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CHANGES IN LAND USE PATTERN IN BANGLADESH OVER THE LAST TWO DECADES

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ABSTRACT

Based on secondary data of Bangladesh Bureau of Statistics, an attempt has been made in this paper to evaluate the changes in land use pattern during the period of 1980/81 to 1999/2000. Absolute changes of land use for different purposes during this period as well as trend values and growth rates were estimated. The growth estimates showed that land not available for cultivation and culturable waste land significantly increased at the rates of 2.1% and 4.09% per annum respectively. As a result, net sown area significantly decreased at the rate of .61% per annum. On the other hand, significant increase in total cropped area at the rate of .28% per annum during the period however, compensated the loss of sown area. Further, it was found that land under forest area increased insignificantly during the last two decades. The rate of decrease of current fallow land over the period was also found to be insignificant.

1. INTRODUCTION

As agriculture is the dominant sector of the economy, land enjoys the highest importance as a resource. Another important aspect of land is that the rapid growth of population in a somewhat stagnant economy puts tremendous pressure on land, thereby adding scarcity value to a natural resource which is already in great demand. With the increase of population, use of land for non-farm and commercial activities as well as for housing and other purposes are increasing, thus gradually reducing the availability of cultivable land. Per capita cultivable land in Bangladesh reduced to only about .06 hectare at the end of 2000 (BBS, 2000).

Small farms and landless households constitute about 80% of total rural households; the majority of whom depend on agriculture for their livelihood. It is obvious that total agricultural land over the periods in the past has not increased although population has increased significantly. It implies that in the near future, land available for cultivation decrease substantially which will have serious implication on agricultural production in Bangladesh.

With the above background, the prime focus of this paper is to explore the changes in land use pattern in Bangladesh during the last two decades (from 1980/81 to 1999/2000). Bangladesh Bureau of Statistics in its different issues presented land utilization statistics under the following six categories:

- i) Land not available for cultivation
- ii) Forest land

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functional differences, conceptual differences between the two small loan ideas need to be considered seriously in order to evaluate their effects on poverty alleviation in the TW.

Few studies, however, discuss the microfinance revolution from the above conceptual perspective. Remenyi and Quinones Jr. (2000) seems to be only writers who make clear conceptual distinction between microcredit and microfinance ideas in their edited volume, *Microfinance and Poverty Alleviation- Case Studies from Asia and the Pacific*. This book takes the traditional banking view for defining microfinance. Banking, defined as financial intermediation, involves bringing together 'the independent acts of savers and borrowers to facilitate one another's goals'. Microfinance is no different from this traditional banking concept except that the market for microfinance consists primarily of poor people in rural areas of TW countries who need credit for pursuing small enterprises in the informal sector. The microfinance entrepreneurs are usual business people, who meet this demand with normal profit motive. This also means that they are supposed to be self-financed eventually: "Subsidized credit and subsidized banking with the poor are inimical to 'best practice in microfinance (Remenyi, 2000, p. 27)."

Clearly then, there are two fundamental conceptual differences between microcredit and microfinance ideas. The first is profit-motive. By definition, microcredit programs are NGOs, meaning that they cannot run their operations with the objective of making profits. The microfinance, on the other hand, is a profit-making private venture. The second fundamental conceptual difference concerns the means of financing micro lending operations. Microcredit programs, being non-profit organizations, depend upon external finance, but microfinance programs must eventually become self-financed, because they are profit-making ventures. For example, moneylenders use their own money to do their business; they do not approach either national or international donor agencies for investment funds. And national and international agencies cannot help them pursue their lending ventures for obvious reasons.

III. NEOCLASSICAL ECONOMICS, SOCIAL ENTREPRENEURSHIP AND SOCIAL-CONSCIOUSNESS-DRIVEN CAPITALISM

Thus, MFIs are profit-making financial ventures like any other private financial agencies. The main feature that distinguishes them from the like agencies is that the MFIs are meant to meet the financial needs of the unfortunate section of society- the poor women in the rural areas. This noble longing no way conflicts with the normal financial rules, under which private people operate business ventures, i.e., operating business activities with resources collected from private sources. However, conflict is created in the case of MFIs, because they demand financial supports, at least at the initial stages of their operations, from the public, both national and international, as well as non-public agencies. Since this kind of help is normally meant for the nonprofits, new and additional socio-economic justifications are required for extending this assistance to private profit-making business ventures. Two varieties of such justifications are found in the literature. The first one comes from Joe Remenyi (2000), who invokes the infant-industry argument to justify subsidizing the operations of MFIs (for details,

categories of land (as mentioned above) over the period have been analysed separately and the results are discussed below:

Land Not Available for Cultivation

Table 1 presents changes in land utilization patterns during the period of 1980/81 to 1999/2000. It can be seen from the table that in early 1980's (Period I), land not available for cultivation was 6808.33 thousand acres which had increased to 8948.00 thousand acres at the end of 1990's (Period II). This means, an increase of 31.43% during 20 years period. Increase of land not available for cultivation to such an extent means that land availability for cultivation has drastically reduced during the period of 1980/81 to 1999/2000.

