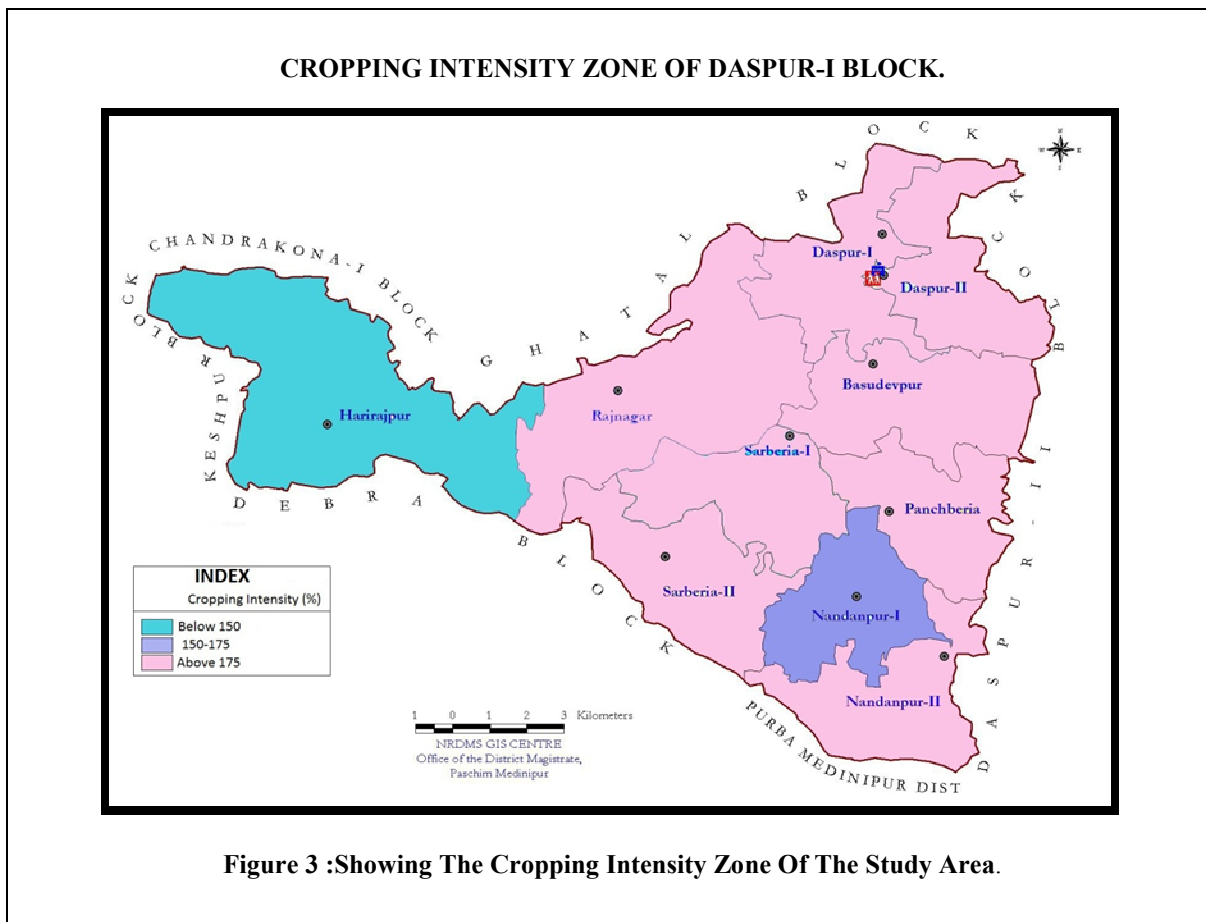
Sl. No.	Name of the Gram Panchayat	Grass Cropped Area (%)	Net Sown Area (%)	Cropping Intensity (%)
1	Harirajpur (Nij Narajole)	2953.9	2128	138.81
2	Rajnagar	3951.7	2246	175.94
3	Sarberia-I	1878	939	200.00
4	Sarberia-II	2248	1124	200.00
5	Nandanpur-I	1544.5	977	158.09
6	Nandanpur-II	2244	1155	194.29
7	Panchberia	2165	1083	199.91
8	Basudevpur	2234	1117	200.00
9	Daspur-I	2202	1101	200.00
10	Daspur-II	2272	1134	200.35

Source:

- i) Annual Agricultural Report, 2106-2017 (Daspur-I).
- ii) The deputy Director of Agriculture,Paschim Medinipur, 09.06.2017
- iii) The Assistant Director of Agriculture, Ghatal, Paschim Medinipur, 09.06.2017.
- iv) Field survey, January 2017.

Table 5: Cropping Intensity Zone In Different Gram Panchayat Under Daspur –I Block.

Sl. No.	Cropping Intensity Zone	Name of the Gram Panchayat	Remarks
1	Below 150.00	Harirajpur	Low cropping intensity zone
2	150.0-170.00	Nandanpur-I	Medium cropping intensity zone
3	Above 170.00	Rajnagar, Sarberia-I, Sarberia-II, Nandanpur-II, Panchberia, Basudevpur, Daspur-I, Daspur-II	High cropping intensity zone zone



High Intensity Zone

In this block cropping intensity (CI- above 175 %) Gram Panchayet areas are Rajnagar, Sarberia-I, Sarberia-II, Nandanpur-II, Panchberia, Basudevpur, Daspur-I, Daspur-II (Figure 3).Under those Gram Panchayat areas all this villages are high cropping intensity zone, because very high fertile land use of the modern agricultural technology, use hybrid seeds irrigation facilities, develop transport system high educated farmers and uses chemical fertilizer. Those facilities create those villages high cropping intensity zone (Table 4, Table 5).

Medium Intensity Zone

Nandanpur-I Gram Panchayat areas cropping intensity (CI- 150%-175%) of this block medium intensity zone (Figure 3).Under this all villages are medium cropping intensity zone. In this region intensity of crop is medium because medium fertile land, lack of irrigation system, lack of crop conservation facilities and lack of high transport facilities (Table 4, Table 5).

Low Intensity Zone

In this block low cropping intensity (CI- below 150%) Gram Panchayat area is Harirajpur (Nij Narajole) (Figure 3).Under this Gram Panchayat all villages are low cropping intensity zone. Because high temperature and humidity unfertile land, soil matter, size of land, labour, lack of operation efficiently lack of transport communication and poor irrigation facilities (Table 4, Table 5).

CONCLUSION

Crop combination and cropping intensity is very important for agriculture. Because crop combination, the attention of farmers with viable options to grown different type of crops on their land. Crop combination creates cropping intensity. Different type of crop grown at different season and avoid risk to crop damages. Presently Daspur-I block analyze changing scenario of crop combination. High crop combination create very high cropping intensity zone. Intensity of crop is a most important matter of agriculture. Changing agricultural practices produce

verities of crop as well as increasing cropping intensity. Cropping intensity mainly depend on crop combination. Cropping intensity is most essential role of play for agriculture, agricultural practices and agricultural production. High cropping intensity zone produce very high percentage of agricultural product. Others have shown its weakness or have tried to present and use it after suitable modification Husain (1976) “A New Approach to the Agricultural Productivity Regions of the Sutlej-Ganga Plains of India”, Geographical Review of India. Where this product mainly use for commercial and household purpose. So crop combination and cropping intensity are most important for agriculture and agricultural production.

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