



Role of Modern Agriculture Technology in Indian Agriculture with special reference to Arunachal Pradesh

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ABSTRACT

This Paper highlighted the role and impact of Modern Agriculture Technology (MAT) in Indian agriculture with special reference to Arunachal Pradesh. It is an attempt to analyse the role and importance of agriculture technology in the agriculture production process. It also examined the agriculture productivity and its relation to agriculture technology. The paper also explained the implication of the given data which highlighted the use of modern agriculture technology in terms of mechanical inputs and biological components. This paper has highlighted the central and state govt. scheme and policy to augment the welfare of the farmer. The paper is based on secondary data, reports from state agriculture department, journals and books related to the topic and personal experience.

Keywords: Modern Agriculture Technology, Agriculture productivity, Implication, biological components, Mechanical inputs

INTRODUCTION:

This paper intended to examine the role of modern agriculture technology in Indian agriculture with special reference to Arunachal Pradesh. Indian agriculture plays a pivotal role in Indian Economy. Agriculture is the largest provider of rural livelihood in India (Arjun, 2013). In India, still, 28% of national income comes from this sector (Praburaj, 2018). Considering the immense importance of agriculture the Indian policy maker has adopted certain measures to improve the country's agriculture scenario since independence. In mid-1960's the Indian govt. initiated the green revolution where new agriculture technology has introduced to augment the agriculture productivity. The use of new agriculture technology has improved the food grains production in the country. Consequently India witnessed a significant change in the adoption level of modern agricultural technology since post independence period. From here, the policy makers considered agriculture technology as an essential part of any developmental programme related to agriculture, which include HYV seeds, assured irrigation, chemical fertilizer and tilling of soil etc. The visible impact of new agricultural technology has been evidently observed in terms of agricultural productivity, employment generation and farmer's income as well as improvements in their standard of living. As per study conducted in Assam, North East India, use of modern technology or green revolution has improved the paddy production as 'In kharif crop the data shown that the percentage of area under the traditional Sali paddy has declined from

80% to 50%, whereas the area under kharif HYV shows an increase of 30%' (Saikia and Bora, 1975). In Arunachal Pradesh also, now farmers have a preference for adopting new agriculture technology than the traditional method. 'So far, Traditional hand tools were used for all the operations. However, improved tools have potential for use in cultivated lands in foothills when scientific agriculture is pursued by way of consolidation of holdings and land leveling' (Dewangan and Kumar GV, 2004).

Definition of modern agriculture technology

Technological induction in agriculture has basically two parts/components:

