Instruments for study

(9) Recorder charts/graphs.
(10) Soil oven
(11) Infrared moisture meter & Soil moisture meter.
(12) Soil Sampling boxes.
(13) Stop watch.
(14) Tape, steel, Cord
(15) Scale, steel
(16) Electric connection accessories.
(17) Cone penetratometer
(18) Shear resistance meter.
(19) Hand drill
(20) Hand saw.
(21) Iron hammer
(22) Scientific calculator
(23) Drafting Equipments - full set
(24) Camera
(25) Colour and B & W films.

Budget

a)	Procurement of intruments for study	Tk. 10,000/-
b)	Salary and allowances of extra personnel	Tk. 10,000/-
c)	In country travel and perdiem	Tk. 10,000/-
d)	Office Supplies	Tk. 5,000/-
e)	Honorarium for Collaborating agents -	Tk. 5,000/-
f)	Operation and maintenance of Vehicle and others	Tk. 10,000/-
g)	Printing and reproduction of reports	Tk. 20,000/-
		Tk. 70,000/-

Reporting requirements

The implementing agency will maintain full Laison with the collaborating agency in collection of Data, carrying out Tests and preparation of report Graph, chart diagrames, mechanics of Langol is to be prepared in consultation with the Expartriates of collaborating agency.

A preliminary report is to be submitted to the financing Agency within eight months of the start of the works.

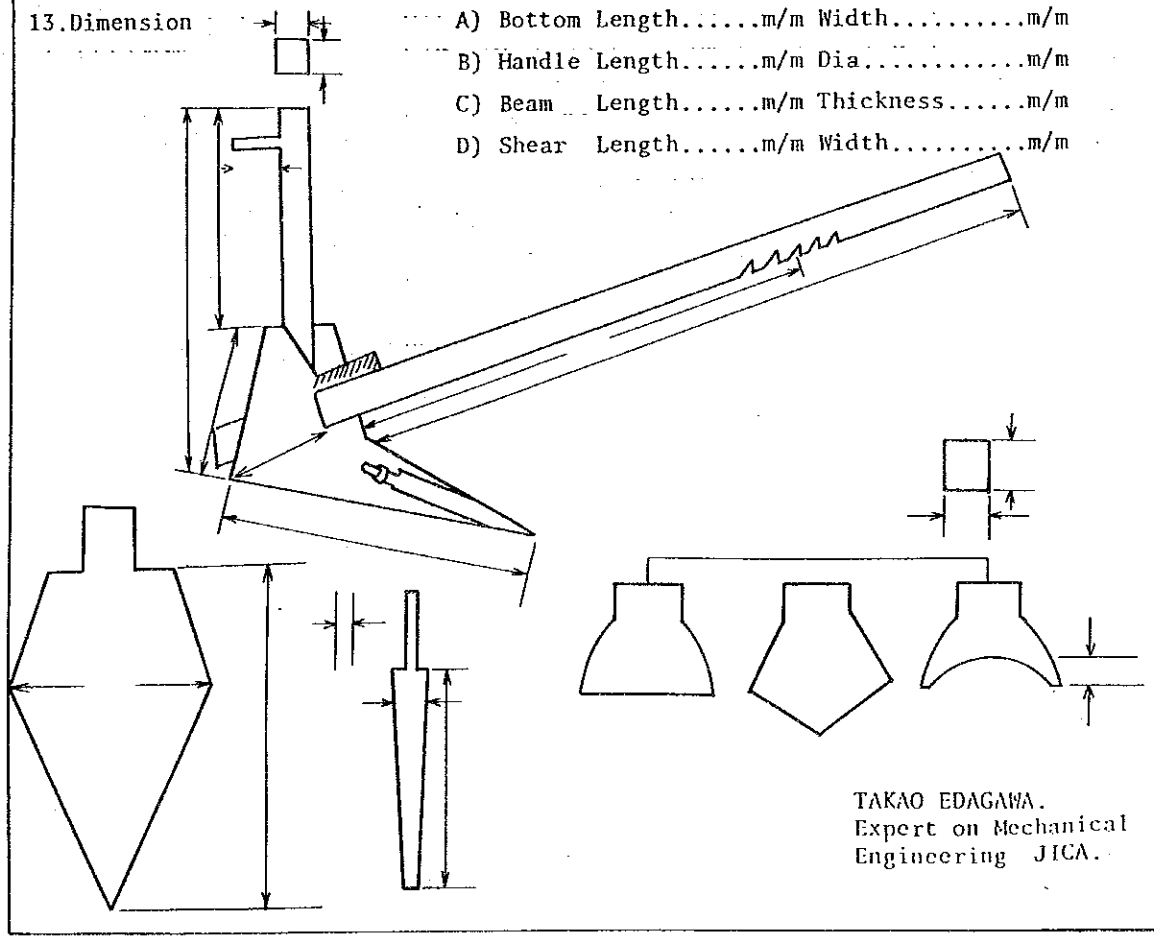
Indicative Schedule of study activities

Description of Work	1982 6	7	8	9	10	11	12	1983 1	2	3	4	5	6	7	8	9	10	11	12
1. Mobilization																			
2. Preparation for collection of Data																			
3. Study on Geometry (1st. Phase) (i) Engineering Survey																			
(ii) Compilation of Survey Data																			
(iii) Making preliminary report.																			
4. Study on Performance Characteristies (2nd Phase)																			
(i) Engineering Survey																			
(ii) Compilation of Data																			
(iii) Reporting																			
5. Final Reporting																			

表－1　調査計画日程

SAMPLES OF LOCAL PIOUGH IN BANGLADESH.

1,Name of District,.....P.S .....Village.....
2.Classification, :Land preparation implement
3.Local Name, :Like Nangal/Langal .....
4.Local Cost, :Total Taka...../-.Shear.....TK
:Bottom.....TK/Handle.....TK/Beam.....Tk
5.Power requirement, :Two,one / Cow. Buffalow.....
6.Usage. :For Ploughing etc.....
7.Average working life :Total year...../months.....
8.Out put (Ploughing) :Acre per day.....to...../Workinghours.....
9.Ploughing cost. :Per acre...Aus...Amon...Boro...Taka.../-
A)Total No of Ploughing :.....
B)Total No of Leveling. :.....
10.Total Cultivation area:.....
11.Materials of Construction.
A) Bottom :Name of Local Wood.....
B) Handle :Name of Local Wood.....
C) Beam :Name of Local Wood.....
D) Shear :Name of Iron / steel.....
12.Weight (including beam):...../Kg Bottom...../Kg Shear...../Kg
13.Dimension
A) Bottom Length.....m/m Width.....m/m
B) Handle Length.....m/m Dia.....m/m
C) Beam Length.....m/m Thickness.....m/m
D) Shear Length.....m/m Width.....m/m



TAKAO EDAGAWA.
Expert on Mechanical
Engineering JICA.

図－1. 犁 の 調 査 表

DHAKA DIVISION

SL. NO.	DATE OF COLLECTION	DISTRICT	POLICE STATION.	VILLAGE	DIMENSION OF PARTS				ANGLE OF		TOTAL WEIGHT
					BOTTOM LENGTH	BOTTOM WIDTH	HANDLE LENGTH	BEAM LENGTH	BEAM	SHEAR	
1.	2.	3.	4.	5.	6(cm).	7(cm).	8(cm).	9(cm).	10.	11.	12(Kg)
1.	14-11-82.	Dhaka.	Joyeypur.	Cohotor.	43.	10.	72.	181.	53.	18.	5.
2.	"	"	"	"	55.	16.	69.	203.	47.	12.	6.
3.	"	"	"	Goytola.	46.	12.	70.	212.	50.	20.	8.
4.	"	"	"	"	45.	12.	70.5	197.	45.	20.	8.
5.	"	"	"	Chandana.	47.1	10.	76.3	211.6	45.	15.	7.
6.	"	"	"	"	50.	10.	89.8	215.	43.	19.	5.
7.	"	"	"	"	39.5	8.3	68.3	200.	42.	11.	6.5
8.	"	"	"	"	48.3	9.9	79.	206.	42.	13.	6.
9.	"	"	"	"	47.	10.	89.5	235.	47.	17.	7.
10.	"	"	"	"	47.8	9.5	79.3	200.	47.	18.	7.5
11.	09-11-82.	"	"	Baniasala.	47.	11.	72.	180.	39.	20.	5.
12.	"	"	Samalgonj.	Kanai.	49.	16.	75.	207.	39.	19.	8.
13.	"	"	Bhadderazar.	Satviara.	55.	21.	86.	242.	45.	17.	9.
14.	"	"	Fatulla.	Sonargaon.	46.	18.	83.	214.	40.	17.	9.
15.	22-10-82.	"	Manikgonj.	Nihondo.	54.	15.	74.	222.	44.	17.	7.
16.	05-11-82.	"	Kaliakair.	Tansutrapur.	44.	13.	72.	180.	53.	17.	4.
17.	"	Tangail.	Mirzapur.	Deruya.	55.	14.	85.	215.	45.	15.	8.
18.	"	"	Bashail.	Dubail.	40.	15.	68.	200.	53.	16.	5.
19.	"	"	Kalikati.	Dhunail.	39.	13.	75.	178.	52.	15.	5.
20.	"	"	"	"	37.	13.	65.	195.	50.	13.	4.
21.	"	"	Modhupur.	Golabari.	36.	11.	68.	163.	55.	20.	4.
22.	"	Jamalpur.	Jamalpur.	Paschimpae-dighuli.	44.	15.	68.	200.	53.	16.	5.
23.	"	"	Sherpur.	Dakalnati.	43.	16.	81.	176.	51.	10.	5.
24.	"	"	"	"	47.	15.	72.	212.	50.	9.	6.
25.	27-10-82.	"	"	Rantia.	55.	23.	85.	179.	46.	11.	9.
26.	"	"	"	"	51.	24.	78.	172.	53.	16.	5.

表－2　鍬の寸法，重量，調査地名

表－3　型の寸法，重量，調査地名

SL. NO.	DATE OF COLLECTION	DISTRICT	POLICE STATION.	VILLAGE	DIMENSION OF PARTS				ANGLE OF		TOTAL WEIGHT
					BOTTOM LENGTH	BOTTOM WIDTH	HANDLE LENGTH	BEAM LENGTH	BEAM	SHEAR	
1.	2.	3.	4.	5.	6(cm).	7(cm).	8(cm).	9(cm).	10.	11.	12(Kg)
27.	06-11-82.	Mymensingh.	Muktagacha.	Charipara.	38.	14.	73.	208.	61.	15.	6.
28.	''	''	Purbodhala.	Naryandia.	38.	12.	70.	185.	56.	20.	5.
29.	07-11-82.	''	''	Barha.	41.5	12.	76.	162.	55.	11.	4.
30.	''	''	''	''	39.	12.	70.	162.	55.	19.	4.
31.	''	''	Bhaluka.	Jamirdia.	44.	16.	69.	194.	54.	25.	5.
32.	20-10-82.	Faridpur.	Boalmari.	Borobagat.	63.	20.	60.	209.	42.	15.	9.
33.	22-10-82.	''	Faridpur.	(A.E.T.I.)	50.	18.	65.	243.	46.	16.	10.
34.	''	''	Goalandoghat.	Mochukomr.	51.	16.	66.	205.	45.	22.	7.
				CHITTAGONG DIVISION.							
35.	29-11-82.	Chittagong.	Ban.	West Gondandi.	36.	12.	68.	185.	56.	20.	4.
36.	''	''	''	''	41.	11.	82.	200.	55.	20.	4.
37.	''	''	Rangonia.	Midingonger.	44.	11.	70.	167.	61.	14.	5.
38.	''	Bandarban.	Kotowali.	Bandarban.	35.	14.	82.	200.	55.	15.	6.
39.	30-11-82.	''	Cox Bazar.	Hajipur.	37.	9.	50.	189.	57.	20.	8.
40.	01-12-82.	C.H.Tracts.	Rangamati.	Rankhapani.	46.	11.	74.	192.	50.	23.	5.
41.	02-11-82.	Noakhali.	Raipur.	Paschimkeura.	47.	20.	73.	186.	50.	20.	6.
42.	''	''	Senbag.	Mohammedpur.	40.	19.	82.	205.	55.	17.	8.
43.	23-11-82.	Comilla.	Behidwa.	Dokhinshotogongi.	62.	20.	80.	173.	46.	12.	9.
44.	''	''	''	Ishu pur.	46.	17.	84.	180.	45.	13.	5.
45.	02-12-82.	''	Choddogram.	Kalikapur.	34.	20.	82.	207.	57.	18.	9.
46.	23-11-82.	Sylhet.	Moulavibazar.	Shampari.	33.	11.	95.	196.	59.	31.	9.
47.	''	''	''	''	33.	11.	95.	196.	59.	31.	6.
48.	24-11-82.	''	Kotwali.	Khadimnagar.	32.	11.	68.	203.	38.	20.	6.
49.	''	''	''	Jaintiapur.	37.	13.	62.	161.	45.	15.	6.
50.	''	''	''	''	49.	17.	72.	210.	50.	17.	7.
51.	''	''	''	Gopal.	42.	14.5	81.	251.	45.	17.	6.

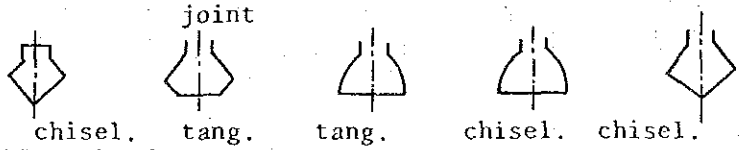
表－4　型の寸法，重量・調査地名

SL. NO.	DATE OF COLLECTION	DISTRICT	POLICE STATION.	VILLAGE	DIMENSION OF PARTS				ANGLE OF		TOTAL WEIGHT
					BOTTOM LENGTH	BOTTOM WIDTH	HANDLE LENGTH	BEAM LENGTH	BEAM	SHEAR	
1.	2.	3.	4.	5.	6(cm).	7(cm).	8(cm).	9(cm).	10.	11.	12(Kg)
52.	24-11-82.	Sylhet.	Kotwali,	Jaintiapur,	32.	14.5	65.	216.	40.	25.	5.
53.	''	''	''	Mollanagar,	26.	11.5	63.	244.	45.	17.	6.
54.	''	''	Srimongal.	Esopur.	31.5	12.5	71.	155.	50.	18.	5.
55.	''	''	Madhobpur.	Surma.	37.	13.	67.	204.	53.	15.	5.
				RAJSHAHI DIVISION							
56.	19-11-82.	Rajshahi.	Nator.	Borfish pur.	52.	26.	80.	156.	42.	10...	6.
57.	21-09-82.	''	''	Biraldah.	59.	21.	78.	190.	35.	13.	11.
58.	''	''	''	''	55.	25.	75.	220.	40.	14.	13.
59.	22-09-82.	''	Paba.	Barabanagram.	60.	24.	75.	265.	37.	11.	22.
60.	''	''	''	''	54.	23.	75.	220.	37.	20.	14.
61.	23-09-82.	Rangpur.	Gaibandha.	(A.E.T.I.)	49.	28.	78.	220.	43.	14.	5.5
62.	''	''	''	''	55.	30.	75.	263.	42.	20.	11.
63.	''	''	''	Gaibandah.	58.	26.	75.	240.	40.	13.	8.
64.	24-09-82.	''	Ranjpur.	Alam Nagar.	49.	26.	75.	240.	40.	17.	9.
65.	''	Dinajpur.	Parbatipur.	Sonapukur.	42.	21.	82.	175.	43.	15.	5.
66.	''	''	''	''	50.	26.	85.	226.	38.	12.	6.
67.	''	''	Phulbari.	Barai.	57.	31.	77.	213.	37.	11.	11.
68.	25-09-82.	''	Jute	Division.	58.	29.	89.	197.	38.	16.	12.
69.	''	''	Thakur.	Bholihat.	35.	17.	75.	145.	40.	11.	5.
70.	21-09-82.	Pabna.	Ishurdi.	(A.E.T.I.)	45.	30	72.	215.	41.	12.	7.
71.	''	''	''	Aronkhola.	55.	30.	75.	215.	41.	12.	9.
72.	''	''	''	Ishurdi.	64.	26.	73.	217.	41.	14.	7.
73.	19-11-82.	''	Shuzanagar.	Ahmod pur.	55.	22.	72.	225.	47.	13.	10.
74.	''	''	Shazad pur.	Aladi pur.	60.	21.	74.	225.	45.	12.	9.
75.	''	''	Shadat pur.	Taita.	53.	18.	70.	190.	48.	19.	8.
76.	''	Bogra.	Bogra.	Nomshep pur.	29.	20.	72.	205.	51.	20.	6.

