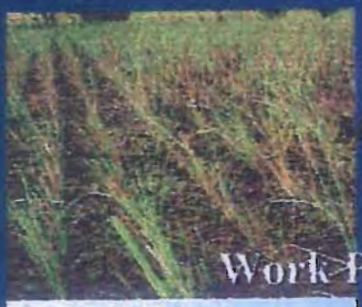
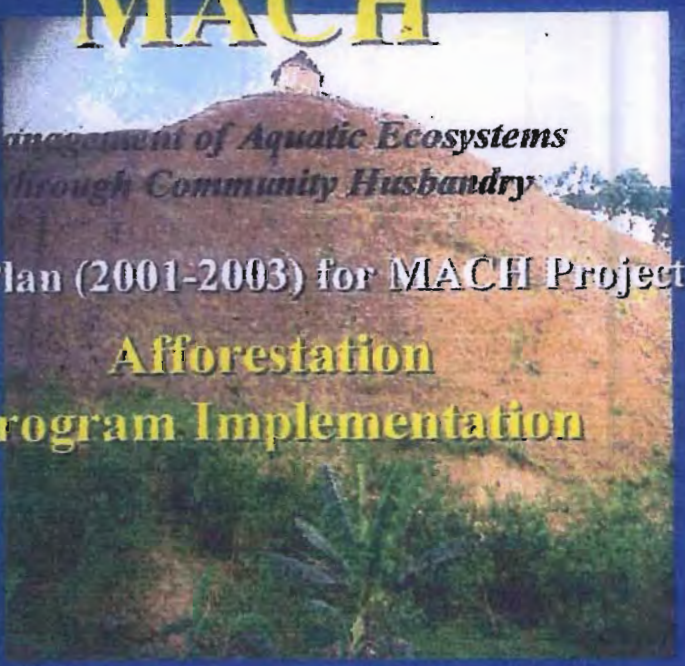
MACH

Management of Aquatic Ecosystems through Community Husbandry

Work Plan (2001-2003) for MACH Project

Afforestation Program Implementation





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Winrock International
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Center for Natural Resource Studies (CNRS)
CARITAS Bangladesh

Work Plan (2001-2003) for MACH Project Afforestation Program Implementation

A

INTRODUCTION

For effective implementation of the MACH project afforestation program, a 3-Day intensive training course on tree plantation and nursery establishment techniques was organized for the MACH-CNRS and MACH-CARITAS field staff, and was held at MACH project site office at Sherpur between 17-19 April, 2001. In all 12 trainees (7 from MACH-CNRS and 5 from MACH-CARITAS) attended the training course. The training curricula was structured with balanced proportions of classroom theoretical discourses and practical field demonstrations, and was successfully completed. The trainees evinced keen interest in the course not only for equipping themselves with appropriate work skills to perform better in course of project implementation but also with the long-term objectives of self-employment and income generating activities with nursery business should some one decides to embark on such entrepreneurial activity.

After completion of the training course, the participants were assigned with the task of preparing a detailed perspective plan for afforestation in their respective working zone for the period from 2001 – 2003. They completed the assignment under the guidance the watershed management consultant, and came out with useful information helpful for future planning and execution of the project programs. It is now considered worthwhile to compile this planning exercise result as a Work Plan document for convenience of all agencies concerned in the implementation of the future afforestation programs under MACH project.

The work plan contains detailed information on year wise and location wise phasing of various categories of plantations to be established under MACH afforestation program for the period 2001-2003. The species composition and quantity of various tree seedlings needed for the plantation establishment have been indicated so that the project management could plan its own nursery raising program or establish contact with reputed commercial nurseries in advance for seedling supply. The work plan also contains an analysis of the costing of different items of plantation activity; this being needed as the basis of cost estimate for budgeting future plantation programs under the project.

To have a full picture of the progress and achievements of the total afforestation program activities of the MACH project, the accomplishments for the past two years i.e., for 1999 and 2000 have also been incorporated in the work plan.

Work Plan (2001–2003) for MACH Project
Afforestation Program (MACH-CNRS Component)

Achievement of MACH Project Afforestation Program for 1999 and 2000 (MACH-CNRS component)

Sl. #	Center	Program component	Achievement for 1999		Achievement for 2000		Progressive achievement since project inception	
			ha/km	# seedlings planted	ha/km	# seedlings planted	ha	# seedlings planted
1	Sreemongol	Swamp land afforestation	0.8	2000	3.4 ha	10,000	3.4	12,000
2	Ditto	Riparian vegetation restoration	-	-	10.9km (≡6.1ha)	15252	6.1	15252
3	Kalia koir	Swamp Afforestation	-	-	0.5ha	1200	0.5	1200
4	Ditto	Jhara/ Chara/ River bank plantation	-	-	3 km (≡1.2ha)	3000	1.2	3.000
5	Sherpur	Swamp Afforestation	-	-	-	-	-	-
Total	-	-	0.8 ha	2000	11.2 ha	29.552	12	31.552

