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lands and also for consolidation of fragmented area. Social and economic homogeneity among the tribes makes for a better possibility of success of such an experiment.

Thirdly, for raising productivity, the extension services need to be reoriented. The supply of seed, manure, chemical fertilizer, etc., and agricultural and cattle purchase loans should be assured to them in times of need so that they may not fall a prey to the greed of the village *Mahajans* and professional moneylenders. More funds should be allocated for these weaker sections of our population to help them stand on their own footing of economic solvency. Together with these, effective demonstration on improved methods of cultivation should be set up in the tribal areas and attempts should be made to bring them out of their insular position.

Last but not the least, diversification of agriculture in the form of piggery and poultry on joint farming basis with adequate subsidy from the Block Development Office should be encouraged among the landless tribes for amelioration of their economic position.

THE TRIBAL AGRICULTURE OF 'BHOTIYAS' IN A NEW SETTING OF TARAI PLAINS

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The Background

The *Bhotiyas* are a migrant tribal community, living along the borderline of Uttarakhand in Uttar Pradesh and Western Tibet. The region is arctic in climate. It is a perpetually frozen desert and has a mean temperature of less than 10°C even during the hottest month. During winters, the temperature may fall to as low a level as -20°C.

“The *Bhotiyas* are a Mongolian race; originally they were the inhabitants of Tibet. Their personal appearance, language, religion, customs and traditions point to this. The *Bhotiyas*, however, settled in the Indian Union, centuries ago. They claim Indian origin and are treated as such.”¹

Agriculture in the Hill (Bhotiya) Region

The sub-Himalayan region of Uttarakhand and trans-Himalayan part of Tibet are regions of contrasted production. Tibet has wool, musk, borax, goats,

1. J. H. Batten : Official Reports in the Province of Kumaon, Government Publications Superintendent, Printing and Stationery, Allahabad, 1851, p. 83.

ponies, yak tails, which the *Bhotiyas* exchanged for their rice, millets, salt, spices, metal wares, cloth, etc., produced in the Indian Union. They also had a flourishing wool industry in which their women specialised. Cloth, shawls, carpets, etc., were woven for family needs and for trade. The *Bhotiyas* thrived on this barter trade with Tibetans and this was the principal source of their sustenance supplemented by a scarcity agriculture and cattle and sheep rearing. Agriculture in that region was of a primitive and shifting nature. Only one crop was raised in a year with meagre resources on a land encumbered with stones and boulders and covered with snow from November to March. There were no bullocks. The *Jibu* (a cross of Indian cow and yak) was used to plough the fields. The sowing of crops was completed by June and these crops were ready for harvest by September or October. The important crops of the region were buck-wheat, barley, *ogal* (*Fagopyrum Esculentum*), and *phaphar* (*Amaranthus Fumenta ceus*). Sometimes due to premature snow fall, the *Bhotiyas* were not able to collect their harvest. It was no wonder, they put little reliance on agriculture, which was so scanty and uncertain.

The New Setting

The Government of Uttar Pradesh have rehabilitated the *Bhotiyas* in Daleepnagar village of Tarai belt in the Nainital district on newly reclaimed lands. The village is inhabited exclusively by the *Bhotiyas*, who were allotted land here between 1952-1959. Till 1957, they used to migrate to Daleepnagar in the plains (where they were allotted land) during the winters and go back to their border village of Munsiri Milam (in district Pithoragarh) during the summers specially for carrying trade with Tibetans across the border. In 1957, some restrictions were imposed on the barter of sugar, rice, wheat, *mandua*, buck-wheat, etc., and, therefore, the trade suffered. The *Bhotiyas* were not able to bring wool (which was cheaply available in Tibet) from Tibet. From 1962 onwards, practically all business with Tibet was closed and they finally settled in their present abode. Each family, and there were 27 in all, was allotted 5 acres of land and, therefore, the holdings are small in size. Thus the *Bhotiyas* had to switch from a shifting agriculture in a hilly region to a settled agriculture on new fertile land in humid climate. This new setting is entirely different from their traditional one. Further, this new setting is characterized not only by a difference in the physical conditions under which agriculture is carried on but also by the fact that agriculture in Tarai is quite progressive and is carried on by enterprising farmers who are using new technology and are following agriculture not as a 'way of life' but as a business proposition. In this context, several questions suggest themselves such as "what has been the performance of *Bhotiyas* in the 'new' setting?" "Is it satisfactory and the reasons thereof?" "Is there any tangible scope for improvement?" and the like. Our study conducted in Daleepnagar village tries to answer these questions. It is in the nature of a village survey. All the families in the village were studied. Information was collected with reference to the agricultural year 1969-70.