表－5　犁の寸法，重量，調査地名

SL. NO.	DATE OF COLLECTION	DISTRICT	POLICE STATION.	VILLAGE	DIMENSION OF PARTS				ANGLE OF		TOTAL WEIGH
					BOTTOM LENGTH	BOTTOM WIDTH	HANDLE LENGTH	BEAM LENGTH	BEAM	SHEAR	
1.	2.	3.	4.	5.	6(cm).	7(cm).	8(cm).	9(cm).	10.	11.	12(Kg
77.	19-11-82.	Bogra.	Bogra.	Momshep: pur.	46.	23.	75.	200.	48.	11.	9.
78.	''	''	Sher pur.	Mirza pur.	47.	22.	78.	190.	54.	18.	8.
79.	26-09-82.	''	Bogra Sadar,	Badruicmazira.	62.	32.	75.	195.	35.	17.	9.
80.	''	''	''	''	30.	14.	70.	186.	47.	12.	4.
				KHULNA DIVISION.							
81.	17-10-82.	Khulna.	Tipna.	Durnuria.	40.	12.	66.	167.	45.	16.	5.5
82.	''	''	''	''	38.	11.	78.	183.	31.	13.	4.8
83.	''	''	Satkhira.	Mohmed pur.	43.	12.	66.	196.	34.	15.	7.
84.	''	''	RounBijoypur.	Bagerhat.	0.	9.	60.	203.	50.	26.	5.
85.	''	''	Daulat pur.	Modhyadanga.	26.	12.	63.	183.	35.	12.	6.
86.	''	''	Koera.	Koera.	0.	8.5	60.	189.	30.	11.	9.7
87.	''	''	''	''	0.	8.	60.	144.5	30.	12.	7.5
88.	''	Jessore.	Obcinagar.	Mohakar.	50.	18.	70.	125.	35.	12.	6.
89.	''	''	Kotowali.	Hamid pur.	52.	15.	67.	191.	42.	16.	20.
90.	18-10-82.	''	Sharsa.	Sharsa.	51.	16..	66.	205.	54.	15.	9.
91.	20-10-82.	''	Jhenidh.	Lokicowi.	49.	23.	75.	215.	46.	12.	10.
92.	''	Kushtia.	Alamdanga.	Kulpala.	65.	19.	80.	215.	43.	10.	14.
93.	''	''	Kushtia.	Nowdahotbari.	60.	20.	93.	215.	51.	15.	12.
94.	''	''	Kumarkhali.	Srilampur.	66.	23.	75.	226.	42.	15.	12.
95.	21-10-82.	Barisal.	Bakergonj.	Dhumhistation.	25.	16.	64.	177.	42.	17.	6.
96.	''	''	''	Dudalmou.	25.	11.	60.	143.	48.	23.	5.
97.	''	''	Kotowali.	Kaladema.	25.	17.	66.	174.	45.	17.	6.
98.	''	''	Gournadi.	Kashimabad.	10.	15.	58.	178.	45.	18.	7.
99.	''	Patuakhali.	Patuakhali:	Kalikapur.	0.	12.	75.	250.	63.	27.	5.
100.	''	''	''	Siali.	0.	13.	66.	163.	60.	21.	5.

DATA OF DHAKA DIVISION

SL No	Specifications.	District. Dhaka. (m.m)	Faridpur (m.m)	Mymen-singh (m.m)	Tangail. (m.m)	Jama-lpur. (m.m)	Average. (m.m)
1.	Beam length.	2038.	2190.	1822.	1902.	1878.	1966.
2.	Beam width.	72.4	90.	60.	63.4	54.4	68.04
3.	Beam thickness.	31.6	46.6	27.	31.	28.	32.8
4.	Bottom length.	497.	546.6	415.	446.	480.	476.9
5.	Bottom width.	156.	180.	140.	126.	196.	159.6
6.	Bottom thickness.	133.	73.3	98.	120.	128.	110.4
7.	Plough length.	962.	623.3	903.	1226.	1310.	1008.8
8.	Length of handle.	no joint	393.3	no joint	no joint	no joint	393.3
9.	Length of grip.	71.	123.3	84.	52.4	74.	80.9
10.	Joint or no joint.	no joint.	handle joint	top joint.	top joint.	top joint	
11.	Shape of bottom.						
12.	Type of shear.	chisel.	tang.	tang.	chisel.	chisel.	
13.	Shear length.	260.	360.	206.	218.	204.	249.6
14.	Shear of width.	63.	73.3	77.	44.	54.	62.2
15.	Shear thickness.	4.1	9.8	5.	6.	4.3	5.8
16.	Name of iron.	loha.	loha.	loha.	loha.	loha.	
17.	Total of weight. (K.g)	6.7	8.6	4.8	5.4	6.0	4.9
18.	Total cost. (Tk.)	97.5	122.	73.	93.	63.8	89.86

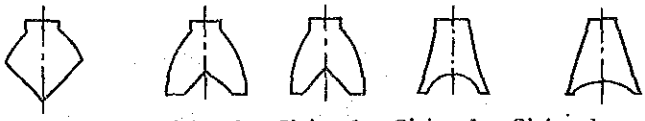
表－6　ダッカ州県別犁の平均値

DATA OF CHITTAGONG DIVISION.

SL No	Specifications.	District. Chitta-gong (m.m)	C.H. Tracts. (m.m)	Bandor-bon (m.m)	Comilla. (m.m)	Noa-khali. (m.m)	Sylhet. (m.m)	Average. (m.m)
1.	Beam length.	1925.	1920.	1945.	1866.	1955.	2098.	1951.5
2.	Beam width.	55.	60.	57.5	66.6	55.	52.1	57.7
3.	Beam thickness.	27.5	30.	30.	36.6	27.5	26.4	29.6
4.	Bottom length.	385.	460.	360.	473.3	435.0	313.8	402.8
5.	Bottom width.	85.	110.	115.	190.	230.	131.1	143.5
6.	Bottom thickness.	60.	170.	135.	174.	220.	148.5	151.2
7.	Plough length.	730.	940.	710.	833.3	765.	1128.	851.
8.	Length of handle.	620.	740.	660.	650.	630.	360.	610.
9.	Length of grip.	275.		250.	180.	215.	120.	208.
10.	Joint or no joint.		(joint of handle)				no joint	
11.	Shape of bottom.							
12.	Type of shear.	tang.	tang.	tang.	tang.	tang.	tang.	
13.	Shear length.	230.	300.	270.	230.	200.	217.1	241.1
14.	Shear of width.	80.	60.	77.5	60.	65.	59.2	66.9
15.	Shear thickness.	3.	3.	4.	5.	3.	3.	3.5
16.	Name of iron.	loha.	loha.	loha.	loha.	loha.	loha.	
17.	Total of weight. (K.g.)	4.	5.	7.	7.6	7.	5.7	6.
18.	Total cost. (Tk.)	111.	40.	55.	110.	102.5	61.4	79.9

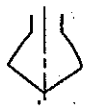
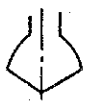
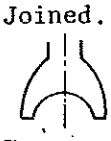
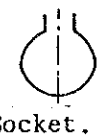
表－7　チッタゴン州の県別犁の平均値

DATA OF RAJSHAHI DIVISION.

SL No	Specifications.	District. Rajshahi. (m.m)	Pabna. (m.m)	Bogra. (m.m)	Rangpur. (m.m)	Dinajpur. (m.m)	Average. (m.m)
1.	Beam Length.	2237.5	2145.	1952.	2410.	1912.	2131.3
2.	Beam Width.	86.7	70.	A.90. B.60.	65.	A. 66. B. 52.	75.5
3.	Beam Thickness.	45.	42.	A. 33.5 B. 60.	30.	A. 33. B. 52.	36.7
4.	Bottom Length.	560.	553.	428.	540.	484.	513.
5.	Bottom Width.	238.	245.	280.	267.5	246.	254.3
6.	Bottom Thickness.	174.	161.	188.	155.	14.4	164.4
7.	Plough length.	766.	726.6	616.6	760.	810.	747.
8.	Length of handle.	510.	415.	590.	625.	586.	545.2
9.	Length of Grip.	124.	159.1	120	136.2	129.	132.04
10.	Joined or no Joined.	(Joined to handle and Bottom.)					
11.	Shape of Bottom.						
12.	Type of Shear.	Tang.	Chisel.	Chisel.	Chisel.	Chisel.	
13.	Shear Length.	282.5	300.	295.	227.5	264.	237.8
14.	Shear Width.	85.	60	63.	30.	37.5	55.1
15.	Shear Thickness.	7.	6.	5.5	6.	6.5	6.2
16.	Name of Iron.						
17.	Weigth of plows.	15.	9.	6.5	8.3	7.2	9.2
18.	Total Cost.	131.25	120.	67.50	93.50	71.30	96.51

表－8　ラジシャヒ州，県別犁の平均値

DATA OF KHULNA DIVISION.

SL No	Specifications.	District. Khulna. (m.m)	Jessore. (m.m)	Kushtia. (m.m)	Barisal. (m.m)	Patuakhali. (m.m)	Average. (m.m)
1.	Beam Length.	1807.8	1975.	2186.6	1605.	2075.	1927.88
2.	Beam Width.	60.	82.5	85.3	94.5	80.	80.46
3.	Beam Thickness.	28.5	31.5	43.6	42.	40.	37.12
4.	Bottom Length.	379.2	522.5	636.6	460.	275.	454.66
5.	Bottom Width.	87.8	180.	206.6	130.	125.	145.88
6.	Bottom Thichness.	58.3	58.	153.3	75.	40.	76.92
7.	Plougth length.	627.1	682.5	736.6	590.	705.	668.24
8.	Length of handle.	420.	460.	386.6	no Joint.	no Joint.	422.2
9.	Length.of Grip.	80.	150.	143.3	142.	142.	129.46
10.	Joined or no Joined.	no Join. Joined.	Joined.	Joined.	Joined.	no Joined.	
11.	Shape of Bottom.						
12.	Type of Shear.	Tang.	Chisel.	Chisel.	Tang.	Socket.	
13.	Share Length.	219.7	290.	363.3	215.	170.	251.6
14.	Share Width.	65.7	53.7	43.3	75.	107.5	69.04
15.	Share Thickness.	4.2	6.3	10.	6.	3.	5.9
16.	Name of Iron.	Loha.	Loha.	Loha.	Loha.	Loha.	
17.	Total Weigth(K.g)	6.5	11.2	12.6	6.	5.	8.26
18.	Total Cost (T.K)	62.4	68.75	173.33	82.50	55.	88.34

表－9　クルナ州，県別犁の平均値

PRICES OF LOCAL PLOWS IN BANGLADESH.

SL. NO.	DISTRICT.	TOTAL PRICE(TK)
1.	Dhaka.	100.
2.	,,	100.
3.	,,	100.
4.	,,	100.
5.	,,	85.
6.	,,	90.
7.	,,	75.
8.	,,	75.
9.	,,	80.
10.	,,	110.
11.	,,	35.
12.	,,	125.
13.	,,	125.
14.	,,	80.
15.	,,	110.
16.	,,	100.
17.	Tangail.	100.
18.	,,	200.
19.	,,	60-70.
20.	,,	70-75.
21.	,,	70-75.
22.	Jamalpur.	100.
23.	,,	50.
24.	,,	50.
25.	,,	65.
26.	,,	54.
27.	Mymensingh.	100.
28.	,,	40-45.
29.	,,	85.
30.	,,	80.
31.	,,	50.
32.	Faridpur.	50.
33.	,,	120.
34.	,,	96.
35.	Chittagong.	100.
36.	,,	122.
37.	,,	70.
38.	Bandarbon.	60.
39.	,,	50.
40.	C.H.Tracts.	40.
41.	Noakhali.	80.
42.	,,	125.
43.	Comilla.	80.
44.	,,	100.
45.	,,	150.
46.	Sylhet.	50.
47.	,,	75.
48.	,,	85.
49.	,,	40.
50.	,,	80.
51.	Sylhet.	60.
52.	,,	60.
53.	,,	70.
54.	,,	40.
55.	,,	70.
56.	Rajshahi.	100.
57.	,,	95.
58.	,,	150.
59.	,,	150.
60.	,,	130.
61.	Rangpur.	90.
62.	,,	100.
63.	,,	80.
64.	,,	100.
65.	Dinajpur.	90.
66.	,,	100.
67.	,,	75.
68.	,,	48.
69.	,,	70.
70.	Pabna.	100.
71.	,,	120.
72.	,,	120.
73.	,,	150.
74.	,,	100.
75.	,,	50.
76.	Bogra.	100.
77.	,,	90.
78.	,,	70.
79.	,,	70.
80.	,,	65.
81.	Khulna.	60.
82.	,,	55.
83.	,,	75.
84.	,,	50.
85.	,,	60.
86.	,,	45.
87.	,,	90-95.
88.	Jessore.	75.
89.	,,	100.
90.	,,	95.
91.	,,	80.
92.	Kushtia.	200.
93.	,,	170.
94.	,,	150.
95.	Barisal.	100.
96.	,,	50-65.
97.	,,	80.
98.	,,	100.
99.	Patuakhali.	50.
100.	,,	60.

表－10. 犁 の 価 格

WORKING LIFE OF PLOUGHS.

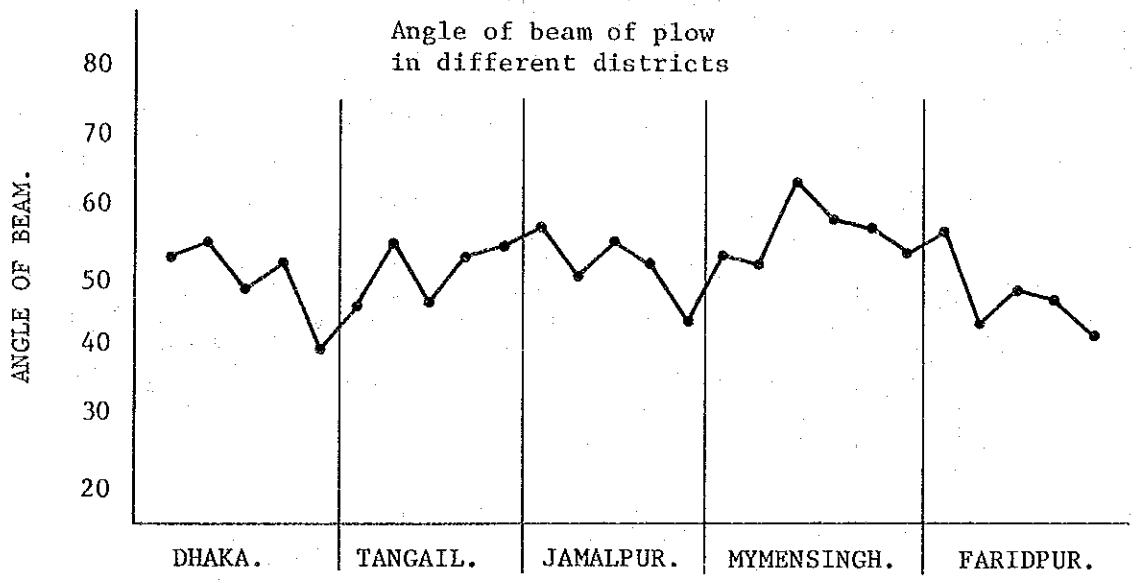
SL. No.	DISTRICT	WORKING LIFE 作期 Year/Season		SL. No.	DISTRICT	WORKING LIFE 作期 Year/Season	
1.	Dhaka.	5	12	51.	Sylhet.	2	4
2.	,,	5	12	52.	,,	2	5
3.	,,	7	14	53.	,,	5	12
4.	,,	4	10	54.	,,	1	2
5.	,,	2	5	55.	,,	1	2
6.	,,	3	7				
7.	,,	3	6	56.	Rajshahi.	1	3
8.	,,	3	8	57.	,,	1	2
9.	,,	3	7	58.	,,	1	2
10.	,,	3	7	59.	,,	1	3
11.	,,	6	12	60.	,,	1	2
12.	,,	1.5	4	61.	Rangpur.	1	2
13.	,,	1	3	62.	,,	1	2
14.	,,	1.5	2	63.	,,	1.5	4
15.	,,	1.5	4	64.	,,	1.5	4
16.	,,	4	10	65.	Dinajpur.	1	3
17.	Tangail.	2	5	66.	,,	1	2
18.	,,	6	15	67.	,,	1.5	4
19.	,,	8	20	68.	,,	1	2
20.	,,	5	13	69.	,,	1	2
21.	,,	10	25	70.	Pabna.	1	2
22.	Jamalpur.	2	6	71.	,,	2	5
23.	,,	10	25	72.	,,	2	5
24.	,,	1	3	73.	,,	1	3
25.	,,	1	3	74.	,,	1	2
26.	,,	1	3	75.	,,	2	4
27.	Mymensingh.	4	10	76.	Bogra.	3	7
28.	,,	3	8	77.	,,	1	2
29.	,,	5	12	78.	,,	1	2
30.	,,	5	12	79.	,,	2	5
31.	,,	5	12	80.	,,	2	5
32.	Faridpur.	1	2				
33.	,,	1	2	81.	Khulna.	2	4
34.	,,	1	2	82.	,,	2	4
				83.	,,	3	6
35.	Chittagong.	5	12	84.	,,	2	4
36.	,,	3	8	85.	,,	2	5
37.	,,	1	3	86.	,,	4	10
38.	Bandarban.	2	4	87.	,,	3	8
39.	,,	1	2	88.	Jessore.	2	5
40.	C.H.Tracts.	5	12	89.	,,	1	3
41.	Noakhali.	1	2	90.	,,	1	3
42.	,,	2	4	91.	,,	1	2
43.	Comilla.	2	4	92.	Kushtia.	1	2
44.	,,	3	6	93.	,,	1	2
45.	,,	2	4	94.	,,	1	2
46.	Sylhet.	1	2	95.	Barisal.	2	5
47.	,,	2	5	96.	,,	1	2
48.	,,	1	2	97.	,,	1	1
49.	,,	2	5	98.	,,	1	2
50.	,,	2	4	99.	Patuakhali.	2	2
				100.	,,	1	2

表－11. 犁の耐用年数

ANGLE OF BEAM.