Table 1. Change in land use for different purposes during the period of 1980/81 to 1999/2000
(Figures in 000' acres)

Year	Not available for cultivation (1)	Forest (2)	Cultureable waste (3)	Current fellow (4)	Net sown area (5)	Total cropped area (6)
Period-I (early 80's)	6808.33	5336.67	600.67	1316.67	21246.33	32763.00
Period-II (end of 90's)	8948.00	5878.00	1040.67	958.33	19844.00	34855.67
Change during Period I and II	2139.67 (31.43%)	541.33 (10.14%)	440.00 (33.42%)	-358.33 (-27.22%)	-1402.33 (-6.60%)	2092.67 (6.39%)

*Calculated by the method of three years average
Period I= Average figures of 1980/81 to 1982/83
Period II= Average figures of 1997/98 to 1999/2000

Table 2 presents the results of linear trend function fitted to the land area not available for cultivation during the period from 1980/81 to 1999/2000. It can be seen from the table that land not available for cultivation increased by 173 thousand acres per annum. This was a significant increase as confirmed from t-value. Trend of land not available for cultivation during the period of 1980/81 to 1999/2000 can also be seen from figure 1.

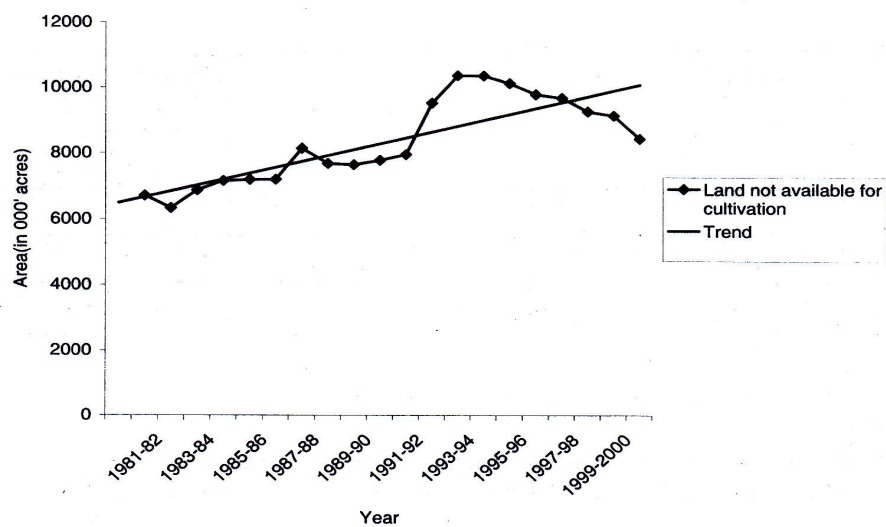
In addition to trend analysis, growth rates of land utilization patterns have also been estimated and presented in Table 3. The table shows that land not available for cultivation increased significantly at the rate of 2.1% per annum during the period of 1980/81 to 1999/2000. With the increase of population the use of land for non-agricultural purposes as well as for housing, roads, etc. are increasing day by day which caused converting land from agricultural to non-agricultural purposes, thus reducing land availability for agriculture.