1. Plantation Establishment and Seedling Procurement / Nursery Raising Plan (2001-2003) for MACH-CNRS Srimongol Center

Sl. #	Location of plantation	Extent of planting fit land				# seedlings required (including vacancy filling)	Year wise plantation and nursery seedling procurement plan					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	# planting rows possible		Extent of plantation. (km/ha)	Species wise # seedlings required	Extent of plantation. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required
1	Alia chara	10.02 (≅ 7.5 km)	7.5 km	-	1-4	29,004	4.5 km (≅ 5.52 ha)	Akashmoni- 2275, Mangium-1100, Mahogony-1000, Koroi-1425, Jam-1725, Chikrassi-700, Champaful-700, Chapalish-800,Garjan-378, Telsur-200,Jalpai-500,, Bahera-156, Arjun-353, Horitoki-102, Amloki-50, Jarul-400, Sissoo-200, Bot-50, Kadam-251, Bamboo-51. Total= 12,656 #	4.5 km (≅ 4.50 ha)	Akashmoni- 2350, Mangium-1000, Mahogony-1150, Koroi-1325, Jam-1455, Chikrassi-750, Champaful-800, Chapalish-1000,Garjan-230, Telsur-150,Jalpai-500,, Bahera-12, Arjun-100, Sal-100, Rongi-88, Horitoki-1 25, Jarul-80, Sissoo-50, Bot-39, Kadam-100, Bamboo-51. Total=11,917 #	vacancy filling	**Akashmoni- 400, Mangium-400, Mahogony-400, Koroi-675, Jam-400, Chikrassi-400, Champaful-400, Chapalish-400, Garjan-300, Telsur-300,Jalpai-100,, Bahera-100, Arjun-100,** Horitoki-56, Total= 4431 #
2	Joita chara	7.5 (≅ 7.50 km)	7.7 km	-	3	22,519	5 km (≅ 5.0 ha)	Akashmoni- 800 Mangium-200 Mahogony-400, Koroi-1000, Jam-900, Chikrassi-570, Champaful-600, Chapalish-300, Garjan-800, Telsur-200,Jalpai-	2.7 km (≅ 2.50 ha)	Akashmoni- 1200, Mangium-500, Mahogony-600, Koroi-1100, Jam-400, Chikrassi-600, Champaful-500, Chapalish-600, Garjan-155, Telsur-50,Jalpai-	Do	**Akashmoni-500, Mangium-500, Mahogony-500, Koroi-1000, Jam-700, Chikrassi-250, Champaful-150Chapalish-200, Garjan-250, Jalpai-100'** -

								200,, Bahera-72, Ar, Jarul-650, Sissoo-500, Bot-50, Kadam-344, Bamboo-84. Total = 11,900 #		100,, Bahera-10, Arjun-29, Amloki-60, Jarul-150, Sissoo-100, Bot-20, Kadam-125 Total- 6299 #		**Amloki-70, Horitoki-100 Total-4320 #**
3	Boula chara	7.0 (≡ 6.40 km)	6.4	-	3	25,874	2.4 km (≡ 2.50 ha)	Akashmoni- 800, Mangium-200, Mahogony-400, Koroi-1000, Jam-900, Chikrassi-570, Champaful-600, Chapalish-300, Garjan-600, Telsur-200,Jalpai-200,, Bahera-72, Arjun-100, Amloki-134, Jarul-800, Sissoo-500, Bot-30, Kadam-400. Total=7,206 #	4.0 km (≡ 4.50 ha)	Akashmoni- 2166, Mangium-2000, Mahogony-2050, Koroi-1100, Jam-1150, Chikrassi-1050, Champaful-1050, Chapalish-1000,Garjan-550, Telsur-50,Jalpai-500, Bahera-50, Arjun-20,Horitoki-25, Amloki-110 Jarul-150, Sissoo-100, Bot-6, Kadam-100, Bamboo-42. Total =13,269 #	Do	**Akashmoni-500, Mangium-500, Mahogony-500, Koroi-1400, Jam-1200, Chikrassi-500, Champaful-400, Chapalish-200, Garjan-100, ,Jalpai-50, Amloki-49,** Horitoki-100. Total=5,399
4	Jaag	15.5 (≡ 8.68 km)	8.65	-	4	43,686	7.80 ha	Akashmoni- 3367, Mangium-1200, Mahogony-900, Jam-1100, Chikrassi-2300, Champaful-1500, Chapalish-2300, Garjan-1065, Telsur-1500, Arjun-1260, Jarul-700, ,Bamboo-36, Koroi-200. Total = 17,428 #	7.70ha	Akashmoni- 3134, Mangium-1050, Mahogony-750, Jam-1195, Chikrassi-2050, Champaful-1500, Chapalish-2050, Garjan-965, Telsur-1500, Arjun-1000, Jarul-550, ,Rongi-1408, Koroi-750, Amloki-200,Bohera-200. Total = 18,302 #	Do	Akashmoni- 500, Mangium-500, Mahogony-500, Jam-2500, koroi-2000, Chikrassi-500, Champaful-500, Chapalish-300, Garjan-400, Telsur-100, Arjun-156. Total=7956 #
5	Faizabad Hill	36	-	-	-	22,500	14.5	Aam- 1500, Jack fruit-5700.	21.5	Aam-2100, Jack fruit-9480.	Do	Aam-800, Jack fruit-2920.