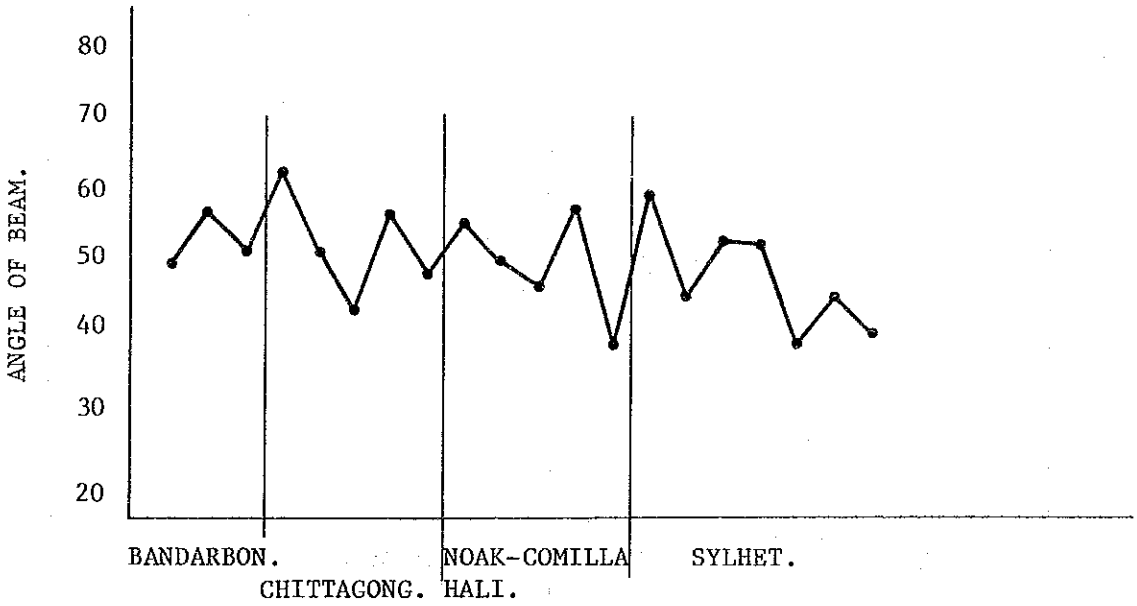
SL.NO.	DHAKA DIVISION		CHITTAGONG DIVISION		RAJSHAHI DIVISION		KHULNA DIVISION.	
1.		52.	C.H.T.	50.		54.		45.
2.		53.		57.	Bogra.	40.		31.
3.		47.	Bandar-	57.		48.	Khulna.	34.
4.	Dhaka.	50.	bon.	62.		35.		50.
5.		39.		51.		32.		35.
6.		44.	Chitta-	43.		42.		46.
7.		53.	gong.	56.		30.		42.
8.		48.		48.	Rajshahi.	37.	Jessore.	54.
9.		45.	Noakhali.	55.		37.		46.
10.		51.		50.		35.		35.
11.	Tangail.	52.		46.		34.		43.
12.		50.	Comilla.	57.		40.	Kushtia.	51.
13.		55.		38.		47.		42.
14.		48.		59.		48.	Barisal.	45.
15.		53.		45.	Pabna.	41.		48.
16.		53.		38.		40.	Patua-	63.
17.	Jamalpur.	50.	Sylhet.	53.		41.	khali.	60.
18.		42.		52.		40.		
19.		51.		45.		43.		
20.		50.		40.	Rangpur.	42.		
21.		61.		40.		46.		
22.		56.				40.		
23.		55.				40.		
24.		55.				43.		
25.	Mymen-	55.				37.		
26.	singh.	54.				35.		
27.		52.			Dinajpur.	40.		
28.		54.				38.		
29.		42.				31.		
30.	Faridpur.	46.				38.		
31.		45.						
32.		40.						
Average.		50.		49.6		39.3		44.6

表－12. ビ ー ム 角



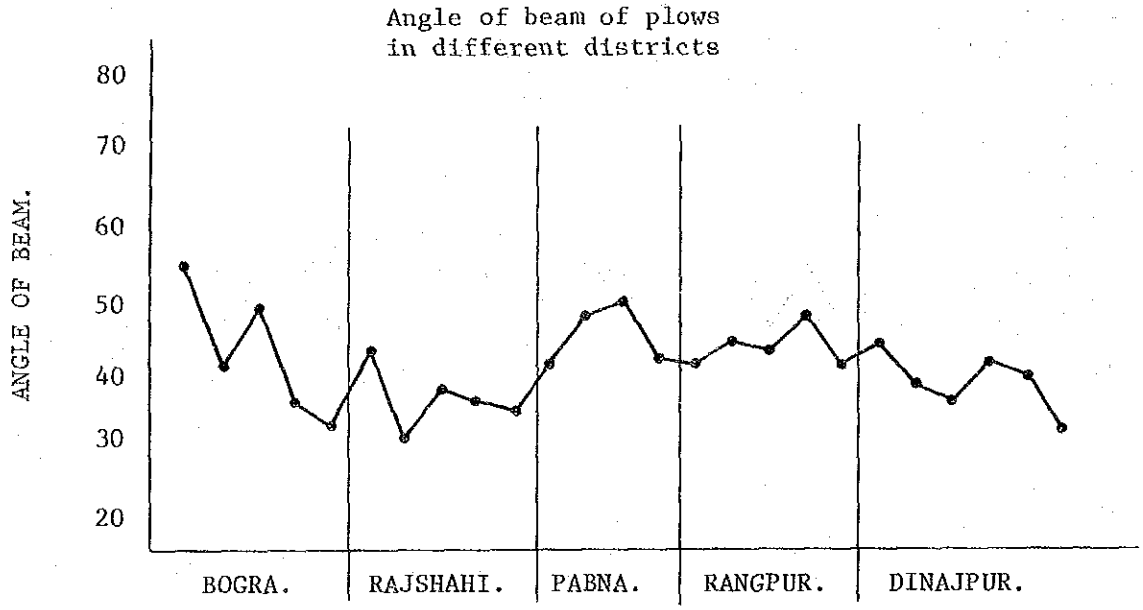
図－1. ダッカ州の犁のビーム取付角

DHAKA DIVISION



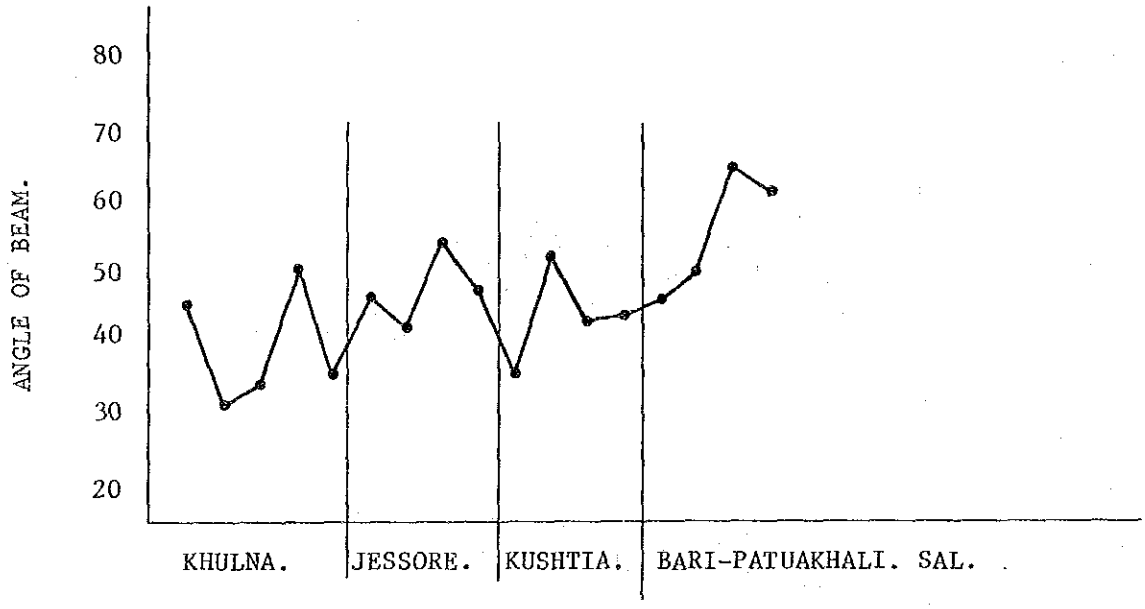
図－2. チッタゴン州の犁のビーム取付角

CHITTAGONG DIVISION



図－3. ラジシャヒ州の犁のビーム取付角

RAJSHAHI DIVISION



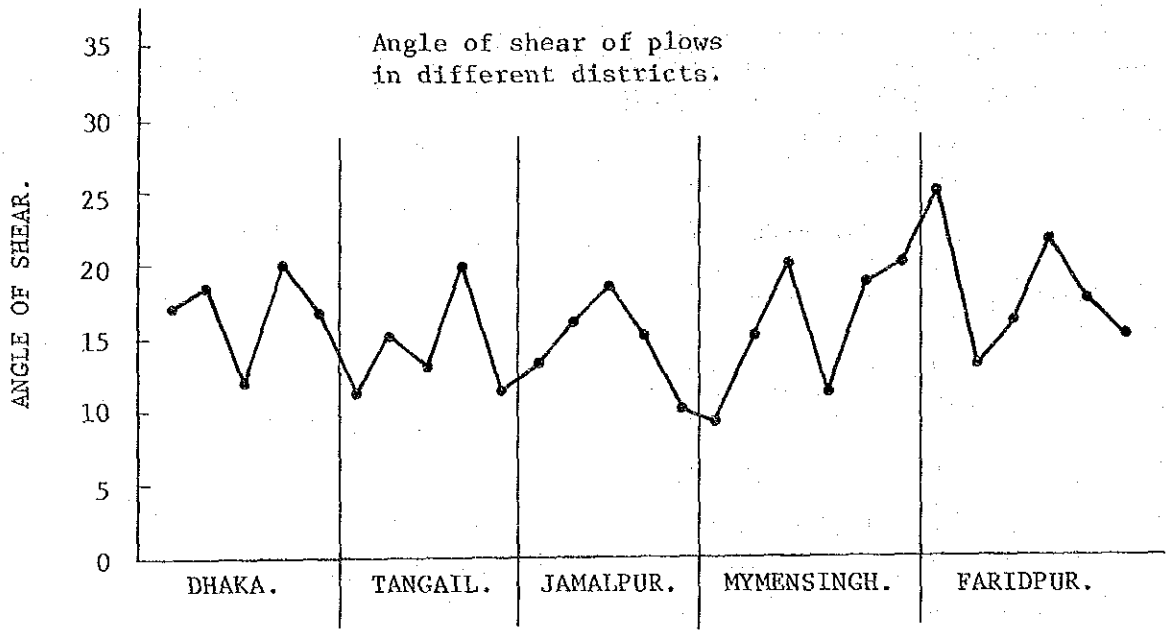
図－4. クルナ州の犁のビーム取付角

KHULNA DIVISION

ANGLE OF SHEAR.

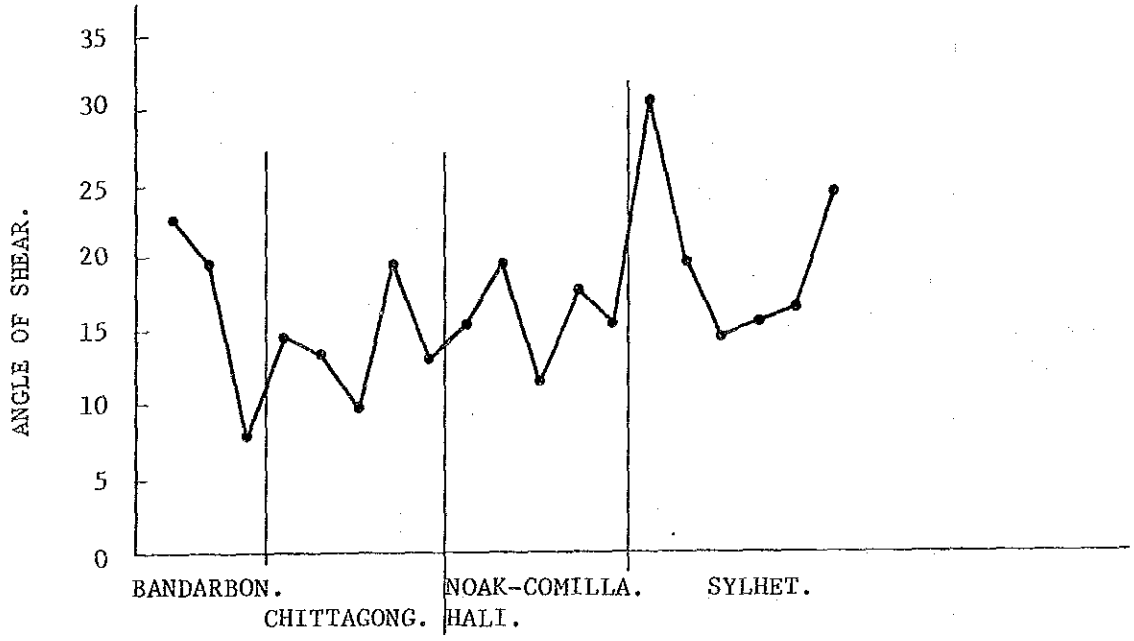
SL.NO.	DHAKA DIVISION		CHITTAGONG DIVISION		RAJSHAHI DIVISION		KHULNA DIVISION	
1.		17.	C.H.T.	23.		18.		16.
2.		18.		20.		09.		13.
3.		12.	Bandarbon	07.	Bogra.	11.	Khulna.	15.
4.	Dhaka.	20.		15.		17.		26.
5.		20.		14.		17.		12.
6.		17.	Chitta-	10.		12.		18.
7.		17.	gong.	20.		10.		16.
8.		11.		13.		20.	Jessore.	15.
9.		13.	Noakhali.	17.		11.		12.
10.		15.		20.	Rajshahi.	20.		12.
11.	Tangail.	13.		12.		13.		10.
12.		15.	Comilla.	18.		16.	Kushtia.	15.
13.		20.		16.		13.		15.
14.		11.		31.		13.	Barisal.	18.
15.		13.		20.		19.		23.
16.		16.		20.	Pabna.	12.	Patua-	27.
17.	Jamalpur.	18.	Sylhet.	15.		10.	khali.	21.
18.		15.		16.		14.		
19.		10.		17.		13.		
20.		09.		25.		13.		
21.		11.		25.	Rangpur.	20.		
22.		19.				18.		
23.		20.				17.		
24.	Mymen-	25.				12.		
25.	singh.	13.				15.		
26.		15.				11.		
27.		15.				18.		
28.		20.			Dinajpur.	15.		
29.		15.				12.		
30.	Faridpur.	16.				15.		
31.		22.				16.		
32.		20.						
Average		15.9		17.3		14.5		16.7

