

*To my respected parents*

*and*

*beloved Tukul*

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*This is to certify that the research work embodied in this thesis entitled "Productive potentiality and economic viability of locally available organic manures in the 'Jhora' fed carp culture of Darjeeling hills" has been carried out by Sri Abhijit Kar under my supervision and guidance and the results thereof have not been published by any other workers. He has followed the rules and regulations as laid down by the North Bengal University for the fulfilment of requirement for the degree of Doctor of Philosophy (Science).*

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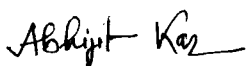
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## ABBREVIATIONS USED

a	:	Annum
AM	:	After manuring
b	:	Slope (rate of increment)
bGH	:	Bovine growth hormone
BM	:	Before manuring
BSA	:	Bovine serum albumin
bw	:	Body weight
C	:	Carbon (organic carbon)
Ca	:	Calcium
CCO <sub>2</sub>	:	Combined carbondioxide
Cal	:	Calorie
CP	:	Control pond
C/N	:	Carbon/Nitrogen
cm	:	Centimetre
cu	:	Cubic
d	:	Day
DM	:	Dry matter
DO <sub>2</sub>	:	Dissolved Oxygen
EP	:	Experimental pond
ft	:	Feet
g	:	Gram
H	:	High Protein
ha	:	Hectare
hd <sup>-1</sup>	:	Receiving sunlight per day
IMC	:	Indian major carp
K	:	Potassium (available potash)
KCal	:	Kilocalorie
Kg.	:	Kilogram
Km	:	Kilometre

LP	:	Low Protein
mg	:	Milligram
mM	:	Millimolar
mMol	:	Millimole
m	:	Metre
mm	:	Millimetre
MSL	:	Mean sea level
n	:	Number of observation
N	:	Nitrogen (total Nitrogen)
NS	:	Not Significant
OD	:	Optical density
p	:	Probability
P	:	Phosphorus (available phosphate)
ppm	:	Parts per million ( $\text{mg l}^{-1}$ )
Pro	:	Production
r	:	Regression co-efficient
RB	:	Rice bran
Rs	:	Rupees
SD	:	Standard deviation
SE	:	Standard error
t	:	t-value
Yr	:	Year
$\Delta$	:	Difference

## LEGENDS TO THE PLATES

Fig. 1. Survey map of Darjeeling – Pulbazar Block (Site of experiment) of Darjeeling District, West Bengal.

Fig.2A. Little Rangeet river.

Fig.2B. Basin of Little Rangeet river.

Fig.3A. Experimental pond at the agricultural fields of Darjeeling hills.

Fig.3B. Experimental ponds at the residential area of Pulbazar .

Fig.4A. Experimental ponds at the residential area of Pulbazar .

Fig.4B. Experimental ponds at the river course of Little Rangeet near Pulbazar .

Fig.5A. 'Jhora' water enters into the experimental ponds through PVC pipe.

Fig.5B. Monthly sampling of different fish species for growth study.

Fig.6A. Harvesting of fish from a pond near Pulbazar.

Fig.6B. Ready for marketing.

Fig.7A. Cow shed at Bijonbari area.

Fig.7B. Pig shed at Pulbazar area.

Fig. 8A. Small scale poultry farm.

Fig. 8B. Tea garden at Darjeeling Pulbazar area