								Total = 7,200 #		Total = 11,580 #		**Total = 3720 #**
6	Road	2.0 (≡ 4.0 km)	4	-	1	4980	2km (≡ 1.0 ha)	Akashmoni- 250, Mangium-100, Mahogony-250, Koroi-200, Jam-200,Chikrassi-100, Champaful-100, Chapalish-200, Garjan-378, Telsur-100 Sissoo-250. Total = 2,000 #	2 km (≡ 1.0 ha)	Akashmoni- 300, Mangium-150, Mahogony-300, Koroi-250, Jam-200, Chikrasssi-700, Champaful-700, Chapalish-250, Telsur-150, Arjun-300, Sissoo-200.Total= 3,500 #	Do	**Akashmoni- 50, Mangium-50, Mahogony-50, Koroi-50, Jam-100, Chikrassi-15, Champaful-15, Chapalish-50, Sissoo-50, Telsur-100, Arjun-50. Total=480**
7	Institute	39 # (≡ 1.0 ha)	-	-	-	2970	30 # (≡ 0.75 ha)	Akashmoni- 200, Mahogony-150, Jam-200, Chikrassi-100, Champaful-200, Arjun-250, Sissoo-250, Bel-100, Kamranga-150,Jambura-150, Jalpai-200, Jack fruit-150. Total = 2,100 #	9 # (≡ 0.25 ha)	Akashmoni- 50, Bel-50, Kamraaanga-50, Mahogony-50 ,Jambura-50, Arjun-50, Jam-50 Jalpai-50, Jack fruit-50. Total = 450 #	Do	**Akashmoni- 30, Mangium-30, Mahogony-50, Koroi-50, Jam-50, Chikrassi-15, Champaful-15, Chapalish-50, Sissoo-30, Telsur-50, Arjun-50. Total=420**
8	Swamp: Chandir Kandi	10.5	-	-	-	39,100	8.0 ha	Koroch-12,500, Hijal-12,500, Jarul-1000, Kadam-450, Bot-50. Total = 26,500 #	2.5ha	Koroch-3500, Hijal-3,500, Jarul-200, Bot-25, Kadam-75. Total =7,300	Do	**Koroch-2500 , Jarul-200, Hijal-2500, Bot-25, Kadam-75. Total =5,300 #**
9	Swamp: Joinkar Par	10.7	-	-	-	39,100	3.0	Koroch-4,500 , Hijal-4,500, Jarul-200, Bot-25, Kadam-75. Total = 9300 #	7.7 ha	Koroch-11,500, Hijal-11,500,Jarul-1000 Bot-50, Kadam- 450. Total =24,500 #	Do	**Koroch-2500 , Jarul-200, Hijal-2500, Bot-25, Kadam-75. Total =5,300 #**
10	Swamp: Kagaurar Kandi	1.5	-	-	-	6,700	1.5	Koroch-2500, Hijal-2500, Jarul-550, Kadam-150. Total = 5700 #	-	-	do	**Koroch-450 , Jarul-50, Hijal-450, Bot-25, Kadam-25. Total =1000 #**
To tal		101.72				237,433	49.57 ha	101,990	52.15 ha	97,117	2.0 ha	38,326

Note:

1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the whole growing season up to October to establish and put appreciable growth.

   ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and should be done almost on a day to day basis so that the sites do not dry up abnormally rendering less chance of survival of planted seedlings due to desiccation or requiring painstaking and costly irrigation in the forthcoming dry season following planting.

2. Seedling Procurement: If the planned seedlings are available in commercial nursery, no need to establish project's own nursery. Contrary situation will call for establishment of project's own nursery. When purchased from commercial nursery, seedling should be booked latest in March. Otherwise good quality seedlings cannot be ensured because the buyers always do creaming off and late buyers have to be satisfied with second and third grade leftovers.
3. Establishment of Live Fence: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year wise abstract of seedling requirement : MACH-CNRS Sreemongol Center

Serial #	Name of species	2001		2002		2003	
		# Seedling	Source of seedlings	# Seedling	Source of seedling supply	# Seedling	Source of seedling supply
1	Jarul	5500	Habiganj nursery, Habiganj and Al Ameen nursery, Sreemongol	2100	CNRS own nursery/ Beneficiary group nursery/ Private nursery	200	CNRS own nursery/ Beneficiary group nursery/ Private nursery
2	Kadam	1650	Al Ameen nursery, Sreemongol	850	CNRS own nursery/Beneficiary group nursery/Private nursery	200	CNRS own nursery/ Beneficiary group nursery/ Private nursery
3	Arjun	5500	Habiganj nursery, Habigan/, Shabuj nursery, Moulvi Bazaar/ Bazbari nursery Moulvi Bazaar/ and Al Ameen nursery, Sreemongol/ Bonoful nursery, Comilla,	1500	CNRS own nursery/Beneficiary group nursery/Private nursery	105	CNRS own nursery/ Beneficiary group nursery/Private nursery
4	Sil Koroi	6600	Do	3800	Do	650	Do
5	Jam	5500	Do	4500	Do	950	Do
6	Sissoo	1400	Do	450	Do	50	Do
7	Bot	225	Do	100	Do	25	Do
8	Bamboo	250	Do	-	-	-	-
9	Garjan	2900	Do	1900	Do	350	Do
10	Chapalish	4150	Do	4700	Do	400	Do
11	Chikrassi	5000	Do	4600	Do	865	Do
12	Champaful	4100	Do	4100	Do	365	Do
13	Telsur	2300	Do	1900	Do	250	Do
14	Mahagony	3600	Do	4900	Do	1250	Do
15	Akashmoni	8900	Do	9300	Do	1980	Do
16	Amloki	263	Do	370	Do	66	Do
17	Bahera	300	Do	380	Do	50	Do
18	Jalpai	1000	Do	1150	Do	120	Do
19	Mangium	3000	Do	4700	Do	1250	Do
20	Sal	-	-	100	Do	100	Do
21	Rangi	-	-	1500	Do	50	Do
22	Aam	1500	Bazbari nursery, Moulvi bazaar/ Bonophul nursery, Comilla	2100	Do	188	Do