表—13. 犁 刃 角 度



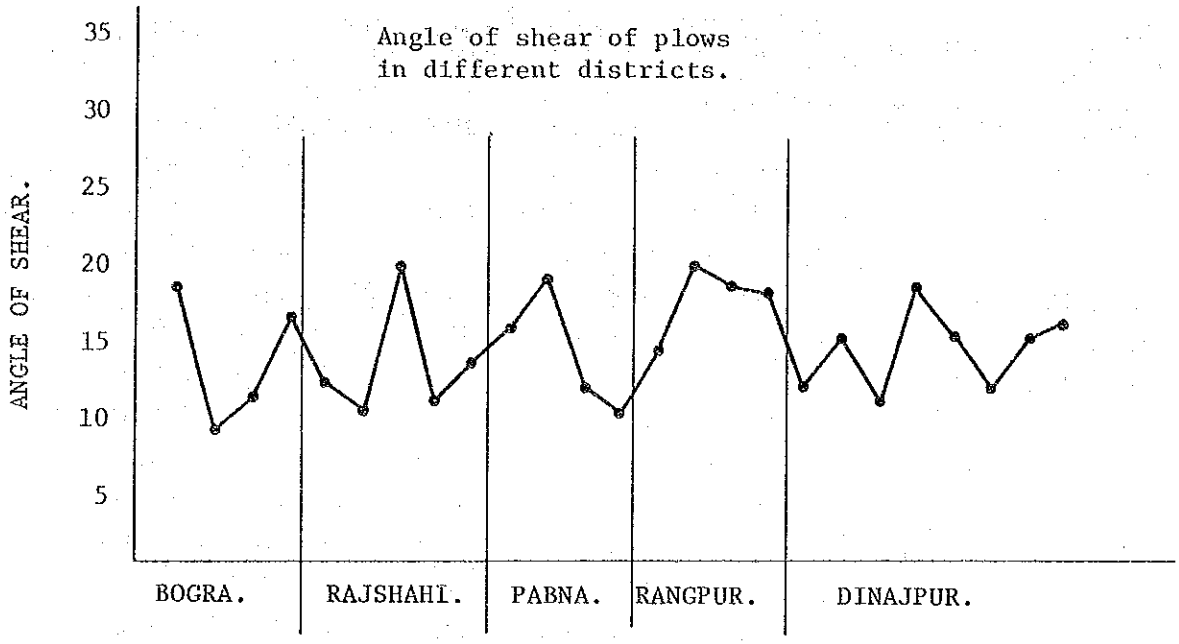
図－5. ダッカ州の犁刃角

DHAKA DIVISION



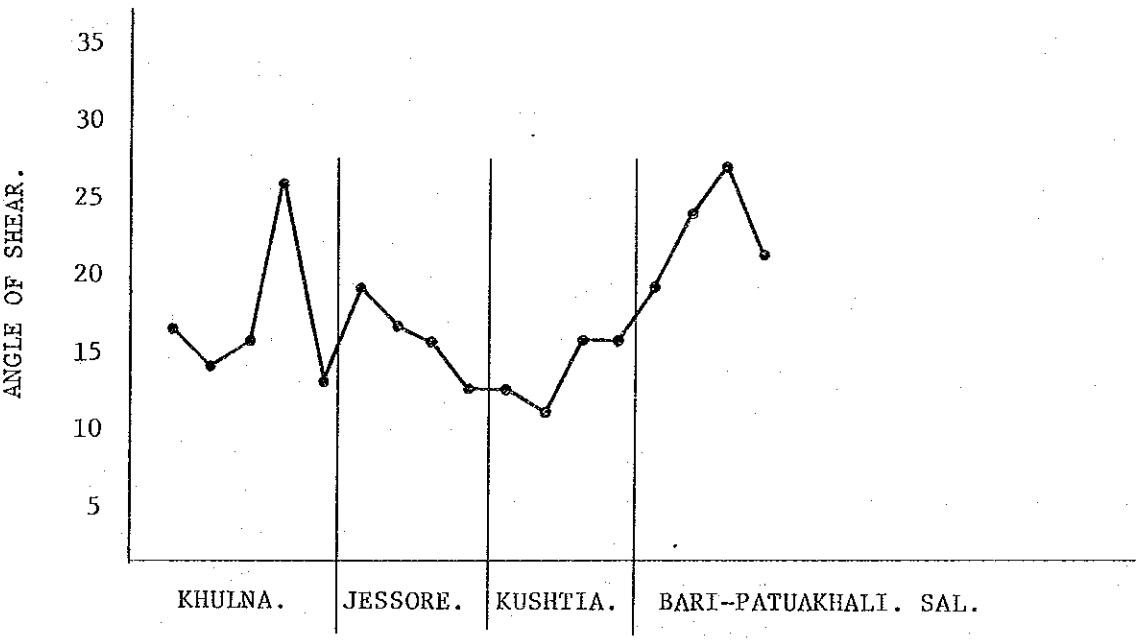
図－6. チッタゴン州の犁刃角

CHITTAGONG DIVISION



図－7. ラジシャヒ州の犁刃角

RAJSHAHI DIVISION



図－8. クリナ州の犁刃角

KHULNA DIVISION

SAMPLES OF LOCAL CLAY IN BANGLADESH.

SL. NO. 1.	DATE OF COLLECTION. 2.	DISTRICT. 3.	POLICE STATION. 4.	VILLAGE. 5.	% OF SAND. 6.	% OF SILT. 7.	% OF CLAY. 8.	TEXTURE. 9.
1.	05-11-82.	Dhaka	Kaliakair	Tansutrapur	35.6.	44.8	21.6	Loam. (L)
2.	06-11-82	"	Sonargaon	Kanainagor	34.3	54.2	11.5	Siltloam
3.	"	"	Badwyrbazar	Badwyrbazar	12.3	71.5	16.2	(SiL)
4.	"	"	Waryangonj	Sonargaon	11.6	74.1	14.3	"
5.	07-11-82	"	Joydevpur	Goytola	13.7	70.3	16.0	"
6.	09-11-82	"	"	Baniasala	39.4	41.4	19.2	Loam
7.	14-11-82	"	"	Cohotor	17.1	60.3	22.6	Siltloam
8.	22-10-82	"	Manikgonj	Nihondo	13.6	56.6	29.8	SiltClayLoam
9.	05-11-82	Tangail	Mirzapur	Deruya	43.0	50.9	6.1	Siltloam
10.	"	"	"	Zogirgopa	38.5	37.8	23.7	Loam
11.	"	"	Bashail	Dubail	14.6	57.9	27.5	Silt Loam
12.	"	"	Kalihati	Dhunail	20.5	67.5	12.0	(SiL)
13.	"	"	Madhupur	Golabari	11.1	68.1	20.0	(SiL)
14.	27-10-82	Jamalpur	Sherpur	Rantia	70.2	20.6	9.2	SandyLoam
15.	05-11-82	"	Jamalpur	Paschim Pardighuli	28.2	53.6	18.2	SiltLoam
16.	"	"	Sherpur	Dakalhati	34.9	51.0	14.1	(SiL)
17.	06-11-82	Mymensingh	Muktagacha	Charipara	43.8	45.6	10.6	Loam
18.	"	"	Purbodhola	Naryandia	40.5	45.1	14.4	"
19.	07-11-82	"	"	Barha	30.1	54.4	15.5	Silt Loam
20.	"	"	Bhaluka	Jamirdia	32.8	49.0	18.2	Loam
21.	20-10-82	Faridpur	Boalmari	Borobaget	5.4	60.1	34.5	Siltyclayloam
22.	"	"	"	"	18.5	63.3	18.2	Siltloam
23.	22-10-82	"	Goalandaghat	Dislimachakomr	21.4	61.9	16.2	"
24.	29-11-82	Chittaging	Westgondandi	Boalkhali	5.9	74.7	19.2	Silt Loam
25.	30-11-82	"	Coxs Bazar	Hagipur	41.9	41.9	16.2	Loam
26.	29-11-82	Bandarbon	Bandarbon	Bandarbon	13.2	60.5	26.3	Silt Loam
27.	01-12-82	"	"	"	27.9	58.4	13.7	"
28.	"	C.H.Tracts	Ranfamati	RangaPani	82.3	7.7	10.0	Loam Sand
29.	02-12-82	Noakhali	Raipur	Paschimkeura	5.3	76.7	18.0	Silt Loam
30.	"	Comilla	Chaddagram	Kura	8.6	72.4	19.0	"
31.	23-11-82	"	Dokinsotonal	Behidwa	11.3	67.8	20.9	"
32.	"	Sylhet	MoulaviBazar	Shampasi	34.8	46.8	18.4	Loam
33.	24-11-82	"	Srimongal	Esoppur	65.7	26.2	8.1	SandyLoam
34.	"	"	Khadimnagar	A.E.T.I.	59.4	25.8	14.8	"
35.	"	"	Sadar	Mollargao	25.2	58.4	16.4	Silt Loam
36.	"	"	Madhabpur	Surma	66.2	24.2	9.6	Sandy Loam
37.	"	"	Kotowali	Goopal	21.0	58.1	20.9	Silt Loam

表－14　土壌分析結果

SAMPLES OF LOCAL CLAY IN BANGLADESH.

SL. NO. 1.	DATE OF COLLECTION. 2.	DISTRICT. 3.	POLICE STATION. 4.	VILLAGE. 5.	% OF SAND. 6.	% OF SILT. 7.	% OF CLAY. 8.	TEXTURE. 9.
38.	21-09-82.	Rajshahi.	Natore.	Biraldah.	8.3	57.8	33.9	SiltyClayLoam
39.	22-09-82.	"	Paba.	Barabangram.	24.2	60.7	15.1	SiltLoam
40.	19-11-82.	"	Natore.	Goroharipur.	13.1	67.5	19.4	S.L
41.	21-09-82.	Pabna.	Ishurdi	A.E.T.I.Farm.	26.	50.4	23.6	SiL.
42.	26-09-82.	"		Hatikumurul.	25.6	57.9	16.5	SiL
43.	19-09-82.	"	Shazadpur.	Aladipur.	17.2	62.6	20.2	S.L
44.	"	"	"	Ahmedpur.	9.2	72.5	18.3	"
45.	26-09-82.	Bogra.	Bograsadar.	Badruicmazira.	29.9	59.7	10.4	SiL
46.	19-11-82.	"	Kotowali.	Momshep-pur.	36.7	45.6	17.7	Loam
47.	23-09-82.	Rang-pur.	Gaibandha.	A.E.T.I.Farm.	58.6	28.6	12.8	Sandyloam.
48.	"	"	- "	"	31.0	56.1	12.9	Siltloam.
49.	24-09-82.	"	Sadar.	Alamnagar.	29.8	54.2	16.	"
50.	24-09-82.	Dinajpur.	Phulbaria.	Barai.	61.4	32.	6.6	Sandyloam
51.	"	"	Parbatipur.	Sonarukur.	55.8	36.4	7.8	SL
52.	25-09-82.	"	Panchgar.	Shinpara.	79.8	10.6	9.6	Loamysand.
53.	"	"	Tetulia	Tetulia.	41.6	48.	10.4	Loam
54.	17-10-82.	Khulna.	Daulatpur.	Madhyadanga.	20.7	63.2	16.1	Siltloam.
55.	"	"	Rounbugoy pur.	Bagerhat.	24.5	58.8	16.7	"
56.	17-10-82.	Jessore.	Kotowali.	Hamidpur.	8.6	65.	26.4	SL
57.	18-10-82.	"	Sharsa.	Sharsa.	16.5	57.	26.5	SiCL
58.	20-10-82.	"	Jhenidah.	Lokicowl.	40.4	51.7	7.9	Siltloam.
59.	"	"	Kotowali.	Noapara.	14.2	54.3	31.5	SiCL
60.	"	Kushtia.	Kumarkhali.	Srillampur.	0.	47.3	52.7	"
61.	"	"	Kushtia.	Nowdahoga Baria.	46.3	42.7	11.	Loam.
62.	21-10-82.	Barisal.	Kotowali.	Kaladema.	25.8	60.6	13.6	Siltloam.
63.	"	"	Bakergonj.	Dhumkistation.	4.6	60.4	35.	Siltyclayloam
64.	"	Patuakhali.	Kotowali.	Kotowali.	25.	58.2	16.8	Siltloam
65.	"	"	Patuakhali	Kalikapur	70.4	22.2	7.4	Sandyloam.

表－15　土壌分析結果

Hilly Land.

The land spreads over Chittagong Hill Tracts, parts of Chittagong,northern part of Mymensingh,north-southern parts of Sylhet,eastern border of Comilla and north-eastern strip of Noakhali district.

Soils

Almost 90% of land area of the country is alluvium. Alluvium formation is both old and new and somewhat uniform throughout.Soil variations have been determined by their geological origins and properties.Soil surveys conducted recently have classified entire land area into following 19 soil types:

Sl.No.	Soil Type.	Characteristics.
1.	Non-Calcareous Alluvium.	Recent Tista,Barhmaputra and Jamuna alluvium. Mainly unstable charland.
2.	Calcareous Alluvium.	Recent Ganges and lower Meghna alluvium. Part unstable charland. Part saline in the Meghna estuary.
3.	Acid Sulphate Soils.	Sundarbans (mangrove swamp) soils with extremely high acidity (potential or actual).Tidally flooded with blackish or saline water for part or all the year.
4.	Peat.	Permanently wet basin peat and muck,part with alluvial topsoil.
5.	Grey Fllodplain Soils.	Grey, finely mottled brown,seasonally flooded soils with seasonally acid topsoil and near neutral subsoils.
6.	Grey Floodplain Soils and Non-Calcareous brown floodplain soils.	Seasonally wet or shallowly flooded.Grey Floodplain Soils on lower ridges and in depressions with moderately well-drained,rather acid,brown loams on higher ridges.
7.	Mixed grey,Dark grey and brown floodplain soils.	Tista floodplain soils.Non-Calcareous brown floodplain soils on higher ridges;seasonally wet or flooded. Mainly silty,mixed

表－16 バングラデシュの土壌

Sl.No.	Soil Type.	Characteristics
7. (cont'd)		Grey Floodplain soils and Non-Calcareous Dark Grey Floodplain soils on lower ridges and in depressions.
8	Grey Floodplain soils and Non-Calcareous Dark Grey Floodplain Soils.	Seasonally wet or shallowly flooded, Grey Floodplain Soils, mainly on ridges, and seasonally shallowly or deeply flooded Non-Calcareous Dark Grey Floodplain Soils, mainly in basin.
9.	Grey Floodplain Soils and Acid basin clays.	This occupies the eastern Surma-Kushiyara floodplain in Sylhet and the Comilla basin.
10.	Grey Piedment Soils.	Grey mottled red or brown, strongly acid, loams to clays on seasonally wet or flooded piedment plains adjoining the eastern hills.
11.	Acid basin clays.	Strongly acid heavy clays, part permanently wet.
12.	Non-Calcareous Dark Grey Floodplain Soils.	Dark Grey, finely mottled brown, and brown soils with dark grey flood coatings, with seasonally acid topsoils and near-neutral subsoils. Mainly seasonally deeply flooded soils of the old Brahmaputra-Karatoya-Bangladesh (Part) and old Meghna estuarine floodplains.
13.	Calcareous dark grey floodplain soils and Calcareous brown floodplain soils.	Mainly dark grey or brown clays with dark grey flood coatings, some calcareous throughout some with seasonally acid topsoils and calcareous substratum within 4 feet. Brown calcareous loamy soils on highest ridges and near river-banks.
14.	Calcareous dark grey floodplain soils with lime kankar.	Mainly leached calcareous dark grey floodplain soils, about half with a hard lime kankar layer 2-6 feet.
15.	Non-Calcareous brown floodplain soils and grey floodplain soils	Brown soils are the dominant soils in the landscape and the grey soils are subordinate.

表－17

Sl.No.	Soil Type.	Characteristics.
16.	Black Terai soils.	Seasonally wet, dark coloured rayher acid, loamy soils on ridges, level areas and in depressions.
17.	Brown Hill soils.	Brown, very strongly acid, mainly loamy soils.
18.	Red-brown terrace soil.	Well to moderately well-drained red and brown, strongly acid, clay loams and clays part over compact Modhupur clay at 1-3 feet,part over deeply mottled clay substratum.
19.	Grey Terrace soils.	Poorly drained, grey, mottled, acid silty soils over a grey, mottled clay substratum.