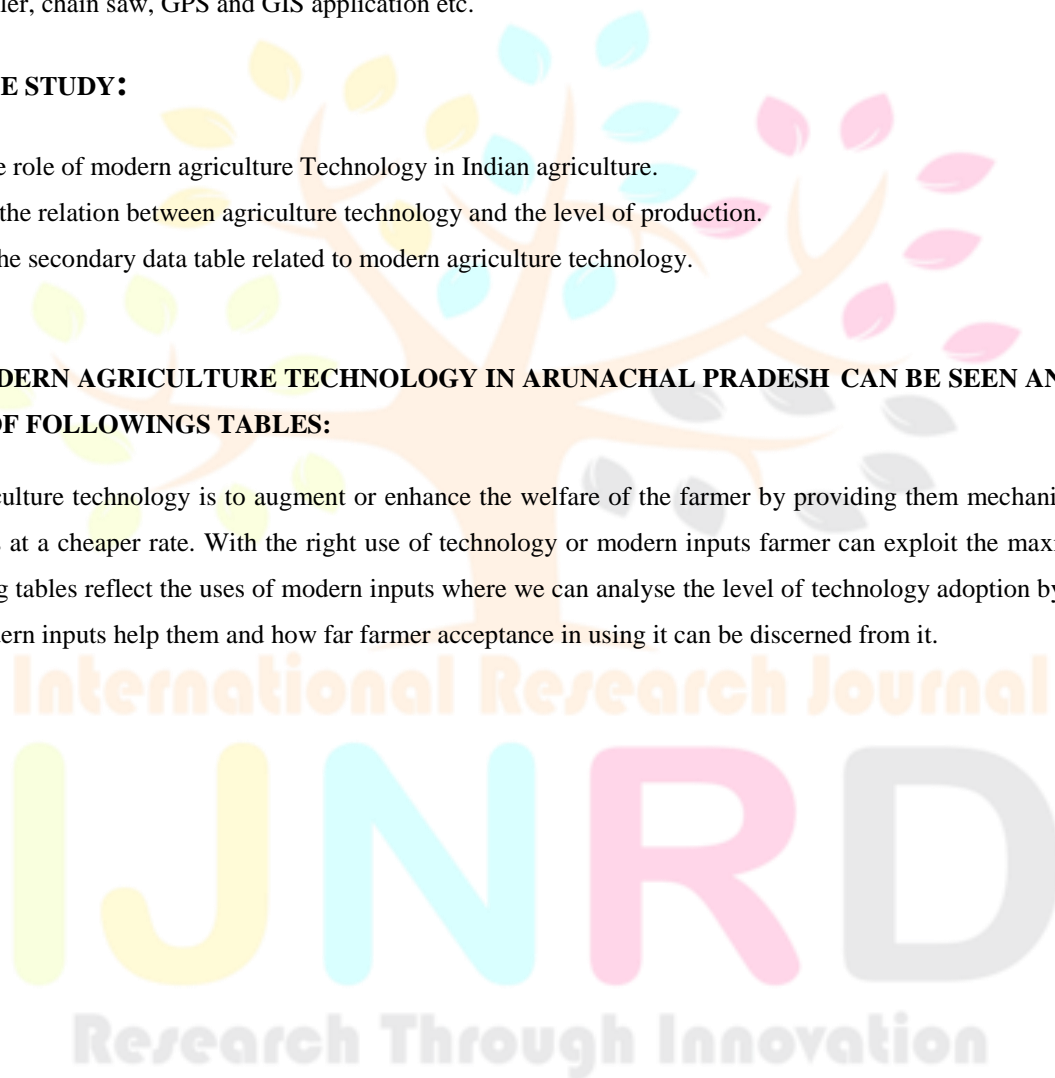
1. Biological components include HYV seeds, fertilizers, irrigation, plant protection measures etc.
2. Mechanical components include the practices of modern agricultural equipment like use of tractors, power tiller, sprayer, thresher, leveller, chain saw, GPS and GIS application etc.

OBJECTIVE OF THE STUDY:

1. To assess the role of modern agriculture Technology in Indian agriculture.
2. To examine the relation between agriculture technology and the level of production.
3. To analyse the secondary data table related to modern agriculture technology.

THE ROLE OF MODERN AGRICULTURE TECHNOLOGY IN ARUNACHAL PRADESH CAN BE SEEN AND EXPLAIN WITH THE HELP OF FOLLOWINGS TABLES:

The main role of agriculture technology is to augment or enhance the welfare of the farmer by providing them mechanical inputs and biological components at a cheaper rate. With the right use of technology or modern inputs farmer can exploit the maximum benefits out of it. The following tables reflect the uses of modern inputs where we can analyse the level of technology adoption by the people in the state. How far modern inputs help them and how far farmer acceptance in using it can be discerned from it.



DISTRICTS WISE AREA AVERAGE YIELD PER HECT OF H.Y.V. CROPS IN ARUNACHAL PRADESH DURING THE YEAR 2017-18

(Area in Hect. / Yield in Qntl./Production in MT)

District Area	Paddy		
	Prodn	Yield	Area
1.Tawang	880	1374	15.61
2. West Kameng	911	1406	15.43
3.East Kameng	3677	4499	24.20
4. Papum pare	4169	12724	30.52
5. L/Subansiri	3619	10567	29.20
6. Kra dadi	151	309	20.46
7. Kurung Kumey	153	324	21.18
8. U/Subansiri	2368	6494	27.42
9. West Siang	7117	18628	26.17
10. Upper siang	3149	6965	22.12
11.East Siang	4250	14783	34.78
12. L/Dibang valley	4569	12624	27.63
13. Dibang valley	1191	1797	15.09
14. Lohit	2203	7109	32.27
15. Anjaw	1916	3451	18.01
16. Namsai	3015	9609	31.87
17. Changlang	4099	13663	33.33
18. Tirap	1436	2299	16.01
19. Longding	1664	2649	15.92
20. Siang	4349	12518	28.78
Total For A.P	54886	148192	27

Source: Director of Agriculture, Naharlagun

Table no.1

As it is shown in the table no.1 all the districts has adopted the uses of HYV crops which is an important components of modern agriculture technology. HYV crops have become one of necessary items for Arunachalee farmers. Among the districts West Siang, East Siang, Lower Dibang valley, Papum pare, East kameng, changlang, Siang and lower Subansiri are the highest producers of paddy using HYV crops. Kra Dadi and Kurung Kumey are the districts which uses least amount of HYVs.