23	Jack fruit	850	Habiganj nursery, Habiganj/ Bonophul nursery, Comilla	9500	Do	2100	Do
24	Bel	100	Al-Amin Nursery, Sreemongol/Bazb ari nursery, Moulvi Bazaar	50	Do	-	Do
25	Horitoki	102	Al-Amin Nursery, Sreemongol	150	Do	61	Do
26	Jambura	150	Do	50	Do	-	Do
27	Kamranga	150	Habiganj Nursery, Habiganj	50	Do	-	Do
28	Hijal	18500	Beneficiary group nursery/ CNRS own nursery	15000	Do	2500	Do
29	Koroch	18500	Do	15000	Do	2500	Do
Tota l		101,990		97,117		38,326	

2. Plantation Establishment and Seedling Procurement/Nursery Raising Plan (2001-2003) for MACH-CNRS Kaliakoir Center

Sl. #	Location of plantation	Extent of planting fit land				Total # seedling required	Year wise plantation and nursery seedling procurement plan					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	Possible # planting rows		Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required
1	Institution Compound Planting	3.61	-	-	1	9,500	1.90 ha	Jack fruit-800, Mango-500, Kat Badam-250, Jam-225, Mahogony-1400, Sissoo-715, Mangium-880, Eucalyptus-350, Sil koroi-180. Total=5300#	1.01 ha	Jack fruit-200, Mango-200, Kat Badam-50, Jam-300, Mahogony-1000, Sissoo-200, Mangium-300, Eucalyptus-150, Sil koroi—100. Total=2500 #	0.70 ha	Jack fruit-100, Mango-150, Kat Badam-50, Jam-150, Mahogony-600, Arjun-200, Mangium-300, Eucalyptus-100. Total=1700 #
2	River/Khal bank planting	6.6 (≡ 33 km)	33	-	1 row	16,500	17 km (≡ 3.4 ha)	Hijal-5000, Koroch-1000, Pitali- 1500, Sil koroi-1000. Total=8,500 #	16 km (≡ 3.2 ha)	Hijal-5000, Koroch-1500, Pitali- 1000, Sil koroi-500. Total = 8000 #	-	-
3	Wetland Afforesta-tion	2.43	-	-	2 rows (along periphery)	6,000	2.43 ha	Hijal-4000, Koroch-500, Sil koroi-500, Pitali-1000. Total=6,000 #	-	-	-	-
To tal		12.64				32,000	7.73 ha	19,800	4.21 ha	10,500	0.70 ha	1,700

Note: 1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the complete growing season up to October to put up appreciable growth.
ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and should be be done almost on a day to day basis so that the sites do not dry up abnormally rendering less chance of survival of the planted seedlings due to desiccation or requiring painstaking and costly irrigation in the forthcoming dry season following planting.

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3. Establishment of Live Fencing: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year wise Abstract of Seedling Requirement: MACH-CNRS Kaliakoir Center.

Serial #	Name of species	2001		2002		2003	
		# Seedling	Source of seedlings	# Seedling	Source of seedling supply	# Seedling	Source of seedling supply
1	Mango	500	Anil Nursery, Taltali, Kaliakoir, Gazipur	200	Anil Nursery, Taltali, Kaliakoir, Gazipur	150	Anil Nursery, Taltali, Kaliakoir, and Beneficiary group Nursery
2	Jam	525	Do	300	-Do- and Beneficiary group nursery.	200	Do
3	Jack fruit	1000	Do	200	Do	100	Do
4	Kat Badam	650	Do	50	Do	50	Do
5	Mahogony	1400	Do	1000	Do	600	Do
6	Mangium	880	Do	300	Do	300	Do
7	Sissoo	915	Do	200	Do	-	-
8	Eucalyptus	650	Do	150	Do	100	D0
9	Sil koroi	1680	Do	600	Do	-	-
10	Arjun	500	-	-	-	200	Do
11	Hijal	9500	-Do- and Beneficiary group nursery.	5000	Do	-	-
12	Karach	1800	CNRS Jamalganj Nursery,Sun amganj	1500	CNRS Jamalganj Nursery,Sunamg anj	-	-
13	Pitali	1700	Anil Nursery, Taltali.	1000	Anil Nursery, Taltali.		
Total		19,800		10,500		1,700	-

3. Plantation Establishment and Seedling Procurement/Nursery Raising Plan (2001-2003) for MACH-CNRS Sherpur Center

Sl. #	Location of plantation	Extent of planting fit land				Total # seedlings required	Year wise plantation and nursery seedling procurement plan					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	Possible # planting rows		Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (ha/km)	Species wise # seedlings required
1	Paglarmukh to Tinani Bazaar Road/embankment plantation	3.5 (≡ 3.5 km)	3.5	3	2.5	8750	3.5 km (≡ 3.5 ha)	Arjun-1400, Raintree-350, Sissoo- 1400, Akashmoni-1400, Mangium-300, Jam-1400, Sheora-200, Neem-400, Hijal-1100, Koroch- 800. Total=8750 #	-	-	Vacancy filling in all centers, in year 2002 and 2003	Arjun-1500, Rain tree-300, issoo-1000, Akashmoni-950, Jam-1000, Neem-250, Hijal-1200 Koroch-1200, ,Jarul- 800, Kadam-100,Pitali-200. Total-8,500
2	From Hashuli Gaon to Dergakhal embankment plantation	1.5 (≡ 1.5 km)	1.5)	3	2.5	3750	1.5 (≡ 1.5 ha)	Arjun-600, Raintree-250, Sissoo- 600, Akashmoni-600, Mangium-50, Jam-500, Sheora-50, Neem-100' Hijal-600. Koroch-400 Total= 3750 #	-	-	-	-
3	Katakhali bridge to Takimari Beel, canal bank planting	1 (≡ 1 km)		3	2	2,000	1 (≡ 1.0 ha)	Arjun-300, Raintree-100, Sissoo-300, Akashmoni-300, Mangium-50, Jam-100, Sheora-50, Neem-400, Hijal-300, Koroch- 200.	-	-	-	-