表－18

Body size of Bos indicus regarding the various varieties

Age	Weight kg	Height cm	Heart girth cm	Length cm	Chest depth cm	Hip width cm
1. Kankrej.						
1yr.Female	176.99	107.95	130.56	108.97	50.80	31.50
Male	179.60	114.05	134.87	114.05	54.36	32.77
2yr Female	244.03	121.16	137.67	123.70	56.39	36.83
Male	249.93	122.17	151.64	119.13	54.86	36.07
Adult Fem.	435.00	146.05	177.80	139.70	66.04	50.80
Male	476.73	168.15	200.66	159.26	76.71	57.15
Castrated	554.29	150.37	196.85	160.53	79.25	58.67
2. Kenwariya.						
1yr.Female	120.66	99.06	127.00	81.28	25.40	27.94
Male	83.92	96.52	109.22	76.20	20.32	27.94
2yr Female	185.07	114.30	142.24	109.22	27.94	45.72
Male	115.21	99.06	116.84	91.44	25.40	30.48
Adult Fem.	348.36	127.00	177.80	119.38	48.26	50.80
Male	296.65	132.08	167.64	114.30	40.64	43.18
Castrated	322.06	127.00	172.72	116.84	43.18	45.72
3. Thari.						
1yr.Female	157.40	104.14	121.92	109.22	45.72	33.02
Male	156.04	104.14	124.46	107.95	48.26	30.48
2yr Female	248.57	118.11	149.86	127.00	55.88	43.18
Male	244.94	120.65	146.05	127.00	55.88	39.37
Adult Fem.	383.29	121.92	175.26	144.78	62.23	50.80
Male	571.54	138.43	195.58	160.02	69.85	50.80
Castrated	433.64	132.08	177.80	143.51	66.04	48.26
4. Hariana.						
1yr.Female	90.72	96.52	109.22	90.17	32.51	26.67
Male	87.09	95.50	99.06	87.88	29.21	25.40
2yr Female	210.92	109.73	142.24	105.66	37.59	34.04
Male	322.06	122.94	157.48	126.24	52.32	33.53
Adult Fem.	356.07	132.59	170.43	136.65	59.18	44.20
Male	430.92	143.00	193.04	153.16	67.81	50.80
Castrated	532.98	143.26	175.76	148.84	68.07	47.24

表－20　バングラデシュの乳牛の体重

Body size of Bos indicus regarding the various varieties

Age	Weight	Height	Heart girth	Length	Chest depth	Hip width
	kg	cm	cm	cm	cm	cm
5. Krishna valley.						
1yr Female	142.43	102.36	121.92	96.52	56.64	25.40
Male	158.31	106.68	127.00	104.14	62.23	26.67
2yr Female	248.57	116.84	149.86	121.92	66.04	35.56
Male	274.88	127.51	153.42	123.44	74.68	38.61
Adult Fem.	323.42	121.92	167.64	132.08	73.66	40.64
Male	513.47	142.24	191.77	150.37	86.36	46.99
Castrated	548.86	144.78	195.83	153.42	91.44	46.99
6. Nagori.						
1yr Female	104.33	91.44	86.36	91.44	22.86	30.48
Male	113.40	91.44	88.90	101.60	25.40	25.40
2yr Female	204.12	121.92	88.90	106.68	35.56	45.72
Male	217.73	121.92	127.00	114.30	38.10	50.80
Adult Fem.	317.52	139.70	182.88	127.00	50.80	60.96
Male	362.88	152.40	203.20	144.78	60.96	68.58
Castrated	317.52	144.78	190.50	139.70	55.88	60.96
7. Deoni.						
1yr Female	99.79	88.90	101.60	78.74	50.80	25.40
Male	102.51	93.98	101.60	86.36	53.34	25.40
2yr Female	172.37	116.84	144.78	114.30	71.12	40.64
Male	181.44	114.30	127.00	106.68	60.96	30.48
Adult Fem.	294.84	132.08	162.56	142.24	83.82	43.18
Male	660.44	149.86	205.74	167.64	96.52	53.34
Castrated	521.64	152.40	187.96	157.48	91.44	50.80
8. Sahiwal.						
1yr Female	181.44	110.49	142.24	124.46	82.55	33.78
Male	181.44	109.22	144.78	104.14	55.88	31.75
2yr Female	385.56	120.65	157.48	125.73	67.31	40.64
Male	371.95	121.92	167.64	132.08	63.50	40.64
Adult Fem.	408.24	121.92	168.91	134.62	80.01	44.45
Male	544.32	137.16	203.20	160.02	81.28	48.26
Castrated	453.60	137.16	182.88	147.32	71.12	48.26

表－21　バングラデシュの乳牛の体重

Body size of Bos indicus regarding the various varieties

Age	Weight kg	Height cm	Heart girth cm	Length cm	Chest depth cm	Hip width cm
9. Nimari.						
1yr Female	145.15	86.36	114.30	81.28	----	25.40
Male	172.37	101.60	114.30	96.52	----	20.32
2yr Female	208.66	111.76	121.92	109.22	----	30.48
Male	240.41	121.92	132.08	116.84	----	25.40
Adult Fem.	304.81	132.08	160.02	121.92	----	55.88
Male	390.10	154.94	172.72	144.78	----	60.96
10. Red Sindhi.						
1yr Female	151.96	96.52	117.60	97.28	47.75	28.70
Male	----	105.92	123.44	99.31	52.32	30.23
2yr Female	234.74	105.92	134.11	106.17	60.96	33.53
Male	----	116.33	139.45	114.3	57.91	35.05
Adult Fem.	306.18	120.65	158.50	128.78	62.48	42.16
Male	430.92	130.81	175.51	139.70	67.82	43.43
Castrated	----	137.41	175.77	144.27	73.41	47.75
11. Lohani.						
Adult Fem.	260.82	111.76	139.70	115.06	56.39	34.29
Male	272.16	106.93	133.60	117.09	49.78	30.99
Castrated	317.52	121.92	160.02	129.03	65.02	41.66
12. Dhanni.						
1yr Female	147.42	116.33	135.60	112.52	52.32	35.56
Male	158.76	120.90	143.00	115.06	57.15	37.08
2yr Female	351.54	121.92	163.06	133.35	60.20	39.37
Male	408.24	129.54	174.75	145.29	61.47	39.88
Adult Fem.	374.22	126.24	168.66	138.43	59.44	44.20
Male	498.96	135.38	191.00	148.84	73.15	50.29
Castrated	555.66	136.14	194.31	153.16	73.94	53.60

表－22　バングラデシュの乳牛の体重

Japanese Cows (Kuroge washiu)

Age	Weight		Height		Heart girth	
Month	Average	Minimum - Maximum	Average	Minimum - Maximum	Average	Minimum - Maximum
1.	51.0	44.3 - 60.8	75.4	70.9 - 78.1	86.3	77.5 - 90.8
2.	74.6	67.2 - 89.6	81.8	77.0 - 84.8	97.7	88.2 - 103.5
3.	98.2	90.1 - 118.3	87.3	82.3 - 90.6	107.8	97.9 - 114.6
4.	121.8	113.0 - 147.1	92.3	87.0 - 95.7	116.9	106.5 - 122.8
5.	145.4	135.9 - 175.8	96.6	91.2 - 100.1	125.1	114.2 - 133.2
6.	169.0	158.8 - 204.6	100.4	94.9 - 104.0	132.4	121.1 - 141.0
8.	216.2	204.9 - 262.1	106.5	101.1 - 110.0	144.8	132.7 - 154.2
10.	275.5	244.6 - 320.7	111.3	105.9 - 115.3	154.9	142.0 - 164.5
12.	323.9	278.2 - 371.3	114.8	109.6 - 119.0	162.9	149.5 - 172.8
14.	363.7	306.5 - 413.9	117.6	112.5 - 121.8	169.4	155.4 - 179.3
16.	396.6	330.4 - 449.8	119.7	114.8 - 124.0	174.6	160.1 - 184.4
18.	423.6	350.7 - 479.9	121.3	116.6 - 125.6	178.8	163.9 - 188.5
20.	445.9	367.7 - 505.3	122.5	118.0 - 126.9	182.2	167.0 - 191.7
22.	464.3	382.1 - 526.7	123.5	119.1 - 127.9	184.9	169.4 - 194.3
24.	479.4	394.2 - 544.6	124.2	120.0 - 128.6	187.1	171.3 - 196.3
26.	491.8	404.5 - 559.7	124.7	120.6 - 129.2	188.8	172.9 - 197.9
28.	502.1	413.1 - 572.5	125.1	121.1 - 129.6	190.2	174.1 - 199.2
30.	510.5	420.4 - 583.2	125.5	121.5 - 129.9	191.4	175.1 - 200.2
32.	517.4	426.6 - 592.2	125.7	121.7 - 130.2	192.3	175.9 - 201.0
34.	527.9	431.8 - 599.8	125.9	122.1 - 130.4	193.0	176.5 - 201.6
36.	527.9	436.2 - 606.2	126.0	122.3 - 130.5	193.6	177.0 - 202.1

表－23　日本の黒毛和牛の体重

Age, weight, heart girth,height, length, chest depth, hip width, hip length,cannon girth, standards for growing Japanese Holstein Friesian female.

Age. month	Weight. (kg)	Height. (cm)	Heart girth (cm)	Length. (cm)	Chest depth (cm)	Hip width (cm)	Hip length (cm)	Cannon girth. (cm)
Birth.								
2	87.6	81.8	96.0	85.2				
4	131.8	93.3	112.8	98.6				
6	176.0	102.4	126.8	109.8				
8	220.2	107.5	138.4	119.1				
10	264.5	115.2	148.1	126.8				
12	308.7	119.7	156.2	133.2				
14	352.9	123.2	162.9	138.6				
16	397.1	126.0	168.4	143.1				
18	434.5	128.2	173.1	146.1	64.3	47.3	48.9	17.5
20	457.4	129.9	176.9	149.8	65.8	48.7	49.8	17.7
22	477.5	131.3	180.1	152.3	67.0	50.0	50.6	17.9
24	494.7	132.4	182.8	154.5	68.1	51.1	51.3	18.0
26	509.5	133.2	185.0	156.2	68.9	51.9	51.8	18.1
28	522.2	133.9	186.8	157.7	69.7	52.7	52.2	18.2
30	533.2	134.5	188.4	158.9	70.3	53.3	52.5	18.3
36	557.6	135.5	191.6	161.6	71.7	54.8	53.2	18.4
42	570.1	136.0	193.5	163.0	72.4	55.6	53.6	18.5
48	583.0	136.3	194.6	163.9	72.8	56.1	53.8	18.5
60	600.0	136.5	196.0	165.0	73.5	57.0	54.0	18.5

表－24　日本のホルスタイン種の体重

SURVEY ON PLOUGHING AND LEVELLING IN BANGLADESH

SL. No.	NAME OF DISTRICT.	TOTAL NO OF PLOUGHING. AUSH.	AMON.	BORO.	TOTAL NO.OF LEVELLING. AUSH	AMON.	BORO.
1.	2.	3.	4.	5.	6.	7.	8.
1.	Dhaka.	3.	3.	--	6.	6.	--
2.	"	3.	3.	--	6.	6.	--
3.	"	5.	5.	6.	4.	9.	12.
4.	"	4.	6.	4.	3.	5.	3.
5.	"	5.	4.	4.	5.	4.	4.
6.	"	5.	5.	4.	5.	5.	5.
7.	"	5.	4.	5.	5.	5.	6.
8.	"	4.	5.	4.	4.	5.	5.
9.	"	5.	4.	4.	5.	5.	5.
10.	"	5.	5.	4.	5.	4.	4.
11.	"	6.	1.	--	3.	3.	--
12.	"	5.	5.	5.	5.	5.	5.
13.	"	6.	6.	6.	3.	3.	6.
14.	"	6.	6.	6.	6.	6.	6.
15.	"	6.	6.	6.	12.	12.	12.
16.	"	4.	4.	4.	4.	5.	5.
17.	Tangail.	7-8.	7-8.	4-5.	10-15.	5-7.	5-7.
18.	"	5-8.	2.	5-6.	4.	4.	10.
19.	"	--	4-5.	8-10.	-	5-6.	5-6.
20.	"	--	6-8.	8-10.	-	10.	10.
21.	"	--	5.	5.	-	5.	5.
22.	Jamalpur.	5-7.	4-5.	8.	3-4.	4.	5-6.
23.	"	5.	5.	5.	10.	5.	5.
24.	"	5.	5.	5.	10.	5.	5.
25.	"	3.	3.	-	3.	3.	-
26.	"	3.	3.	-	3.	3.	-
27.	Mymensingh	5-7.	5.	5.	10.	10.	10.
28.	"	5-7.	5-7.	-	10-12.	10-12.	-
29.	"	-	6-8.	6-8.	-	4-5.	4-6.
30.	"	-	6.	7.	-	5.	6.
31.	"	7.	5.	6.	10.	4.	4.
32.	Faridpur.	4.	4.	-	4.	4.	-
33.	"	5.	5.	5.	5.	7.	7.
34.	"	4.	4.	4.	2.	2.	7.
35.	Chittagong.	6.	6.	2.	1.	1.	1.
36.	"	6.	6.	4.	1.	1.	1.
37.	"	5.	6-7.	4-5.	2.	3.	2.
38.	Bandarban.	6.	6.	-	2.	2.	-
39.	"	8.	8.	10.	4.	4.	6.
40.	C.H.Tracts.	4.	4.	-	4.	4.	-
41.	Noakhali.	4.	4.	3.	4.	4.	3.
42.	"	6.	6.	2.	6.	6.	2.
43.	Comilla.	4.	4.	6.	12.	12.	3.
44.	"	4.	4.	2.	6.	6.	3.
45.	"	5.	5.	6.	4.	4.	5.
46.	Sylhet.	6.	6.	-	6.	6.	-
47.	"	2.	2.	4.	3.	3.	4.
48.	"	5.	5.	3.	5.	5.	3.
49.	"	5.	5.	4.	5.	5.	4.
50.	"	4.	4.	3.	5.	5.	3.
51.	"	5.	5.	3.	5.	5.	3.
52.	"	5.	5.	3.	5.	5.	3.
53.	"	4.	5.	3.	4.	5.	3.
54.	"	8.	8.	4.	6-8.	6-8.	4.
55.	"	4.	4.	4.	4.	4.	4.

表－25　犁起し回数とモイによる均平作業回数

SURVEY ON PLOUGHING AND LEVELLING IN BANGLADESH.

SL. No.	NAME OF DISTRICT.	TOTAL NO PLOUGHING. AUSH.	AMON.	BORO.	TOTAL NO. OF LEVELLING AUSH.	AMON.	BORO.
:1.	2.	3.	4.	5.	6.	7.	8.
56.	Rajshahi.	5.	5.	-	10.	10.	-
57.	"	6.	6.	-	10.	10.	-
58.	"	5.	5.	-	6.	6.	-
59.	"	5.	5.	-	5.	5.	-
60.	"	6.	6.	-	8.	8.	-
61.	Rangpur.	7.	7.	-	10.	7.	-
62.	"	7.	7.	-	7.	7.	-
63.	"	6.	5.	-	8.	6.	-
64.	"	5.	5.	-	6.	6.	-
65.	Dinajpur.	4.	4.	-	6.	6.	-
66.	"	6.	6.	-	8.	8.	-
67.	"	5.	5.	-	7.	7.	-
68.	"	7.	7.	7.	10.	10.	10.
69.	"	5.	5.	-	7.	7.	-
70.	Pabna.	3.	2.	-	2.	2.	-
71.	"	4-5.	4-5.	-	4.	4.	-
72.	"	4.	4.	5.	4.	4.	5.
73.	"	6.	6.	4.	12.	12.	8.
74.	"	6.	6.	6.	12.	12.	12.
75.	"	6.	6.	6.	12.	12.	12.
76.	Bogra.	6.	6.	-	3.	3.	-
77.	"	6.	6.	-	3.	3.	-
78.	"	6.	6.	6.	6.	6.	6.
79.	"	5.	5.	-	6.	6.	-
80.	"	6.	6.	-	8.	8.	-
81.	Khulna.	6.	4.	-	4.	3.	-
82.	"	6.	4.	4.	8.	5.	5.
83.	"	6.	4.	4.	10.	5.	5.
84.	"	6.	8.	4.	6.	8.	4.
85.	"	6.	4.	-	6.	3.	-
86.	"	5-6.	5-6.	-	2-3.	2-3.	-
87.	"	5-6.	5-6.	-	2.	2-3.	-
88.	Jessore.	5.	4.	5.	5.	4.	5.
89.	"	4-5.	4.	3-4.	8-10.	8.	6-8.
90.	"	6.	4.	4.	18.	12.	12.
91.	"	8.	6.	-	8.	6.	-
92.	Kushtia.	5.	5.	-	5.	5.	-
93.	"	4.	4.	-	7.	7.	-
94.	"	7.	7.	-	7.	7.	-
95.	Barisal.	4-8.	8.	-	4-8.	8.	-
96.	"	4-5.	7-8.	-	2-4.	3-4.	-
97.	"	4-6.	4.	-	3-4.	2.	-
98.	"	4.	-	-	3.	-	-
99.	Patuakhali.	4.	6.	-	2.	2.	-
100.	"	-	6.	-	-	10.	-

表－26　犁起し回数とモイによる均平作業回数

COLLECTION OF LADDER (moi)