Table no.2- Irrigation facilities use by the farmers of Arunachal Pradesh

SL.no	Districts	Irrigation potential created (in Ha.) as on 31/03/2020	Irrigation potential created (in Ha.) during the year 2020-21	Cumulative Irrigation potential created (in Ha.) since inception	No. of channel spill over scheme	No. of Tube wells spill over scheme	Area irrigated more than once (in Hect.)	Net area irrigated (in Hect.)	Gross area irrigation (in Hect.)
1	Tawang	2401	70	2471	27	0	371	1482	1853
2	W/Kameng	2467	114	2581	40	4	387	1549	1936
3	E/Kameng	4137	471	4608	65	116	691	2755	3456
4	P/Kessang	0	104	104	14	26	691	2755	3456
5	Papum Pare	9031	9031	9403	89	54	1410	5642	7052
6	L/Subansiri	2054	166	2221	18	46	333	1332	1666
7	K/Kumey	0	34	34	13	0	5	20	25
8	Kra Daadi	0	70	70	27	0	11	42	53
9	Kamle	0	57	57	15	7	9	34	43
10	U/Subansiri	6933	130	7063	21	29	1059	4238	5297
11	Lepa Rada	0	78	78	12	18	12	47	58
12	W/Siang								
13	Shi-Yomi	10909	333	11242	108	20	1686	6745	8431
14	Siang	1928	156	2084	60	0	313	1250	1563
15	L/Siang	0	146	146	31	25	22	87	109
16	E/Siang	26406	598	27004	89	141	4051	16202	20253
17	U/Siang	5622	112	5734	43	0	860	3440	4301
18	D/Valley								
19	LD/Valley	10666	572	11238	66	154	1746	6983	8729
20	Namsai	0	385	385	42	106	58	231	289
21	Lohit	2310	349	2659	34	100	399	1595	1994
22	Anjaw	1094	156	1250	60	0	188	750	938
23	Changlang	12892	613	13505	120	115	2026	8103	10129
24	Tirap	2968	112	3080	27	16	462	1848	2310
25	Longding	1683	60	1743	8	15	261	1046	1307
	Total A.P	103500	5257	108757	1029	992	16374	65494	81863

Sources: Statistical Abstract of Arunachal Pradesh 2021

IMPLICATIONS OF THE DATA:

1. All the districts of Arunachal Pradesh has availed the irrigation Facilities or using it in their agricultural operations.
2. Irrigations facilities is one of the important components of modern agriculture technology (MAT).

3. The Districts like East Siang, Lower Dibang Valley, West Siang, Papum Pare, Changlang and Upper Subansiri are having the highest rate of availing irrigations facilities among the districts of Arunachal Pradesh.
4. Kurung Kumey, Kra Dadi, Kamle and Lepa Rada Districts are the lowest rate of using/availing irrigations facilities.
5. East Siang and Changlang Districts have the highest rate of cumulative Irrigations potential created in hectare in the state.
6. During the year 2021, papum pare has created the highest rate of irrigation potential in hectare among the districts of A.P and Kurung Kumey has the least of it.

From the above given data and implications we could say that Arunachal Pradesh is very much into using/adopting modern agriculture technology. Agriculture technology plays a vital role in developing agriculture in the state. Some of the districts display low use of it because some of them are newly formed districts.

Table no.3- Districts wise consumption of chemical fertilizers in Arunachal Pradesh during the year 2020-21.

(In. MT.)