								Total=2000 #				
4	Tircha to Bishwa road, Keota and Baka Beel middle roadside planting	1.5 (≡ 1.5 km)	1.5	2	2	3000	1.5 (≡ 1.5 ha)	Arjun-400, Raintree-200, Sissoo-400, Akashmoni-500, Mangium-50, Jam-600, Sheora-50, Neem-300, Hijal-300, Koroch- 200. Total=3000#	-	-	-	-
5	Keota Beel, Southern bank	-	2.5 (≡ 2.5 ha)	2.5	2	2,500	2.5 (≡ 2.5 ha)	Arjun-300, Raintree-100, Sissoo-300, Akashmoni-200, Mangium-50, Jam-200, Sheora-150, Neem-100, Hijal-700, Koroch- 400. Total=2500 #				
6	Malijhi river bank planting from Ghagra-Kamarpara	1	-	-	-	2500	-	-	1 ha	Arjun-500, Sheora-200, Neem-300, Hijal-300, Koroch- 500, Jarul-500, Kadam-200. Total=2500 #		
7	Southern sideroad of Takimari Beel from Baniapara-Kurulikanda	1.5 (≡ 1.50 km)	1.5	3	2	3000	-	-	1.5 km (≡ 1.20 ha)	Arjun-400, Raintree-100, Sissoo-300, Akashmoni-400, Jam-400, Sheora-100, Neem-100, Hijal-400, Jarul-300, Koroch-300#, Pitali-100 , kaadam- 100.		

										Total = 3000 #		
8	Malijhi river, both bank of Bahar ali kur,	4.8 (≅ 4.0 km)	4	5	3	12000	-	-	4km (≅ 4.80 ha)	Arjun-1000, Raintree-500, Sissoo-1500, Akashmoni-2000, Mangium-50, Jam-1500, Pitali-500, Jarul-1000, Sheora-500, Neem-500, Hijal-1500, Koroch-1000. Kodom-500. Total=12,000 #		
9	Katakhali canal bank, from Bailla mukh to Paglar mukh	1.6 (≅ 4.0 km)	4	2	2	4000	-	-	4 (≅ 1.60 ha)	Arjun-800, Kadam-300, Pitali-300, Jarul-800,Hijal-800, Koroch-700, Sheora-300. Total=4000 #	-	-
10	Bogadubi canal bank plantation from Dholi beel to Bogadubi bridge	1.0 (≅ 1.0 km)	2.5	1	1	2,500	-	-	1.	Arjun-500, Kadam-400, Pitali-300, Jarul-800,Hijal-500, Koroch-500, Sheora-300. Total=2,500 #	-	-
11	Dholibeel bank road	2.0 (≅ 2.5 km)	2.5	2	2	5000	-	-	2.5 (≅ 2.0 ha)	Arjun-600, Kadam-300, Pitali-200,		

	from Shari Kalinagar to Dorikalinagar primary school									Sissoo-500, Jam-600, Jarul-600,Hijal-600, Koroch-500, Sheora-200, Akashmoni-600, Neem-100. Total=5000 #		
12	Sharikalin-agar to Dokhin Doriarpar, Road partitioning Dholi and Gozarmari Beel	1.60 (= 2.0 km)	2	2.5	2	4000	-		2.5 (= 2.0 ha)	Arjun-500, Kadam-200, Pitali-200, Raintree-200, Jarul-500, Hijal-500, Koroch-400, Sheora-100, Akashmoni-400,Neen-100, Jam-500, Sissoo-400. Total=4000 #	-	-
13	Southern side road of Baillar Beel, (from Dokkhin Doriarpar toBaliachandi Gram)	1.60 (= 2.0 km)	2	2.5	2	4000	-		2 (= 1.60 ha)	Arjun-500, Kadam-200, Pitali-200, Raintree-200, Jarul-500, Hijal-500, Koroch-400, Sheora-100, Akashmoni-400,Neen-100, Jam-500, Sissoo-400. Total=4000 #		
14	Baillar	1.6	2	2.5	2	4000	-	-	2	Arjun-500,	-	-

	Beel, Northern side road From (Dorikali nagar to Kanduli)	(2.0 km)							(≡ 1.60 ha)	Kadam-200, Pitali-200, Raintree-200, Jarul-500, Hijal-500, Koroch-400, Sheora-100, Akashmoni-400,Neen-100, Jam-500, Sissoo-400. Total=4000 #		
15	TenaChora canal bank(From Dholibeel mukh to Kandulu	1.0 (≡ 2.0 km)	2	1.5	1	2000	-	-	2 (≡ 1.0 ha)	Arjun-250, Kadam-100, Pitali-100, Raintree-100, Jarul-250, Hijal-250, Koroch-200, Sheora-50, Akashmoni-200,Neem-50, Jam-250, Sissoo-200. Total=2000 #	-	-
16	Bailsha Beel, North and west Bank road	0.50 (≡ 1.0 km)	1	1	1	1000	-	-	1 (≡ 0.50 ha)	Arjun-125, Kadam-50, Pitali-50, Raintree-50, Jarul-125, Hijal-500, Koroch- Total=1000 #	-	-
17	Someswari bank (from Bagervita bridge to Gojarm	1.0 (≡ 2.0 km)	2	1.5	1	2000	-	-	2 (≡ 1.0 ha)	Arjun-250, Kadam-100, Pitali-100, Raintree-100, Jarul-250, Hijal-250, Koroch-200, Sheora-50,		