At present, there are 21 *Bhotiya* families settled in the village. Of these, only 12 own the land. Eleven families have holdings of 5 acres each and the only other land owning family has three acres of land. Practically all the other residents take land on share-cropping basis. This coupled with wages in agriculture form their chief source of income. The other important avenues of income to the

village families are spinning and weaving, poultry and goat keeping and cattle rearing. Though a canal flows nearby and there is also a seasonal river, it is ironical that the entire land of the village is unirrigated. The use of improved implements is limited to only meston ploughs owned by 11 of the 21 families. The others do not have anything worth the name in improved implements. There is no *pucca* house in the village.

Cropping Pattern

Due to the non-availability of irrigation, most of the area is single cropped. The most important *kharif* crops of the village are maize and paddy. In *rabi*, *desi* wheat, barley and gram are raised. Sugarcane (both planted and ratoon) is also grown by some farmers. The two crop mixtures grown in the village are *lahi* + *masoor* (lentils) and *lahi* + *jai*. But for 1.75 acres of land, all the area in the year 1969-70 was under the local varieties. In the name of high-yielding varieties, RR-21 (wheat) and China 4 (paddy) were tried in 1.5 acres and 0.25 acre, respectively for the first time in 1969-70.

Nature of Technology and Resource Use

As mentioned earlier, only *desi* varieties were raised in the entire village during the year 1969-70. As a sort of trial, 1.75 acres of land was put under improved varieties. This was for the first time that the farmers were exposed to the use of high-yielding varieties in the village. The entire village land is unirrigated. Even in this progressive locality, where agriculture compares favourably with some of the best in the world, not a single *Bhotiya* farmer of the village has ever used any fertilizer. Only farmyard manure is used for supplying nutrients to the soil and that too is poor in quality and inadequate in quantity. Agriculture in the village is still primitive and traditional. As a consequence, though their variable costs are not so low, the yields obtained by them are very poor as can be seen from Table I.

TABLE I—LEVELS OF YIELDS AND RETURNS PER ACRE FROM THE CROPS IN DALEEPNAGAR VILLAGE: 1969-70

Crop grown	Variable costs (Rs. per acre)	Yield per acre (quintals)	Gross returns (Rs. per acre)	Returns over variable costs (Rs. per acre)
1. Paddy (<i>Hansraj</i>)	168.00	2.50	200.00	32.00
2. Paddy (coarse)	50.58	5.90	354.00	103.42
3. Maize	224.38	4.35	261.00	36.62
4. Wheat	173.33	3.20	272.00	98.67
5. Barley	129.00	3.40	204.00	75.00
6. Sugarcane	486.00	90.00	675.00	189.00

Supplementary Income Sources

As pointed out elsewhere, the source of non-crop income of the *Bhotiyas* in Daleepnagar include wages for agricultural labour, share-cropping on land owned by others, service, poultry and goat keeping and cattle rearing. However, the most important single source of non-crop earnings is spinning and weaving of articles like carpets, shawls and other woollen cloth. Recently, the State Government has given free of charge, one spinning wheel (*charkha*) and one loom (*kargha*) each to 14 families. The remaining seven families are expected to get these shortly. From one such set, an average family is expected to earn a net profit of about Rs. 360 per year or, roughly speaking, one rupee a day which is certainly non-remunerative. In addition, goats, poultry and cattle, supplemented, on an average, Rs. 63.33 to the annual net earnings of a *Bhotiya* family in the village. The average non-crop income per family in the village when all families have loom and spinning wheel could come to about Rs. 423.33 per year.