Table 2. Trends of land use patterns during the period of 1980/81 to 1999/2000

(In 000' acres)

Particulars of land use	Fitted trend functions	t-value	R ²
Land not available for cultivation	$Y = 6576.174 + 173.098t$	5.800*	.651
Land under forest area	$Y = 4927.889 + 19.368t$	1.097	.063
Culturable waste land	$Y = 590.874 + 38.355t$	4.108*	.484
Current fallow land	$Y = 1755.305 - 26.577t$	-.930	.046
Net sown area	$Y = 21682.926 - 128.969t$	-5.628*	.638
Total cropped area	$Y = 32866.408 + 90.595t$	3.554*	.412

- Significant at 1% level

**Figure 1. Trend of land not available for cultivation during 1980/81 to 1999/2000****Table 3. Growth rates of land use patterns during the period of 1980/81 to 1999/2000**

Particulars of land use	Fitted semi-log function	Annual growth (% per annum)	t-value	R ²
Land not available for cultivation	$\ln Y = 8.804 + .021t$	2.1	6.221*	.683
Land under forest area	$\ln Y = 8.505 + .0033t$.33	1.008	.053
Culturable waste land	$\ln Y = 6.420 + .0409t$	4.09	4.607*	.541
Current fallow land	$\ln Y = 7.414 - .0199t$	-1.99	-1.246	.079
Net sown area	$\ln Y = 9.983 - .0061t$	-.61	-5.685*	.642
Total cropped area	$\ln Y = 10.399 + .0028t$.28	3.73*	.436

- Significant at 1% level.

Forest Land

Land area under forest was found to be 5336.67 thousand acres in Period I which has increased to 5878 thousand acres in Period II; an increase by about 10% in 20 years period (Table 1). Trend analysis showed that forest area increased by 19 thousand acres per annum (Table 2); however, the trend value was not found statistically significant. The trend of forest area during the period of 1980/81 to 1999/2000 can also be seen from Figure 2. It shows that although overall increasing trend was found, significant decrease in forest area was observed during late 1980's up to early 1990's. Further, sharp increase in forest area was found at the end of 1990's (Figure 2). Further, analysis of growth rate showed an increase of forest area by .33% per annum which was an insignificant increase as confirmed by t-value.

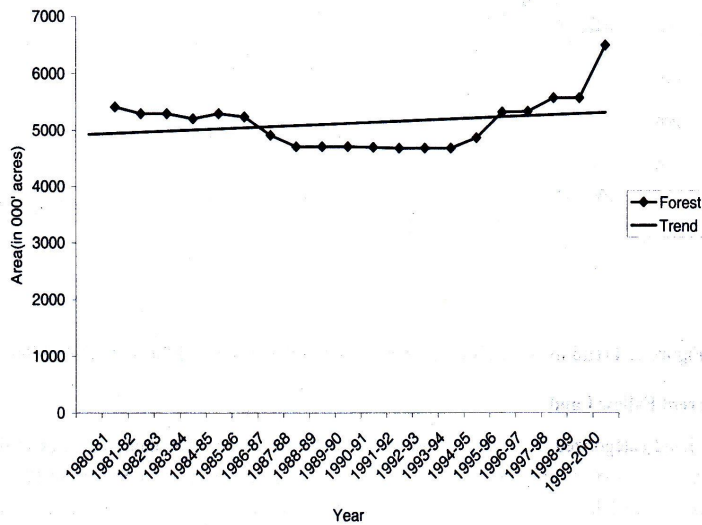


Figure 2. Trend of forest area during the period from 1980/81 to 1999/2000

Culturable Waste Land

Culturable waste land at the beginning of 1980's was about 600 thousand acres which had increased to about 1040 thousand acres, an increase by about 33%. Trend analysis showed that during the period of 1980/81 to 1999/2000, culturable waste land increased significantly at the rate of 38.35 thousand acres per annum (Table 2). Significant increase can be observed during the first half of 1990's which sharply decreased at the end of 1990's (Figure 3). Further, growth estimate showed that culturable waste land significantly increased at the rate of 4.09% per annum during the period of 1980/81 to 1999/2000. Increase of

culturable waste land at such a rate implies significant negative effect on the availability of land for crop production.