	ari Beel)									Akashmoni-200,Neen-50, Jam-250, Sissoo-200. Total=2000 #		
18	Kalagho sha river bank (from Gojni to Somesh wari ri er)	6.0 (= 5.0 km)	5	3.5	3	15,000	-	-	5 (≡ 6.0 ha)	Arjun-1800, Kadam-900, Pitali-600, Sissoo-1500, Raintree-600, Jarul-1800, jam-1800, Hijal-1800, Koroch-1500, Sheora-600, Akashmoni-1800 Neem-300 Total=15,000 #		
19	Shahati Chara bank (from Jhinaiga ti TNO office to Dhan shail road crossing)	1.0 (≡ 2 km)	2	1.5	1	2000	-	-	2 (≡ 1.0 ha)	Arjun-200, Kadam-100, Pitali-100, Raintree-100, Jam-250, Jarul-250, Hijal-250, Koroch-200, Sheora-100, Akashmoni-200,Neem-100, Jam-500, Sissoo-200. Total-2000#	-	-
20	Aura-Baura Beel bank road	1.6 (≡ 4 km)	4	1.5	1	4000	-	-	4 (≡ 1.60 ha)	Arjun-500, Kadam-200, Pitali-200, Rain-tree-200, Jarul-500, Hijal-500, Koroch-		

										400, Sheora-100, Akashmoni-400 Neem-100, Jam-500, Sissoo-400. Total=4000 #		
To tal		36.5				87,000 + 8,500 for vacancy filling	10.0	20,000	26.5	67,000	-	8,500

Note:

1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the whole growing season up to October to establish and put appreciable growth.
   ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and should be done almost on a day to day basis so that the sites do not dry up abnormally rendering less chance of survival of planted seedlings due to desiccation or requiring painstaking and costly irrigation in the forthcoming dry season following planting.
2. Seedling Procurement: If the planned seedlings are available in commercial nursery, no need to establish project's own nursery. Contrary situation will call for establishment of project's own nursery. When purchased from commercial nursery, seedling should be booked latest in March. Otherwise good quality seedlings cannot be ensured because the buyers always do creaming off and late buyers have to be satisfied with second and third grade leftovers.
3. Establishment of Live Fencing: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year Wise Abstract of Seedling Requirement: MACH-CNRS Sherpur Center

SL. #	Name of species	Year: 2001		Year: 2002		Year: 2003	
		# Seedling	Source of seedlings	# Seed-ling	Source of seedlings	# Seed-ling	Source of seedling
1	Arjun	3,000	Private nurseries located at Gouripur, Sreebordi, Sherpur and Jhenaigati, and Govt. nursery at Sherpur town	8,575	Private nurseries located at Gouripur, Sreebordi, Sherpur and Jhenaigati, and Govt. nursery at Sherpur town	1500	Private nurseries located at Gouripur, Sreebordi, Sherpur and Jhenaigati, and Govt. nursery at Sherpur town
2	Raintree	1000	Do	2550	Do	300	Do
3	Sissoo	3000	Do	6100	Do	1000	Do
4	Akashmoni	3000	Do	7100	Do	950	Do
5	Mangium	500	Do	-	Do	-	Do
6	Jam	3000	Do	7175	Do	1000	Do
7	Sheora	500	Do	2775	Do	-	Do
8	Neem	1000	Do	1575	Caritas Beneficiary group nursery	250	Caritas Beneficiary group nursery
9	Hijal	3000	CNRS Nursery at Jamalganj or Kaliakkoir	8775	CNRS Nursery at Jamalganj or Kaliakkoir	1200	CNRS Nursery at Jamalganj or Kaliakkoir
10	Koroch	2000	Do	7300	Do	1200	Do
11	Jarul	-		7875	Caritas Beneficiary group nursery	800	Caritas Beneficiary group nursery
12	Kadam	-		3850	CNRS Jamalganj Nursery,Sunamg anj	100	CNRS Jamalganj Nursery,Sunamga nj
13	Pitali			3350	Anil Nursery, Taltali.	200	Anil Nursery, Taltali.
Tot al		20,000		67,000		8500	

Abstract of Total Plantation Activity and Cost Estimate for MACH-CNRS Plantation Program for the Period 2001-2003.

Center	Yr: 2001		Yr: 2002		Yr: 2003		Total		
	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Planned Seedlings	**Total cost (in million Tk.)
Sreemongol	49.57	101,990	52.15	97,117	2.0	38,326	101.72	237,433	12.32
Sherpur	10.0	20,000	26.5	67,000	-	8,500	36.5	95,500	4.95
Kaliakoir	7.73	19,800	4.21	10,500	0.70	1700	12.64	32,000	1.66
Grand Total	67.3	141,790		174,617		48,526	150.86	364,933	18.93

** Basis of detailed cost estimate is enclosed as Annex- A of this work plan

Cost Estimate for MACH-CNRS Plantation Activity (2001-2003).