Production and Income Potential

We have already seen that the level of agricultural technology used by the farmers is very low. No fertilizers are used. The whole farming is unirrigated. As a consequence, the yields as well as incomes from the crops are poor as compared to those obtained under similar physical conditions on other similar farms. The yields and, therefore, incomes can be greatly increased, in many cases, with the same amount of expenditure, if the farmers get into the stream of 'new' technology (and resources are reallocated). An idea of the potential can be had from the average yields and returns realised from selected crops on farms in other neighbouring villages as given in Table II.

TABLE II—AVERAGE YIELDS AND RETURNS OBTAINED FROM SELECTED CROPS BY *Bhotiyas* AND OTHER NEIGHBOURING VILLAGE FARMERS: 1969-70

Crop grown	Variable costs (Rs. per acre)		Yields per acre (quintals)		Gross return (Rs. per acre)		Return over variable costs (Rs. per acre)	
	<i>Bhotiyas</i>	Farmers in neigh- bouring villages	<i>Bhotiyas</i>	Farmers in neigh- bouring villages	<i>Bhotiyas</i>	Farmers in neigh- bouring villages	<i>Bhotiyas</i>	Farmers in neigh- bouring villages
Paddy (<i>Hansraj</i>)	.. 168.00	315.00	2.50	6.15	200.00	492.00	32.00	177.00
Paddy (coarse)	.. 250.58	432.00	5.90	12.00	354.00	720.00	103.42	288.00
Maize	.. 224.38	594.00	4.35	15.00	261.00	900.00	36.62	306.00
Wheat (<i>desi</i>)	.. 173.33	302.00	3.20	7.50	272.00	637.50	98.67	335.50
Sugarcane (planted)	.. 486.00	513.33	90.00	143.00	675.00	1,072.50	189.00	559.17

It might be pointed out here that these yields are for the same varieties but grown with different resource use. Even from these local varieties, if grown properly, incomes could be more than doubled. However, these average yields are given for the local varieties only as obtained on farms in the neighbouring villages

for facilitating comparison. If we consider the high-yielding varieties and the consequent recommended package of practices, given certain facilities, the yields and incomes can be raised four to five times. There is ample evidence to support this from the yields and incomes realised on the experiment station situated only 15 miles from the village and by the very progressive farmers of the region.

Conclusion and Suggestions

Agriculture as carried on by the *Bhotiyas*, a hill tribe, in the plains, is still primitive and traditional. There are no irrigation facilities. No fertilizer has ever been used. Only local varieties of crops are grown. But for the meston ploughs, no improved implements are used. The yields and returns per acre are poor. In spite of the tremendous strides made by agriculture in the country, in general, and the Tarai region of Nainital, in particular, the *Bhotiyas* have remained a secluded tribe with a world of their own in Daleepnagar. Incomes from the supplementary enterprises are also very low. There is a great potential for increasing yields and incomes for which the following steps are suggested.

1. Special attention should be paid by the State and the extension workers to the problems of *Bhotiyas*. People with special understanding of their problems and sympathetic to them should be kept to work with them. The extension worker should be relieved of the responsibility of working with many villages, at least for some time. It would be good if he concentrated his attention on the development of *Bhotiyas*.

2. Special provision of loans should be made for them and these should be adequate. These could be, partly, in cash and partly in kind. Of the latter, the most important would be pumping sets. It is suggested that a service co-operative may be organized in the village and, in addition to inputs like fertilizers, improved seeds, pesticides and insecticides, it may also obtain a few pumping sets which may be provided to the villages on rental basis. Provision of irrigation facilities alone would go a long way in helping *Bhotiya* agriculture.

3. Another bottleneck in the development is the poor transportation facility. The village is not connected by any road and during rains, it becomes inaccessible. The situation needs improvement.

4. There is a great need to give encouragement to their traditional industry of spinning and weaving. It is heartening to note that the State Government have decided to give a set of *charkha* and *kargha* to each of the families. But this is not enough. For the industry to flourish, it is necessary that it is remunerative which it has not been so far due to several factors including poor marketing. It would greatly accelerate the progress of the industry and raise the levels of the income of the farmers, if proper marketing facilities were provided. The Government could help a lot in this respect by purchasing their products at remunerative prices. These products could then be marketed through the State owned cottage industries' shops all over the country. The suggested co-operative, when formed, could also perform the function of marketing crops and wool products.