Districts	Chemical Fertilizers			
	Nitrogenous(N)	Phosphetic P ₂ O ₅	Potassic (K ₂ O)	Total(NPK)
Tawang	43	21	8	72
W/Kameng	47	24	10	81
E/Kameng	4	3	1	8
P/Kessang	2	1	1	4
Papum Pare	10	9	4	23
L/Subansiri	5	3	2	10
Kra dadi	0	0	0	0
Kurung Kumey	0	0	0	0
U/Subansiri	0	0	0	0
Kamle	0	0	0	0
W/Siang	6	4	1	11
Lepa Rada	3	2	1	6
Shi-Yomi	4	2	1	7
Upper Siang	6	4	3	13
E/Siang	15	13	3	31
L/Siang	6	4	1	11
LD/Valley	5	4	2	11
D/Valley	6	4	3	13
Lohit	10	7	3	20
Anjaw	8	4	4	16
Namsai	15	11	4	30
Changlang	10	5	3	18
Tirap	4	2	2	8

Longding	6	4	2	12
Siang	14	8	3	25
Total A.P	229	139	62	430

Source: Director of Agriculture, Govt. of AP, Naharlagun.

IMPLICATIONS OF THE DATA:

1. The District which is the highest user of chemical fertiliser of Arunachal Pradesh is West Kameng and it is followed by Tawang and East Siang respectively.
2. The Districts which register nil in using chemical fertiliser are Kra-Dadi, Kurung Kumey, Upper Subansiri, and Kamle respectively.
3. Out of all the chemical Fertilisers the Nitrogeous(N) was use in highest amount as 229 out of 430 during the period.

CENTRAL/ STATE GOVT. ROLE IN PROVIDING MODERN AGRICULTURE TECHNOLOGY:

The Central/Govt. of Arunachal Pradesh has initiated a series of provisions for the development of agriculture and its allied sectors in providing subsidy in loans and other scheme. The two main schemes in providing agriculture equipments like Tractor, Power Tiller, Sprayer, Hand Tools Kits etc are

1. Atma Nirbhar Krishi Yojana (ANKY):

It is an ambitious scheme launched by the Chief Minister of Arunachal Pradesh in 2021 with an aim to promote farmers for their self reliance in agriculture sector. Under this scheme the farmers are provided financial assistance for various agriculture activities. The implementation of the scheme is overseen by a state level committee headed by the chief minister. Various banks are participating in providing loans under the scheme.

2. Sub-Mission on Agriculture Mechanization(SMAM):

It is a scheme launched by the Govt. of India under the ministry of Agriculture and Farmer's welfare. The scheme aims at promoting the use of agriculture machinery and equipment to enhance the productivity and efficiency of agriculture in India.

POSITIVE IMPACT OF THE USE OF AGRICULTURE TECHNOLOGY IN PADDY CROP IN AP:

It has been observed that the farmers of the state has adopted the use of agriculture technology in cultivation process and thereby enhance the level of production in almost all the crops. With the coming of modern agriculture technology it has made the cultivation process easier. As a sample in showing the impact of MAT (modern agriculture Technology) only on paddy production and its growth has been shown below as follows:

Table no.04: Paddy production since 2015-2022 in A.P

Year	Productions in metric ton(M.T)	Average Prices (Rs./M.T)
2015-16	306000	Rs 18000/-
2016-17	330000	Rs.19000/-
2017-18	350000	Rs 21000/-
2018-19	360000	Rs 21500/-
2020-21	367125	Rs 22000/-
2021-22	370535	Rs.22500/-

Source: Directorate of Agriculture, Govt. of Arunachal Pradesh

IMPLICATIONS OF THE DATA:

1. The paddy crop production in Arunachal Pradesh has increasing trends since 2015-16.
2. The average price of paddy also has increasing trends since the same time period.
3. The increasing trend of paddy crop has a positive relation with the uses of MAT (modern agriculture technology) in terms of their growth trends which shows the positive impact of the later.

CONCLUSION/SUGGESTION/FINDINGS:-

The uses or adoption of modern agriculture technology in Arunachal Pradesh agriculture is in increasing trends but due to many factors like lack of finance or credit the farmers are adopting only the basics equipments like tractors, Sprayer, grass cutter, thresher, chain saw etc in mechanical components and in terms of biological components its uses mainly weedicides, insecticides and pesticides for clearing the boundary of field and to some extent HYV seeds has been used. Not All mechanical and biological components are used as majority of the farmers are in favour of local seeds instead of HYV seeds and also due to the popularity of organic cultivation in the recent time. Irrigation facility is also in limit due to geographical factors. More awareness is needed for the use of the agriculture technology.

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