Sl #	Particulars of work	Unit cost (Tk.)	Average cost per 1000 plants. (Tk.)	Year wise cost of plantation activities planned for						Total	
				2001		2002		2003		# Plant	Cost (mill. Tk)
				# plant	Cost (mill. Tk)	# plant	Cost (mill. Tk)	# plant	Cost (mill. Tk)		
1	**FY – 1** Site reconnaissance to ascertain area available for planting, site quality and species suitability: cleaning ground of jungles and weeds to prepare ground for plantation: 1-4 person day (PD)/km.	70	140								
2	Establishment of live fencing/hedge row of Arhar/Boga along the road edge road: a). Arhar/Boga seed @ 12 kg/km b). Labor wage for soil working and seed sowing in lines, 25 cm wide and 15cm deep: 4 PD.	30 70	360 280								
3	Material and labor cost for making bamboo stake for using as support to planted seed-lings (stake height =2.25m; width=4 cm; 4-6 # stakes to be made out of a round bamboo piece)--1000 stakes /km	3	3000								
4	Labor wages for digging planting pit, size 30cm x 30cm x 30cm at a distance of 2m center to center as per plan- 25 PD/1000pits.	70	1750								

5	Cost of fertilizer for pre-planting application in the planting pits as follows (material estimate/1000 pits). a). Decomposed cow dung @2 kg / pit =2000kg b). TSP @ 100 gm/pit=100kg c). MP @ 100 gm/pit= 100kg d). Polythene twine for tying seedlings to stakes = 2kg/100plants	1 16 12 60	2000 1600 1200 120								
6	Pulverizing dug out earth earth, mixing soil with organic and chemical fertilizer and filling the pits with manure mixed soil at least three weeks before actual tree planting—10 PD/100 pits	70	700								
7	Cost of 1.82m (6 ft) and above height seedlings delivered at the planting site (cost also includes price of seedlings died during transportation and after planting—roughly 20%)	10-15	13000								
8	Cost of planting individual seedling in pre-dug pits including carrying seedlings from local stock to individual site ,fixing stakes alongside each plant as support-20 PD/1000plants	70	1400								
9	Engagement of caretaker for protection and upkeep of plantation @ 1 caretaker / km (or 1000 plants) for 1 month in the FY	1200	1200								

10	<u>Miscellaneous expenses</u> i. An umbrella/caretaker ii. 2 sign boards at the beginning and end of plantation (assuming average plantation length of 2km) iii. planting and maintenance tools/caretaker (tools include a *Nirani* and a *Dao*) Ls.	160 300 50	160 300 50								
	Sub total of year –1 cost	-	**27,260**	141,790	3.87	174,617	4.76	48,526	1.33	364,933	9.95
12	**<u>FY--2</u>** Engagement of caretaker for protection and upkeep of plantation @ 1 caretaker / km (1000 plants) for 12 months.	1200	14400								
13	(i). Cost of seedlings (1.82m and above in height) for replacement of dead and damaged plants (assuming 15% vacancy) = 150 # (ii). Stake cost for the replaced seedlings = 150 #	10-15 3	1950 450								
14	Urea fertilizer application—4 doses, once in each of July, August, September and following May-June @ 30gm per plant/application = 1200	6.5	7800								
	Sub-total of year-2 cost	-	**24,600**	141,790	3.49	174,617	4.30	48,526	1.19	364,933	8.98
	Grand total of costing		**51,860**	141,790	7.35	174,617	9.06	48,526	2.52	364,933	18.93

Work Plan (2001–2003) for MACH Project Afforestation Program (MACH-CARITAS Component)

Achievement of MACH Project Afforestation Program for 1999 and 2000 (MACH-Caritas component).

Sl. #	Center	Program component	Achievement for 1999		Achievement for 2000		Progressive achievement since project inception	
			ha/km	# seedlings planted	ha/km	# seedlings planted	ha	# seedlings planted
1	Sreemongol	Roadside tree plantation	-	-	7 km (≡2.8ha)	6790	2.8	6790
2	Kalia koir	Ditto	-	-	5 km (≡2 ha)	5000	2	5000
Total	-	-	-	-	12 km (4.8 ha)	11.790 #	4.8	11.79 #

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1. Plantation Establishment and Seedling Procurement / Nursery Raising Plan (2001-2003) for MACH-CARITAS Kaliakoir Center

Sl. #	Location of plantation	Extent of planting fit land				# seedlings required (including vacancy filling)	Year wise plantation and nursery seedling procurement plan					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	# planting rows possible		Extent of plan. (ha/km)	Species wise # seedlings required	Extent of plan. (ha/km)	Species wise # seedlings required	Extent of plan. (ha/km)	Species wise # seedlings required
1	Kundaghat --Boali Bazaar Road	1 (≡ 2 km	2	3.5	1	2000	2	Mahogony-484, Sissoo-322, Mangium-484, Akashmoni-484, Eucalyptus-162, Jack fruit-20, Jam-20, Arjun-24. Total = 2000 #	-	-	-	-
2	Telsolahati--Sholahti Roaad	0.5 (≡ 1.2 km)	1.2	2.8	1	1200	1.2	Mahogony-290, Sissoo-193, Mangium-290, Akashmoni-290, Eucalyptus-81, Jack fruit-10, Jam-10, Arjun-12. Total = 1200 #	-	-	-	-
3	Main Road--Namasulai	0.40 (≡ 1 km)	1	2.5	1	1000	1	Mahogony-242, Sissoo-161, Mangium-242, Akashmoni-242, Eucalyptus-81, Jack fruit-10, Jam-10, Arjun-12. Total =	-	-	-	-