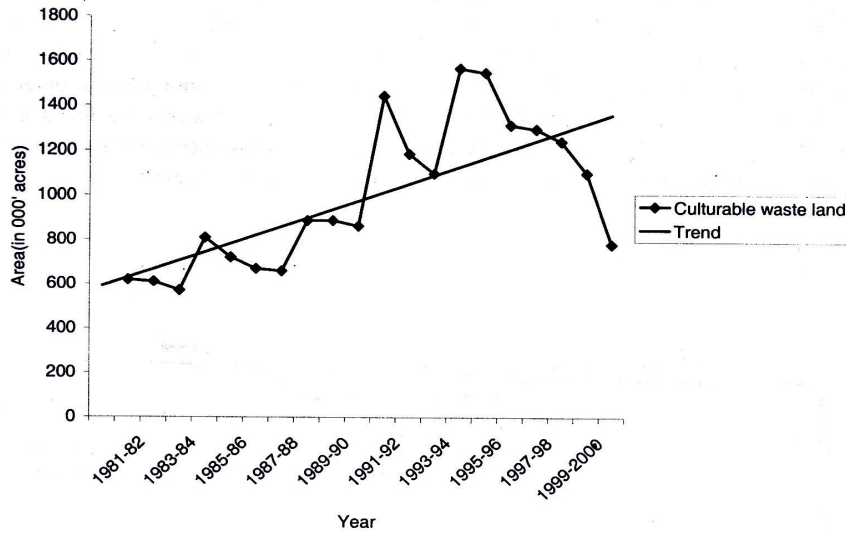


Figure 3. Trend in culturable waste land during the period of 1980/81 to 1999/2000

Current Fallow Land

Land categorized as current fallow was found to be about 1316 thousand acres at the beginning of 1980's. This however, reduced to about 958 thousand acres at the end of 1990's. Thus, current fallow land was reduced by about 358 thousand acres in 20 years time during the period of 1980/81 to 1999/2000. The trend analysis showed that the rate of decrease of fallow land as 26.57 thousand acres per annum; this however, was found statistically insignificant. The trend of current fallow land over the years can also be seen from Figure 4. It shows that extent of current fallow land sharply increased during early 1990's which again stabilized soon. Again, estimation of growth rate showed that during the period of 1980/81 to 1999/2000, area under current fallow land decreased at an insignificant rate of 1.99 per annum (Table 3).

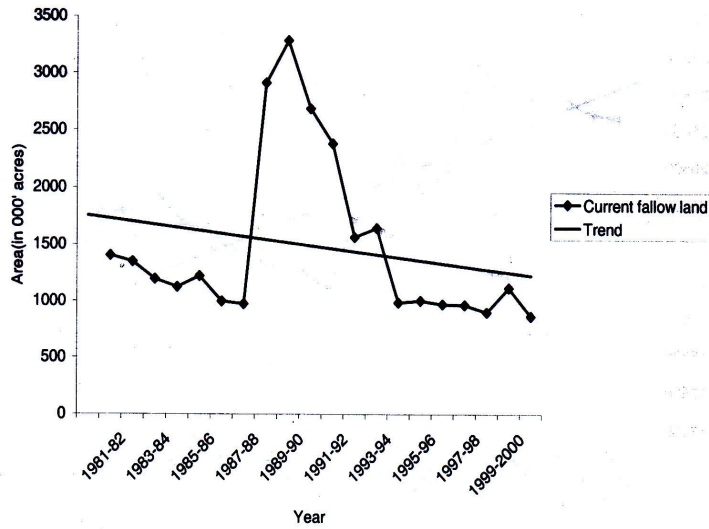


Figure 4. Trend of current fallow land during the period of 1980/81 to 1999/2000

Net Sown Area

During early 1980's (Period I), net sown area was about 21246 thousand acres which reduced to 19844 thousand acres at the end of 1990's (Period II). This means a reduction of net sown area by 6.60% in 20 years period (Table 1). Trend analysis shows that net sown area in Bangladesh during the period of 1980/81 to 1999/2000 decreased by about 129 thousand acres per year. This was a significant decrease over the period. Decreasing trend in net sown area over the years can also be seen from the graphical presentation in Figure 5. The rate of decrease in net sown area over the period of 1980/81 to 1999/2000 was estimated as -.61 per annum which was found statistically significant (Table 3).