Sl. No.	DISTRICT	Localname.	Materials of Construction	Body length	Width	Weight	Average of life	Local Cost.
1.	2.	3.	4.	5.Cm	6.Cm	7.K/g	8.Season	9.TK.
1.	Dhaka.	Chongho	Bamboo	292.5	33.	5.4	3	20/-
2.	(B)Type	"	"	195.	55 x30	6.3	2	30/-
3.	(C) "	Maitta	Kathle	225.	15 x10	27.	12	150/-
4.	(D) "	Chongho	"	210.	22.5	13.5	19	100/-
5.	Faridpur	Moyee/Chonga	Bamboo	175.	20	5.4	3	30/-
6.	(B)Type	Dolon/Dolna	Kathle	210.	12.5	18.	10	150/-
7.	Tangail	Chongho	Bamboo	227.5	32.5	6.3	4	15/-
8.	(B)Type	Moyee	"	187.5	25	7.2	11	25/-
9.	Jamalpur	"	"	175.	20	4.5	5	25/-
10.	Mymensingh	"	"	160.	60 x45	5.4	2	30/-
11.	Sylhet	Moi	Bamboo	197.5	37.5	6.7	2	25/-
12.	Comilla	Chagham/Chongo	"	205.	50 x25	7.2	2	20/-
13.	Noakhali	Hapta/Sapta	"	140.	30 x25	4.	2	25/-
14.	(B)Type	Moyee/Hapta	"	175.	32 x25	5.4	4	25/-
15.	Chittagong	Sapta	"	140.	35 x25	5.8	2	20/-
16.	(B) type	Hapta/Hatta	Karui	130.	30 x22	6.3	5	30/-
17.	Patuakhali	Chongho	Bamboo	270.	27.5	7.2	2	20/-
18.	(B) type	Dolna	Taal	205.	17.5	13.5	7	30/-
19.	Barisal	Moi	Bamboo	183.	26.	4.5	2	20/-
20.	(B) type	"	"	180.	10 x0.3	3.2	2	20/-
21.	(C) type	Dolna/Dolon	Randi	200.	12 x10	13.5	25	100/-
22.	Khulna	Moi/Chonga	Bamboo	180.	25.	3.6	6	20/-
23.	Jessore	Moi/Basoi	"	275.	25.	4.5	3	25/-
24.	Kushtia	Moi/Basui	"	250.	22.5	5.4	4	25/-
25.	Pabna	Hapta	Bamboo	220.	20.	5.4	5	20/-
26.	Rajsahi	Moi	"	175.	25.	4.5	2	15/-
27.	Bogra	"	"	250.	21.5	4.9	2	15/-
28.	Rangpur	"	"	195.	25.	4.5	2	25/-
29.	Dinajpur	"	"	200.	20.	4.5	2	15/-

表－27　モイの寸法，重量，価格

JOAL OF SPECIFICATION.

SL. No.	District	Materials of Construction	Body Length/Dia Cm.	Spike Length/Width Cm.	Distance Cm.	Weight K/g	Average Working life.	Local Cost T/K
1.	Dhaka.	Bamboo.	157.5 x 7.5	45 x 3.	48.	2.7	3.	10.
2.	"	Boroi.	148. x 8.	45 x 3.	55.	4.5	8.	30.
3.	Faridpur.	Bamboo.	135. x 6.5	45 x 2.5	47.	2.7	2.	12.
4.	"	Kathal.	140. x 8.	30 x 2.5	55.	5.4	5.	40.
5.	Jamalpur.	Pitraj.	165. x 15.	30 x 2.5	100.	5.4	3.	30.
6.	Mymensingh.	Bamboo.	138. x 7.5	30 x 2.5	60.	2.7	2.	15.
7.	Sylhet	Joroi.	85. x 6.	(one Cwoe type)		2.3.	3.	20.
8.	"	Bamboo.	122. x 8..	43 x 2.5	65.	2.7	2.	20.
9.	Comilla.	Bamboo.	143. x 7.	40 x 3.	57.	4.5	8.	30.
10.	"	Tanarkat.	155. x 7.5	23 x 2.	55.	3.6	7.	25.
11.	Noakhali.	Koroi.	95. x 6.5	50 x 3.	62.5	5.4	3.	32.
12.	"	Pitraj.	130. x 8.5	45 x 2.5	75.	4.	3.	30.
13.	Chittagong.	Kashi.	110. x 6.5	45 x 2.5	50.	4.5	2.	25.
14.	C.H.Tract.	Goda.	100. x 7.5	45 x 2.	45.	5.8	3.	15.
15.	Patuakhali.	Kathal.	135. x 8.5	45 x 5.	55.	2.7	3.	20.
16.	Barisal.	Bamboo	160. x 7.5	45 x 5.	55	1.3	1.	8.
17.	"	Roina.	120. x 8.5	40 x 5.	55.	2.2	5.	25.
18.	Khulna.	Ball.	150. x 12.	28 x 2.5	50.	4.5	3.	30.
19.	Jessore.	Dibdar	160. x 12.	50 x 2.	38.	4.9	3.	25.
20.	Kushtia.	Pua	165. x 12.	25 x --	45.	5.4	3.	50.
21.	Pabna.	Jaam.	145. x 12.	45 x 1.5	33.8	5.4	4.	25.
22.	Rajshahi.	Kathal.	125. x 20.	35 x 2.	55.	5.4	6.	28.
23.	Bogra.	Kathal.	135. x 10.	32 x 1.5	50.	4.5	4.	40.
24.	"	Bell.	150. x 7.5	45 x 2.	55.	3.6	2.	35.
25.	"	Kathal.	135. x 27.5	x 7.5	80.	6.3	4.	60.
26.	Ranfpur.	Bowla.	130. x 12.5	45 x 3.	67.5	3.2	7	30.
27.	"	Bamboo.	125. x 10.	40 x 2.5	55.	1.2	1.	35.
28.	Dinajpur.	Bamboo.	130. x 12.5	45 x 2.5	100.	3.1	7.	20.

表－28　ジョアールの寸法

S U R V E Y R E P O R T

VILLAGE CHANDANA, JOYDEBPUR, DHAKA

Sl. No.	Name of Farmers	Family Member	Family Workers	Children	Holding Self	Holding Share	Total / ha
1	2	3	4	5	6	7	8
1.	Md. Matiur Rahman	8	1	5	0,576	0,384	0,96
2.	Hasen Ali	5	1	3	0,448	-	0,448
3.	Md. Akteruzzaman	5	1	3	0,256	0.512	0,768
4.	Md. Arshadur Rahman	4	2	2	0,128	1.024	1,152
5.	Md. Sonatullah	7	2	4	0,064	0,064	0,128
6.	Md. Abdul Hakim	13	2	8	0,256	0,768	1,024
7.	Md. Abdul Khaleque	8	1	4	0,704	-	0,704
8.	Md. Samsul Haaque	7	1	4	0,32	-	0,32
9.	Md. Sonatullah Hazi	4	1	3	0,384	-	0,384
10.	Md. Ashraf Ali	4	1	2	1,536	-	1,536
11.	Md. Jalal Uddin	4	1	1	2.408	-	2.408
12.	Md. Hossain Ali	16	4	7	0,768	2,56	3,328
13.	SreeM.Goshamy	14	4	6	1,664	-	1,664
14.	Md. Aminuddin	4	1	2	0,128	0.64	0,768
15.	Md.Fozor Ali Miah	11	3	7	0,896	-	0,896
16.	Md. Ohad Boksho	8	2	4	1,408	0.64	2.048
17.	Md. Amat Ullah	5	1	3	0,384	0,552	0,936
18.	Md. Monir Uddin	5	1	3	0,256	0,64	0,896
19.	Md. Almas Ali	8	2	3	0.448	0,512	0,96
20.	Md. Chandu Miah	8	1	5	1,792	-	1,792
21.	Md. Moula Boksho	14	4	6	0,512	0.896	1,408
22.	Md. Arab Ali	8	2	4	0,128	0.768	0.896
23.	Md. Nayeb Ali	9	3	5	0,768	0.384	1,152
24.	Md. Janab Ali	8	1	6	0,384	0,512	0,896
25.	Md. E.B. Fakir	6	1	4	1,792	0:64	2,432
26.	Md. Abur Ali	18	5	8	2,176	-	2,176
27.	Md. Babur Ali	8	1	4	1,536	-	1,536
28.	Md. Abdul Ali	7	2	3	0.384	0.64	1.024
29.	Md. Rahi Munshi	8	1	6	0,768	1,64	2,408
30.	Md. Jamiruddin	11	2	8	2,432	0.128	2.56

表－29　農 家 調 査

1	2	3	4	5	6	7	8
31.	Md. Hashem Ali	8	2	6	0.32	0.32	0.64
32.	Md. Ayub Ali	7	1	5	0.384	0.512	0.896
33.	Md. Wazuddin	5	1	3	0.256	0.384	0.64
34.	Md. A. Khaleque	7	2	3	0.64	0.128	0.768
35.	Md. Akbar Ali	4	1	2	0.832	-	0.832
36.	Md. Nazimuddin	6	1	4	0.448	-	0.448
37.	Md. Kamizuddin	5	1	3	0.256	-	0.256
38.	Md. Hafizuddin	15	3	11	0.768	0.128	0.896
39.	Md. Iman Ali	6	1	4	0.448	1.024	1.472
40.	Md. Ansar Ali	9	2	7	0.64	1.152	1.792
41	Md. S. Ali Munshi	14	3	7	0.64	2.56	3.20
42.	Md. Ramjan Ali	8	2	4	0.512	-	0.512
43.	Md. Mamiruddin	9	2	6	0.32	0.384	0.704
44.	Md. Anuruddin	7	2	3	0.768	-	0.768
45.	Md. Arab Ali	10	2	6	0.128	0.64	0.768
46.	Md. Anowar Hossain	5	1	3		0.384	0.384
47.	Md. Karam Ali	8	1	5	0.128	0.512	0.64
48.	Md. Ramizuddin	6	2	1	0.576	0.192	0.768
49.	Md. Abdur Rahim	6	1	4	0.512	0.512	1.024
50.	Md. Komar Ali	6	2	2	0.128	0.768	0.896
51.	Md. L. Naib	8	1	5	0.384	0.384	0.768
52.	Md. Torab Ali	10	2	5	0.768	0.896	1.664
53.	Md. Sobur Ali	12	3	6	0.64	0.512	1.152
54.	Md. Kadam Ali Bapari	8	2	4	0.768	0.384	1.152
55.	Md. Nabi Boksho	7	2	3	0.384	1.92	2.304
56.	Md. Afizuddin	7	1	5	-	1.024	1.024
57.	Md. Aminuddin	10	3	3	0.896	0.256	1.152
58.	Md. Iat Ali	3	1	1	0.384	-	0.384
59.	Md. Serajul Islam	7	2	3	2.56	-	2.56
60.	Md. Shorbesh Ali	7	1	5	1.28	-	1.28
61.	Haji Md. Rahimuddin	9	2	4	3.20	-0.256	2.944
62.	Md. Shyed Ali	3	1	1	1.536	-	1.536
63.	Md. Sharfat Ullah	11	3	5	0.512	0.768	1.28
64.	Md. Shafizuddin	7	1	5	0.512	0.256	0.768
65.	Md. Rahamat Ullah	7	1	5	0.512	-	0.512

表－30　農　家　調　査

1	2	3	4	5	6	7	8
66.	Md. Shalimuddin	4	2	-	0.384	-	0.384
67.	Md. Bashiruddin Munshi	5	1	3	0.384	-	0.384
68.	Md. Poshoruddin Munshi	9	2	6	0.384	0.768	1.152
69.	Md. Kabir Uddin	4	1	2	0.384	0.256	0.64
70.	Md. Kashem Ali	5	1	2	0.576	0.256	0.832
71.	Md. Ahalad Miah	7	1	4	0.896	-	0.896
72.	Md. Shoha Mullah	7	2	2	0.896	0.384	1.28
73.	Md. Alkas Ali	5	2	1	0.384	0.512	0.896
74.	Md. Akkil Fakir	12	4	4	0.384	0.64	1.024
75.	Md. Shoreuddin	2	1	-	0.512	-	0.512
76.	Md. Toshimuddin	6	2	2	0.192	-	0.192
77.	Md. Alimuddin	4	1	2	0.384	0.256	0.64
78.	Md. Ansar Ali	6	1	3	0.384	-	0.384
79.	Md. Hakimuddin	9	2	7	0.192	-	0.192
80.	Md. Badrul Alam	13	5	1	4.48	1.536	6.016
81.	Md. A. Hamid	5	1	3	0.768	-	0.768
82.	Md. Moula Boksho	8	2	3	1.216	-	1.216
83.	Md. Mohiuddin	4	1	2	1.28	-	1.28
84.	Md. Khadem Hossain	6	1	3	0.64	0.448	1.088
85.	Md. Kamizuddin	5	1	4	0.128	0.64	0.768
86.	Md. Bashir Uddin	4	1	2	0.384	-	0.384
87.	Md. Haki Mullah	7	1	4	0.64	0.256	0.896
88.	Md. Abdur Rahman	5	1	2	0.32	0.576	0.896
89.	Md. Nesed Uddin	2	1	-	0.448	-	0.448
90.	Md. A. Rahman	4	1	1	0.064	1.024	1.088
91.	Md. Shonatullah Mollah	7	1	5	0.384	1.024	1.408
92.	Md. Ohaz Uddin	4	1	2	0.128	0.768	0.896
93.	Dr. Md. Alfaz Uddin	11	2	8	2.688	0.384	2.304
94.	Md. Abdur Razzaque	7	1	5	0.896	-	0.896
95.	Md. Shour Uddin	8	2	5	0.384	0.576	0.96
96.	Md. Shafiqul Islam	3	1	2	0.128	0.64	0.768
97.	Md. Shamir Uddin	6	2	2	0.512	0.256	0.768
98.	Md. Iman Ullah	5	1	3	0.64	0.128	0.768
99.	Md. Aman Ullah	7	1	4	0.64	0.128	0.768
100.	Md. Mukter Hossain	5	1	2	2.048	0.128	1.92
		723	166	557	73.896	40.208	114.104

表－31　農 家 調 査

OPERATION OF PLOUGHING & LEVELLING.

Nasher Uddin.

Area = 1458m = 0.1458 hactare.
Ploughing time required = 12:45/min.
Levelling (moi)time required
= 1:40/min.

Ploughing time required perhectare.

$$= \frac{1:40/\text{min.}}{0.1458/\text{hectare}}$$

87 hours 27 minutes.

Levelling time required/hectare.

$$= \frac{1:40/\text{min.}}{0.1458/\text{hectare.}}$$

= 11 hours 43/minutes.

Total time required to ploughing and levelling/ hectare.
= (87:27min.)+(11:43min.)
= 99 hours 10 minutes.
= 17 working days.

A.Rahim.

Area = 2046 m = 0.2046 actare
Ploughing time required = 19:30 /min.
Levelling time required = 1:45 /min.

Ploughing time required /hectare.

$$= \frac{19:30/\text{min.}}{0.2046/\text{hectare.}}$$

95 hours 19 minutes per hectare.

levelling time required/hectare.

$$= \frac{1:45/\text{min.}}{0.2046/\text{hectare.}}$$

8 hours 33/minutes per hectare.

Total time required to ploughing and levelling/ hectare.
= (95;19min.)+(8:33min)
= 103 hours 52 minutes/hoctare.
(6 hours = 1 working day.)

Total Area of Nashir Uddin & A. Rahim =(0.1458+0.2046)=0.3504 hectare.

Time required to ploughing = $\frac{(12:45)+(19:30)}{0.3504 \text{ hectare.}}$ = 92 hours 3 minutes per hectare.

Levelling time required = $\frac{(1:40)+(1:45)}{0.3504 \text{ hectare.}}$ = 9 hours 45 minutes per hectare.

Total = 101 hours 48 minutes = 17 working days.

表－32　犁起し作業と砕土均平作業の能率

Date of collection : 18-03-83.

Name of farmer : Md. Abdur Rahim.

Name of Village : Chanduna.

Total holding area : Half bigha.

Ploughing area : 62m x 33m = 2046 Sqm.

Number of plough : One.

Number of moi : One.

Total hour of ploughing : Seven hours.

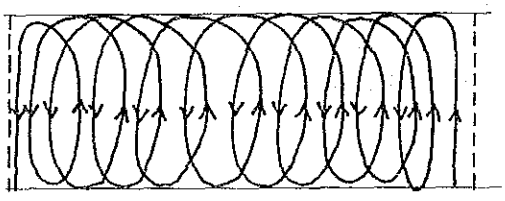
START		STOP
6:30 a.m.	---------	10:00 a.m.
10:30 a.m.	---------	12:30 p.m.
1:00 p.m.	---------	2:30 p.m.

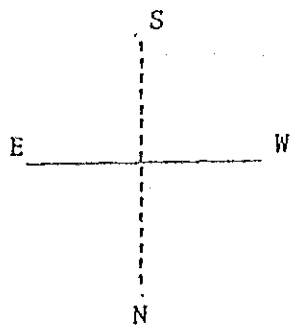
Total hour of moi :

First ploughing condition :

WIDE		DEPTH
10.5	----------	.95
10.6	----------	.90

Ploughing figure No. 1.



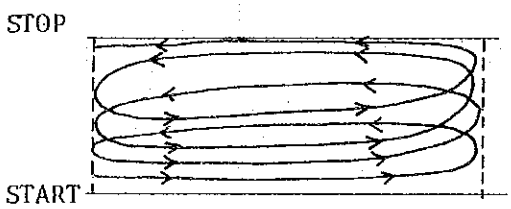


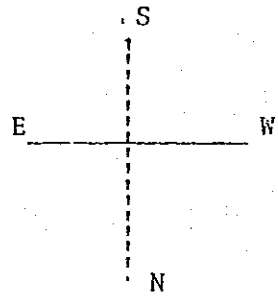
Moi (Levelling) Fig. :

表－33. 犁起しと均平作業の調査

Date of collection	:	25-03-83.
Name of farmer	:	Md. Abdur Rahim.
Name of village	:	Chondona,
Total holding area	:	Half bigha,
Ploughing area	:	62m x 33m = 2046 Sqm.
Number of plough	:	One,
Number of moi	:	One.
Time for first (1st) moi	:	50 minutes.
		(From 6:30 a.m. --- 7:20 p.m.)

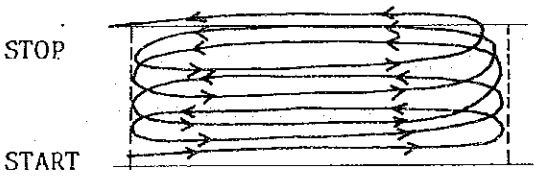
Figure for 1st moi





Time for second (2nd) Ploughing	:	6½ hours.
		(From 7:30 a.m. ---- 10:00a.m.)
		(& 10:30 a.m. ---- 2:30 p.m.)

Figure for 2nd ploughing



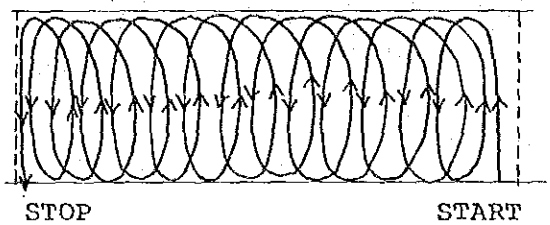
表－ 34. 犁起しと均平作業の調査

Date of collection : 26-03-83.

Name of farmer : Md. Nasir Uddin.
Name of village : Nag bari.
Total holding area : One bigha.
Ploughing area : 54m x 27m = 1458 sqm.
Number of plough : One set.
Number of moi : One.
Time for third (3rd)ploughing : 3½ hours.

Figure for 3rd ploughing

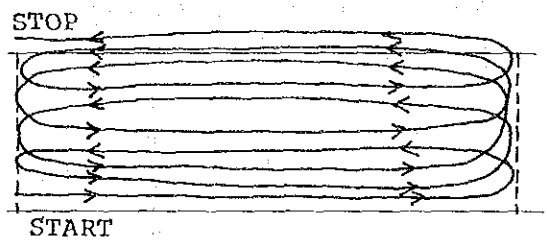
(From 6-30 a.m. --- 10-00 a.m.)



Time for fourth(4th)ploughing : 3 hours.

Figure for 4th ploughing

(From 10:30 a.m. -----1:30 p.m.)

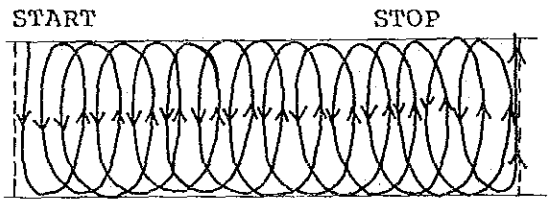


TOTAL HOURS OF PLOUGHING : 3½ + 3 = 6½ hours.

Time for second (2nd) moi : 35 minutes.

Figure for 2nd moi

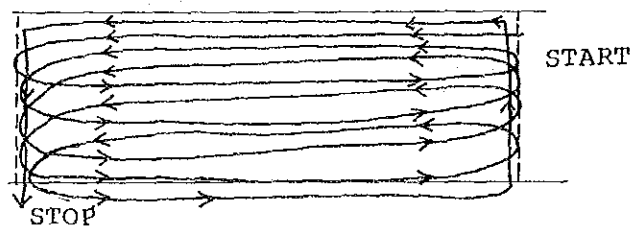
(From 1:45 p.m. ----2:20 p.m.)



Time for third (3rd) moi : 30 minutes.

Figure for 3rd moi

(From 2:20 p.m. ----2:50 p.m)



TOTAL HOURS OF MOI : 1 hour & 05 minutes.

表－35. 犁起しと均平作業の調査

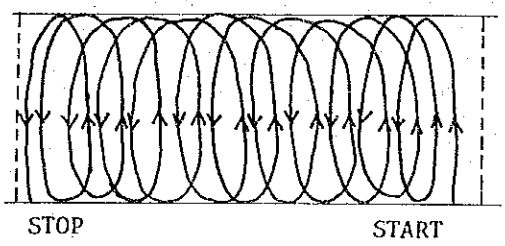
Date of collection	:	6-05-83.
Name of farmer	:	Md. Abdur Rahim.
Name of village	:	Chanduna.
Total holding area	:	Half bigha.
Ploughing area	:	62m x 33m = 2046 Sqm.
Number of plough	:	One.
Number of moi	:	One.
3rd ploughing Time	:	From ---------- to

6 a.m. ---------- 9 a.m.

9-30 a.m. -------- 12-30 p.m.

Total hours= 6

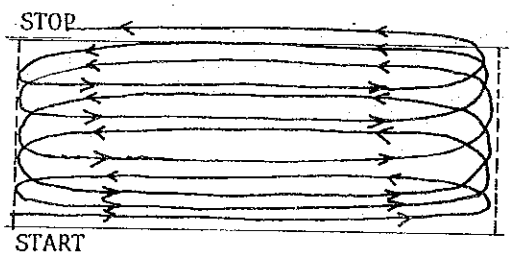
Ploughing. Fig.No.3.



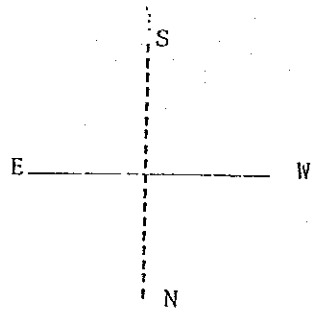
3rd Lableing Time — From ----------to

Lableing Fig.No.3 — 12-30 p.m. ------- 1 p.m.

= 30 munits



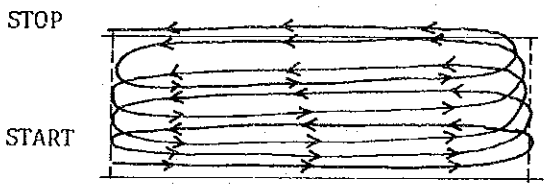
Total working hours 6½



表－ 36. 犁起しと均平作業の調査

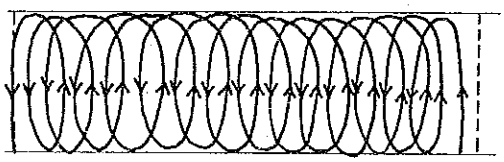
Date of collection	:	7-05-83.
Name of farmer	:	Md. Abdur Rahim.
Name of village	:	Chanduna.
Total holding area	:	Half bigha. 3 bigha = 1 acr
Ploughing area	:	62m x 33m = 2046 Sqm.
Number of plough	:	One.
Number of moi	:	One.
4th Ploughing Time	:	From ---------- to 6-30 a.m. ---------- 9-30 a.m. 10 a.m. ---------- 1-00 p.m. 6-00 hours
Total Ploughing Time	:	

Ploughing Fig.No-4

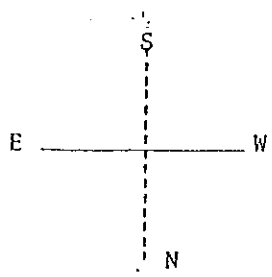


Lableing Time	:	From ---------- to 1-10 p.m. ---------- 1-35
Total Lableing Time	:	25 munites

Lableing Fig. No-4.



Total working hours : 6-25 hours



表－37. 犁起しと均平作業の調査

MATERIAL OF CONSTRUCTION

SL. NO.	BOTTOM. Name of Materials.	%	SL. NO.	HANDLE. Name of Materials	%	SL. NO.	BEAM. Name of Materials	%	SL. NO.	YOKE. Name of Materials	%	SL. NO.	SHARE. Name of Materials	%
1.	Babla.	18	1.	Gazari.	21	1.	gazari.	23	1.	Ata.	1			
2.	Bada.	4	2.	Kathal.	1	2.	Kathal.	2	2.	Babla.	4			
3.	Badra	1	3.	Mango.	6	3.	Sundari.	16	3.	Ball.	4			
4.	Bain.	1	4.	Babla.	11	4.	Bamboo.	12	4.	Bamboo.	52			
5.	Boroi.	1	5.	Pilraj.	2	5.	Babla.	1	5.	Baeui.	1		100 % Loha	
6.	Baura.	3	6.	Korai.	8	6.	Boroi.	1	6.	Boroi.	4			
7.	Bonaku.	1	7.	Badraj	1	7.	Bakul.	1	7.	Bot.	4			
8.	Gatar.	2	8.	Sundari.	3	8.	Badraj.	1	8.	Bhutum.	1			
9.	Gamar.	1	9.	Gamar.	1	9.	Chaiu.	5	9.	Charder.	2			
10.	Godas.	2	10.	Godas.	1	10.	Chawa.	1	10.	Dibdar.	1			
11.	Gorjon.	1	11.	Tal.	1	11.	Chow.	1	11.	Gab.	1			
12.	Gazari.	21	12.	Gatar.	1	12.	Gab.	2	12.	Joga.	1			
13.	Horno.	11	13.	Bonaku.	1	13.	Godas.	1	13.	Kathal.	9			
14.	Jarul.	8	14.	Jarui.	7	14.	Horno	1	14.	Paya.	2			
15.	Kathal.	2	15.	Tetul.	2	15.	Ishu.	2	15.	Pua.	2			
16.	Karmja.	1	16.	Jaam.	1	16.	Jaam.	1	16.	Roina.	4			
17.	Korai.	7	17.	Sonal.	1	17.	Jarul.	1	17.	Sal.	2			
18.	Mango.	13	18.	Gutgutty.	1	18.	Khair.	2	18.	Sundari.	1			
19.	Pitraj.	4	19.	Tamarid.	1	19.	Korai.	2	19.	Tetul.	2			
20.	Sundari.	3	20.	Karamja.	1	20.	Lohakat.	3	20.	Thona.	2			
21.	Supari.	1	21.	Baura.	9	21.	Randi.	1						
22.	Tal.	1	22.	Chaiu.	1	22.	Sal.	8						
23.	Tamdrid	1	23.	Awal.	1	23.	Sonalu.	1						
24.	Tetul.	2	24.	Bain.	1	24.	Shundol.	1						
			25.	Kuty.	1	25.	Supari.	1						
			26.	Bamboo.	15	26.	Tal.	6						
					1	27.	Mair.	1						
						28.	Ujar.	1						

表－38　犁に使用されている材料名

SAMPLES OF LOCAL PLOWS IN BANGLADESH

SL NO 1.	DATE OF COLLECTION 2.	DISTRCT 3.	POLICE STATION 4.	VILLAGE 5.	MATERIALS OF CONSTRUCTION BOTTOM 6.	HANDLE 7.	BEAM 8.	YORK 9.	SHEAR 10.	WEIGHT K/g 11.	TOTAL Taka 12.
				(DHAKA DIVISON)							
1	14-11-82	Dhaka	Joydevpur	Cohotor	Gazari	Gazari	Gazari	Bamboo	Loha	5.	100
2.	"	"	"	"	Kathal	Kathal	"	"	"	6.	100.
3.	"	"	"	Joytola	Gazari	Gazari	"	"	"	8.	100.
4.	"	"	"	"	"	"	"	"	"	8.	100.
5.	"	"	"	Chandana	"	"	"	"	"	7.	85.
6.	"	"	"	"	"	"	"	"	"	5.	90.
7.	"	"	"	"	"	"	"	"	"	6.5	75.
8.	"	"	"	"	"	"	"	"	"	6.	75.
9.	"	"	"	"	"	"	"	"	"	7.	80.
10.	"	"	"	"	"	"	"	"	"	7.5	110.
11.	09-11-82	"	"	Baniasala	"	"	"	"	"	5.	35.
12.	"	"	Samalgonj	Kanai	Mango	Mango	"	"	"	8.	125.
13.	"	"	Bhadder Bazar	Satviapara	"	"	Sundari	"	"	9.	125.
14.	"	"	Fatulla	Sonargaon	Boroi	"	"	"	"	9.	80.
15.	22-10-82	"	Manikgonj	Nihondo	Babla	Babla	"	"	"	7.	110.
16.	05-11-82	"	Kaliakair	Tanstrapur	Gazari	gazari	Gazari	"	"	4.	100.
17.	"	Tangail	Mirzapur	Deruya	"	"	"	"	"	8.	100.
18.	"	"	Bashail	Dubail	"	"	"	"	"	5.	200.
19.	"	"	Kalihati	Dhunail	"	"	"	"	"	5.	60-70.
20.	"	"	"	"	"	"	"	"	"	4.	70-75.
21.	"	"	Modhupur	Golabari	"	"	"	Paya	"	4.	70-75.
22.	"	Jamalpur	Jamalpur	Paschimpar-dighuli	Pitraj	Pitraj	Bamboo	"	"	5.	100
23.	"	"	Sherpur	Dakalhati	Gazari	Gazari	Gazari	Bamboo	"	5.	50.
24.	"	"	"	"	"	"	"	"	"	6.	50.
25.	27-10-82	"	"	Rantia	"	"	"	Charder	"	9.	65.

表－39　犁に使用されている材料の調査

SAMPLES OF LOCAL PLOWS IN BANGLADESH

SL NO 1.	DATE OF COLLECTION 2.	DISTRICT 3.	POLICE STATION 4.	VILLAGE 5.	MATERIALS OF CONSTRUCTION					WEIGHT K/g 11.	TOTAL Taka 12.
					BOTTOM 6.	HANDLE 7.	BEAM 8.	YOKE 9.	SHEAR 10.		
26.	27-10-82	Jamalpur	Sherpur	Rantia	Gazari	Gazari	Gazari	Charder	Loha	5.	54.
27.	06-11-82	Mymensingh	Muktagacha	Charipara	"	"	"	Bhutum	"	6.	100.
28.	"	"	Purbodhola	Naryandia	Pitraj	Pitraj	Chow	Boroi	"	5.	40-50.
29.	07-11-82	"	"	Barha	Koroi	Koroi	Lohakat	"	"	4.	85.
30.	"	"	"	"	Badraj	Badraj	Badraj	"	"	4.	80.
31.	"	"	Bhaluka	Jamirdia	Koroi	Koroi	Sal	"	"	5.	50.
32.	20-10-82	Faridpur	Boalmari	Borobagat	Babla	Babla	Sundari	Baeui	"	9.	150.
33.	22-10-82	"	Faridpur	A.E.T.I.	Sundari	Sundari	Boroi	Sundari	"	10.	120.
34.	"	"	Goalanda-ghat	Mochukomr	Babla	Babla	Bakul	Babla	"	7.	96.
				(CHITTAGONG DIVISION)							
35.	29-11-82	Chittagong	Boankasi	West Gondandi	Supari	Jaam	Jaam	Kathal	"	4.	100.
36.	"	"	"	"	Horno	Koroi	Horno	"	"	4.	122.
37.	"	"	Rangonia	Midingangar	Gamari	Gutgutty	Saal	"	"	5.	70.
38.	"	Bandarban	Kotowali	Bandarban	Godas	Gamar	Godas	"	"	6.	60.
39.	30-11-82	"	Coxsbazzar	Hagipur	Tal	Tal	Tal	"	"	8.	50.
40.	01-12-82	C.H.Tracts	Rangamati	Rankhapani	Godas	Godas	Ujar	"	"	5.	40.
41.	02-12-82	Noakhali	Raipur	Paschimkeura	Karoi	Karoi	Supari	Thona	"	6.	80.
42.	"	"	Senbag	Mohammedpur	"	"	"	"	"	8.	125.
43.	23-11-82	Comilla	Behiwa	Dokhinshoto-gonei	Gatar	Gatar	Ishu	Bamboo	"	9.	80.
44.	"	"	"	Ishupur	"	Kuty	"	"	"	5	100.
45.	02-12-82	"	Choddogram	Kalikapur	Koroi	Koroi	Lohakat	"	"	9.	150.
46.	23-11-82	Sylhet	Moulavi-bazar	Shampasi	Bonaku	Bonaku	Bamboo	"	"	9.	50.
47.	"	"	"	"	Jarul	Jarul	Jarul	"	"	6.	75.
48.	24-11-82	"	Kotwali	Khadimnagar	Jarul	Jarul	Sonalu	"	"	6.	80.
49.	"	"	"	Jaintiapur	Jarul	Jarul	Chaiu	"	"	6.	60.
50.	"	"	"	"	"	"	"	"	"	7.	80.