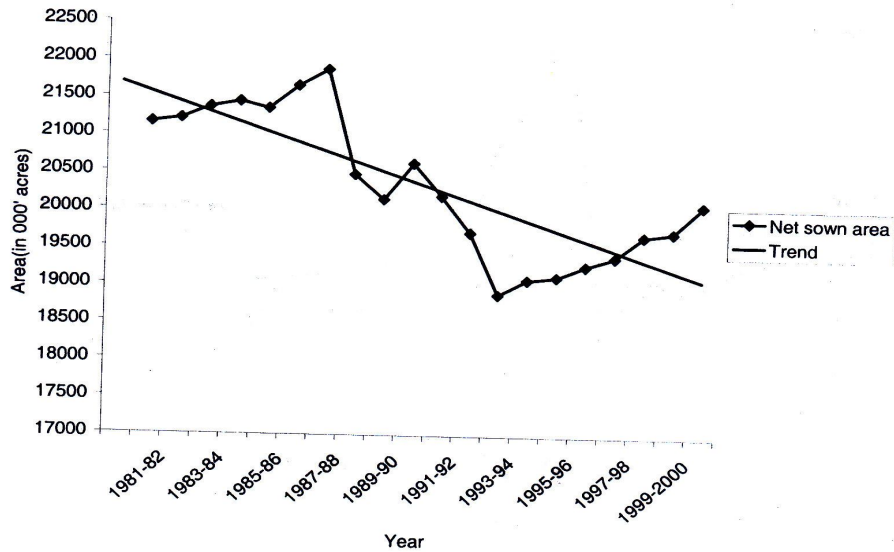


Figure 5. Trend of net sown area during the period of 1980/81 to 1999/2000

Total Cropped Area

Total cropped area during early 1980's was found to be 32763 thousand acres which at the end of 1990's increased to about 34856 thousand acres, representing an increase of 6.39% during the period (Table 1). Total cropped area was found to have increased by 90.595 thousand acres per annum (Table 2). This was a significant increase over the period. Trend of total cropped area over the period can also be seen from Figure 6. Further, estimate of growth rate showed that total cropped area during the period of 1980/81 to 1999/2000 increased by .28% per annum and the growth co-efficient was found to be statistically significant (Table 3).

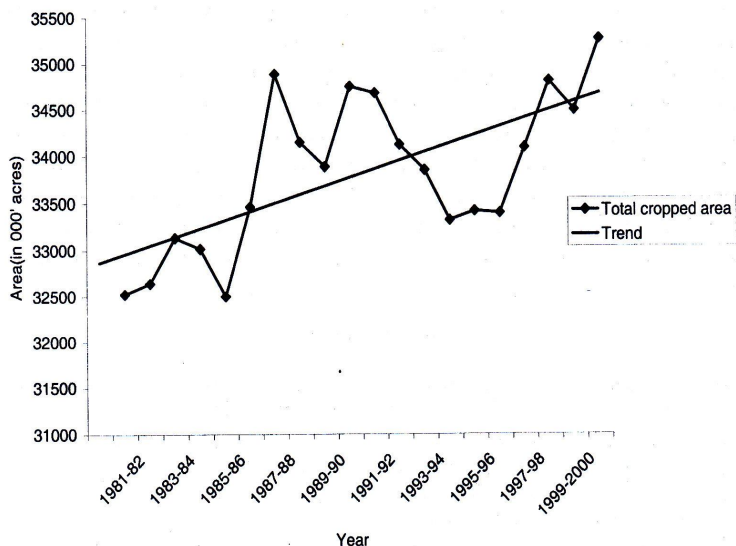


Figure 6. Trend of total cropped area during 1980/81 to 1999/2000

Analysis of net sown area and total cropped area showed that although the net sown area during the last 20 years (from 1980/81 to 1999/2000) has decreased significantly, total cropped area on the contrary has increased. As a result, cropping intensity has increased from 154.21% in early 1980's to 175.65% at the end of 1990's (Table 4). Therefore, decrease in net sown area has largely been compensated by the increase in cropping intensity.

Table 4 Changes in cropping intensity during the period of 1980/81 to 1999/2000

Year	Total cropped area (in 000' acres)	Total sown area (in 000' acres)	Cropping intensity (%)
Period-I	32763	21246	154.21
Period-II	34857	19844	175.65

Notes : Cropping Intensity = Total cropped area/ Total sown area x 100

Period I = 1980/81 to 1982/83

Period II = 1997/98 to 1999/2000

IV. CONCLUSIONS

Rapid growth of population in Bangladesh with increased use of land for housing, roads, commercial activities, etc. has resulted tremendous pressure on limited land available for agriculture. The results of the analysis in this paper showed that during the period of 1980/81 to 1999/2000, land not available for cultivation and culturable waste land significantly increased. Land under forest area was also found to have increased and current fallow land on

the other hand was found to have decreased over the period. However, the rates of increase in forest area and decrease in current fallow land were not found statistically significant. The overall analysis in this paper showed that there has been significant decrease in net sown area in Bangladesh during the period of 1980/81 to 1999/2000. On the other hand, significant increase in total cropped area took place during the same period which to some extent compensated the loss of sown area. Since land is very scarce in Bangladesh and land available for cultivation has been reducing day by day; land productivity must be increased for feeding the growing population as well as meeting demand for other crops. Finally, efforts should be made in proper land use planning in rural and semi-urban areas so that agricultural land is least affected.

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