表－40　型に使用されている材料の調査

SAMPLES OF LOCAL PLOUGH IN BANGLADESH

SL NO 1.	DATE OF COLLECION 2.	DISTRICT 3.	POLICE STATION 4.	VILLAGE 5.	MATERIALS OF CONSTRUCTION BOTTOM 6.	HANDLE 7.	BEAM 8.	YOKE 9.	SHEAR 10.	WEIGTH K/g 11.	TOTAL TaKa 12.
51.	24-11-82	Sylhet	Kotwali	Gopal	Jarul	Jarul	Chaiu	Bamboo	Loha	6.	60.
52.	"	"	"	"	"	"	"	"	"	5.	60.
53.	"	"	"	Mollanagar	"	Chaiu	"	"	"	6.	170.
54.	"	"	Srimongal	Esoppur	"	Jatnl	Bamboo	"	"	5.	40.
55	"	"	Madhobpur	Surma	Koroi	Awal	"	"	"	6.	70.
				(Rajshahi Division)							
56.	19-11-82	Rajshahi	Natore	Borfrishpur	Babla	Bamboo	Koroi	Bamboo	Loha	6.	100.
57.	21-09-82	"	"	Biraldah	Bada	Bamboo	Kathal	"	"	11.	95.
58.	"	"	"	"	"	"	"	"	"	13.	150.
59.	22-09-82	"	Paba	Barabanagram	"	"	Khair	"	"	22.	150.
60.	"	"	"	"	"	"	"	"	"	14.	130.
61.	23-09-82	Rangpur	Gaibandah	(A.E.T.I.)	Mango	Bamboo	Sal	"	"	8.	80.
62.	"	"	"	"	Mango	Mango	"	Sal	"	11.	100.
63.	"	"	"	"	"	"	"	"	"	8.	80.
64.	24-09-82	"	Ranjpursatar	Alam nagar	Kathal	Babla	Sal	Bamboo	"	9.	100.
65.	"	Dinajpur	Parbatipur	Sonapukur	Mango	Mango	Chawa	Pua	"	5.	90.
66.	"	"	"	"	"	Bamboo	Sal	"	"	6.	100.
67.	"	"	Phulbari	Barai	"	"	"	Kathal	"	11.	75.
68.	25-09-82	"	Kotwali	(Jute seed)	"	"	Bamboo	Bamboo	"	12.	48.
69.	"	"	Thakurgaon	Bhalihat	"	"	"	"	"	5.	70.
70.	21-09-82	Pabna	Ishurdi	(A.E.T.I.)	Babla	Babla	Sundari	Babla	"	7.	100.
71.	"	"	"	Aronkhola	Gorjon	Bamboo	Bamboo	"	"	9.	120.
72.	"	"	"	Ishurdi	Babla	Babla	Mair	Bamboo	"	7.	120.
73.	19-11-82	"	Shujanagar	Ahmodpur	"	"	Sundari	"	"	10.	150.
74.	"	"	Shazadpur	Aladipur	"	"	"	"	"	9.	100.
75.	"	"	Shadatpur	Taita	"	"	"	Joga	"	8.	50.

表－41　犁に使用されている材料の調査

表－42　犁に使用されている材料の調査

SAMPLES OF LOCAL PLOUGH IN BANGLADESH

SL NO 1.	DATE OF COLLECTION 2.	DISTRICT 3.	POLICE STATION 4.	VILLAGE 5.	MATERIALS OF CONSTRUCTION					WEIGHT K/g 11.	TOTAL Taka 12.
					BOTTOM 6.	HANDLE 7.	BEAM 8.	YOKE 9.	SHEAR 10.		
76.	19-11-82	Bogra	Bogra	Momshep pur	Babla	Bamboo	Bamboo	Bamboo	Loha	9.	100.
77.	"	"	"	"	Mango	"	"	"	"	6.	90.
78.	"	"	Sherpur	Mirzapur	Koroi	"	"	"	"	8.	70.
79.	26-09-82.	"	Bograsadar	Badruilmazira	Mango	Sonal	"	kathal	"	9.	70.
80.	"	"	"	"	"	Bamboo	"	"	"	4.	65.
				(Khulna Diviion)							
81.	17-10-82.	Khulna	Tipna	Durnuria	Baura	Baura	Sundari	Ball	Loha	5.5	60.
82.	"	"	"	"	"	"	"	"	"	4.8	55.
83.	"	"	Satkhira	Mohmedpur	Babla	Babla	Tal	Bot	"	7.	75.
84.	"	"	Rounbijoy pur	Bagerhat	Tetul	Tetul	"	"	"	5.	50.
85.	"	"	Daulatpur	Madhyadanga	Babla	Babla	Shundari	Ball	"	6.	60.
86.	"	"	Koera pur	Koera	Sundari	Sundari	"	Bamboo	"	7.5	45.
87.	"	"	"	"	Bain	Bain	"	"	"	9.	95.
88.	"	Jessor	Obinagar	Mohakar	Baura	Baura	Shundol	Bot	"	6.	75.
89.	"	"	Kotowari	Hanidpur	Babla	"	Taal	"	"	20.	100.
90.	18-10-82.	"	Sharsa	Sharsa	"	"	"	Ata	"	9.	95.
91.	20-10-82.	"	Jhenidha	Lokicowl	"	"	"	Dibdar	"	10.	80.
92.	"	Kushtia	Alamdanga	Kulpala	"	"	Sundari	Tetul	"	14.	200.
93.	"	"	Kushtia	Nowdahogotbaria	"	"	Babla	Babla	"	12.	170.
94.	"	"	Kumarkhali	Srilam pur	"	"	Sundari	Tetul	"	12.	150.
95.	21-10-82.	Barisal	Bakergonj	Dhumkistation	Koroi	Koroi	Gab	Roina	"	6.	100.
96.	"	"	"	Dudalmon	Sundari	Sundari	"	"	"	5.	65.
97.	"	"	Kotowali	Kaladema	Tetul	Tetul	Randi	"	"	6.	80.
98.	"	"	Gournadi	Kashimabad	Tamaraid	Tamaraid	Lohakat	"	"	7.	100.
99.	"	Patuakhali	Patuakhali	Kalika pur	Karamja	Karamj	Sundari	Ball	"	5.	50.
100.	"	"	"	Siali	Koroi	Koroi	Koroi	Gab	"	5.	60.

LOCAL WOOD AVAILABLE FOR CONSTRUCTION AND AGRICULTURAL IMPLEMENTS.

Sl.No.	Scientific name.	Local name.	Short description and uses. (Remarks)
1.	Albizzia procera.	Korai.	.Common. It is used in construction purposes,furniture,table tops,large size panels,boats,oars,agricultural implements,cart wheel,rice pounder etc.
2.	Ammora rohituka.	Roina,Amari.	.Sporadic.Box planking.
3.	Artocarpas chaplasha.	Chambal.	.Sporadic.It is suitable for ship bldg.dug outs house buildings,cars,masts,carts,well-construction furniture,box,general carpentary,work and shanks of built up jute bobbins.
4.	A. integrifolia.	Kathal.	.Plenty in villages but few in the forest.The wood is suitable for musical instruments,furniture,house bldg. country crofts,masts,carts,tool,handle,etc.
5.	Barringtonia acutangula.	Hijal.	.In low lying areas and marshy lands.The timber is suitable for boat bldg. well-construction,rice-pounder,etc.
6.	Bridelia vetusa.	Kata-khai, Shemail.	.The wood is used for cart,cart-shafts,yokes and agricultural implements.
7.	Careya arobrea.	Kumbi,Gadula.	.Plenty.It is used in wooden vessel,agricultural implements,house post,etc.
8.	Cassia fistula.	Sonalu.	.Common.For house posts,carts,yokes,agricultural implements,rice pounders,boat handles.
9.	Cordia myxa.	Bohal,Bahal.	.Wood is useful for agricultural implements,tea chests.
10.	Dalbergia sissu.	Sissu.	.Good furniture wood.
11.	Dillenia pentagyna.	Ajuli.	.The wood is used for house building(specially in roof structure,carriage shaft,rice mills,etc.

表－43　利に使用されている木材

LOCAL WOOD AVAILABLE FOR CONSTRUCTION AND AGRICULTURAL IMPLEMENTS.

Sl.No.	Scientific name.	Local name.	Short description and uses. (Remarks)
12.	Diospyros embryopteris.	Gab.	.Wood is used for mast of country boats.
13.	Erythrina indica.	Mandar, Daltamandar.	.The wood is known as "Mochi wood" and is used for boxes,toy,tea chests,etc.
14.	Gmelina arborea.	Jogini chakra, Gamar.	.Sporadic.Good furniture wood.
15.	Lannea grandis.	Jiyal,Jigal.	.Wood is used in spear,cart wheel,spoke yoke, rice pounder,house bldg.etc.
16.	Mallotus philippinensis.	Sindure,Sunduri.	.It is used for handle of hoes.
17.	Mangifera indica.	Aam.	.Fruits,fuel and inferior timber,plywood.
18.	Miliusa velunina.	Gandigajari.	.It is used for agricultural implements and firewood.
19.	Randia spinosa.	Mankata.	.Fencing,fruits eaten & used for agricultural implements.
20.	Spatholofus roxburghii.	Margalialata.	.A large woody climber of Sal forest.

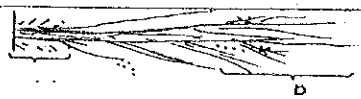
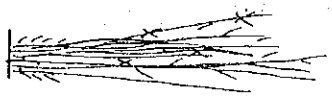
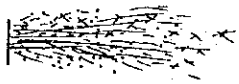
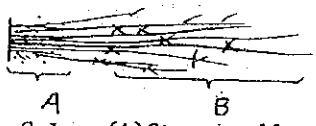
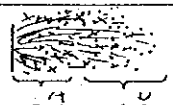
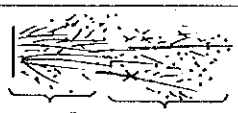
表－44　製化使用されている木材

SAMPLES OF LOCAL WOOD.

SL. NO.	LOCAL NAME. 2.	SCIENTIFIC NAME. 3.	DISTRICT OF ORIGIN. 4.
1.	Barta.	Artocarpus lakoocha.	Chittagong.
2.	Bel.	Aegla marelos.	Kushtia, Khulna, Jessore.
3.	Boroi.	Zyziphus jujuba.	Dhaka, Tangail, Khulna.
4.	Dharmara.	Stereosperum chelonoides.	Chittagong Hill Tracts.
5.	Gaab.	Diespyrox embryopteris.	Faridpur, Barisal, Jessore, etc.
6.	Gamar.	Gmelina aroborea.	Chittagong Hill Tracts.
7.	Garjan.	Dipte rocarpus sp.	Tangail, Jamalpur, Ctg.
8.	Goda.	Vitex spp.	Chittagong, C.H.Tracts.
9.	Gutguttey.	Bursera serrata.	Chittagong Hill Tracts.
10.	Jam.	Eugenia sp.	Rangpur, Sylhet, Mymensingh, etc.
11.	Kathal.	Artocarpus integrifolia.	Chittagong, Barisal.
12.	Khoir.	Albezzia procera.	Rajshahi.
13.	Koroi.	Anogeissus lanceolata.	Comilla, Noakhali, Ctg.
14.	Mango.	Mangifera indica.	Bogra, Rangpur, Dinajpur.
15.	Nim.	Azaderachta indica.	Bogra, Rajshahi.
16.	Pitraj.	Amoora spp.	Jamalpur, Mymensingh, Noakhali.
17.	Roina.	Ammora rohituka.	Barisal, Dhaka.
18.	Sissu.	Dalbergia sissu.	Kushtia.
19.	Sonalu.	Cassia fistula.	Rangpur, Bogra.
20.	Sundari.	Mallotus philippinensis.	Kushtia, Jessore, Patuakhali, etc.
21.	Tal.	Borazzus flačalifera.	Mymensingh, Khulna, Kushtia.
22.	Tetul.	Tamarindus indica.	Faridpur.

表－45　犁に使用されている木材

CHARACTERISTICS OF SPARKS OF METALS WHEN PLACED ON A HIGH.

No-1 Wrought Iron	 Color-(A)straw yellow. (B)white.	Average stram length with power grinder-65 in. Volume-large long shafts ending in forks and arrowlike appendages.
NO-2 Low-Carbon Steel *	 Color-White.	Average length of stream with power grinder-70 in. Volumemoderately large shafts shorter than wrought iron and in forks and appendages. Forks become more numerous and sprigs appear. as carbon content increases.
NO-3 Carbon Steel	 Color-White.	Average stream length with power grinder-55 in. Volume-large Numerous small and repeating sprigs.
No-4 Alloy Steel **	 Color-(A)Straw yellow. -(B)White.	Stream lrngth varies with type and amount of alloy content. Shafts may end in forks, buds or arrows, frequently with break between shaft and arrow. Few, if any, sprigs.
No-5 White Cast Iron	 Color-(A) Red. (B) Straw yellow.	Average stream length with power Grinder-20 in. Volume-very small.Sprigs-finer than gray iron, small and repeating.
No-6 Gray Cast Iron	 Color-(A) Red (B) Steaw yellow.	Average stream length with power grinder-25 in. Volum-small Nany springs small and repeating.
No-7 Malleable Iron	 Color-Straw yellow.	Average stream length with power grinder-30 in. Volume moderate longer shafts than gray iron ending in numerous small, repeating sprigs,
No-8 Nickel ***	 Color-Orange.	Average stream length with power grinder-10 in. Short shafts with on forks or sprigs,

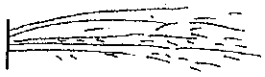
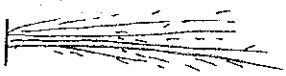
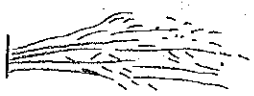
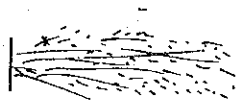
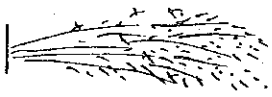
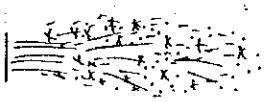
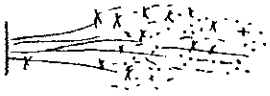
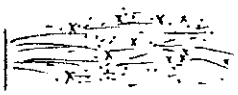
* In general the same as for cast steel.

** Spark shown is for stainless steel.

*** Monel metal spark is similar to nickel.

表－46. 鋼材のグライングー火花試験

SPARK TEST OF STEEL MATERIALS

KIND	SPARKS	REMARKS
Pure Iren 0.05 % C		Sparks are long and orange-coloured. No flower is seen.
Extreme Mild Steel 0.1 % C		The number of flower is a little more compared with pure iron.
Mild Steel 0.2 % C		A little bit numerous flowers are seen, and their shape become compicated.
Hard Steel 0.4 % C		Numerous flowers are seen. Flowers become stream with sprigs. They are Double and tripple-folded with pollen at their tip.
High Carbon Steel 0.6 - 0.8 % C		With increase of carbon content, streams become shorter and flower becomes more complicated.
High Carbon Steel 0.9 -1.2 % C		Streams become shorter than the above. Flowers are increased and complicated.
Nickel Chromium Steel C ..0.25 - 0.32 % Ni..2.50 - 3.50 % Cr..0.60 - 1.00 %		Petals are numerous and their shapes are star-like. At the tip of petals, small fiowers are seen. The volume, of flowers are about one second.
Chromium Molybde-nium steel. C ..0.25 - 0.35 % Cr..0.80 - 1.20 % Mo..0.15 - 0.35 %		The shape of flowers are star-like with numerous petals. Leaves are double-staged. The bundle of sparks are feeble but thick and bright. The volume of flowers are one second.

表－47. 鋼材のグラインダー火花試験