								1000 #				
4	Metalleed road—Majhipara	0.40 (≡ 1 km)	1	3.25	1	1000	1	Do	-	-	-	-
5	Kanchanpur to Betara Masjid	0.40 (≡ 1 km)	1	2.5	1	1000	1	D0	-	-	-	
6	Taltali – Boroibari Road	1.2 (≡ 3 km)	3	5	1	3000	-	-	3	Mahogony-726 Sissoo483, Mangium-726, Akashmoni-726, Eucalyptus-243, Jack fruit-30, Jam-30, Arjun-36. Total = 3000 #	-	-
7	Haturia Chala—Gopinpur	0.80 (≡ 2 km)	2	3	1	2000	-	-	2	Mahogony-484, Sissoo-322, Mangium-484, Akashmoni-484, Eucalyptus-162, Jack fruit-20, Jam-20, Arjun-24. Total = 2000 #	-	-
8	Maajukhan —Laskar Chala road	0.40 (≡ 1 km)	1	3	1	1000	-	-	1	Mahogony-242, Sissoo-161, Mangium-242, Akashmoni-242, Eucalyptus-81, Jack fruit-10, Jam-10, Arjun-12. Total = 1000 #	-	
9	Mediashclai — Kanchanpur	0.8 (≡ 2 km)	2	2.5	1	2000	-	-	2	Mahogony-484, Sissoo-322, Mangium-484, Akashmoni-484, Eucalyptus-162, Jack fruit-20, Jam-20, Arjun-24. Total = 2000 #	-	-
10	Boroibari—Dakurail Road	0.40 (≡ 1 km)	1	2.2	1	1000	-	-	-		1	Mahogony-242, Sissoo-161, Mangium-242,

												Akashmoni-242, Eucalyptus-81, Jack fruit-10, Jam-10, Arjun-12. Total = 1000 #
11	Boalil— Cha Bagan Road	0.40 (≡ 1 km)	1	2.2	1	1000	-	-	-	-	1	- Do-
12	Ajgana— Namashulai Road	0.40 (≡ 1 km)	1	2.5	1	1000	-	-	-	-	1	-Do-
To tal		7.8 (≡ 17.2 km)	17.2			17,200 #	6.2km/ 2.7 ha	6200	8 km/ 10ha	8000	3km/ 1.2 ha	3000

Note:

1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the whole growing season up to October to establish and put appreciable growth.

   ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and should be done almost on a day to day basis so that the sites do not dry up abnormally rendering less chance of survival of planted seedlings due to desiccation or requiring painstaking and costly irrigation in the forthcoming dry season following planting.
2. Seedling Procurement: If the planned seedlings are available in commercial nursery, no need to establish project's own nursery. Contrary situation will call for establishment of project's own nursery. When purchased from commercial nursery, seedling should be booked latest in March. Otherwise good quality seedlings cannot be ensured because the buyers always do creaming off and late buyers have to be satisfied with second and third grade leftovers.
3. Establishment of Live Fencing: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year wise abstract of seedling requirement : MACH-CARITAS Kaliakoir center

Serial #	Name of species	2001		2002		2003	
		# Seedling	Source of seedlings	# Seedling	Source of seedling supply	# Seedling	Source of seedling supply
1	Mangium	1500	Maa Nursery, Hobiganj and other local commercial nurseries.	2000	Caritas beneficiary group nurseries and local commercial nurseries	1000	. Caritas beneficiary group nurseries and local commercial nurseries
2	Mahogony	1500		2000		1000	
3	Akashmoni	1500		2000		1000	
4	Sissoo	1000		1000		-	
5	Jam	60		-		-	
6	Jack fruit	60		100		-	
7	Arjun	80		-		-	
8	Eucalyptus	500		900		-	
Total	-	6,200		8,000		3,000	

2. Plantation Establishment and Seedling Procurement / Nursery Raising Plan (2001-2003) for MACH- CARITAS Sherpur Center

Sl. #	Location of plantation	Extent of planting fit land				# seedlings required (including vacancy filling)	Year wise plantation and nursery seedling pro					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	# planting rows possible		Extent of plan. (ha/km)	Species wise # seedlings required	Extent of plan. (ha/km)	Species wise # seedlings required	Extent of plan. (ha/km)	Species wise # seedlings required
1	Bank of Durungi Beel fromSaduq Ali's house to Bakarkanda Metalled road.	1 (≡ 2.5 km)	2.5	3.5	2	2500	2.5	Arjun-300, Mahogony-500, Jam-200, Ghora Neem-200, Jack fruit-200, Mengium-200, Sissoo-300, Koroi-150, Gamar-150, Akashmoni-300. Total = 2500 #	-	-	-	-
2	Road running from Pakuria UP office to Eastern bank of Tilakandi, up to the mosque in front of Rina member's house	1 (≡ 2.5 km)	2.5	3	2	2500	-	-	2.5	Arjun-200, Mahogony-400, Jam-200, Ghora Neem-100, Jack fruit-200, Mengium-100, Sissoo-200, Koroi-200, Gamar-200, Jarul-250, Akashmoni-250. Total = 2500 #	-	-
3	Road from Rina member's house to Haora Garh Moniruddin Fakir's house (in Tilkandi mosjid purbo para)	0.40 (≡ 1 km)	1	3.5	2	1000	1	-	1	Arjun-100, Mahogony-200, Boroi-100, Neem-100, Mengium-100, Sissoo-200, Jarul-100, Akashmoni-100 Total = 1000 #	-	-

4	Road from Kamaria Idris Mian mosque to Digharpar primary school	0.6 (≡ 1.5 km)	1.5	3.2	2	1500	-	-	-	-	1.5	Arjun-100, Mahogony-400, Jam-100, Neem-100, Mengium-100, Sissoo-200, Jarul-100, Akashmoni-100. Ipil-Ipil-100, Raim tree-100, Boroi-100.Total = 1500 #
5	Road from Mandakhali main road to Bakar kanda Muja Rahman's house via Badate Goria	1 (≡ 2.5 km)	2.5	3.5	2	2500	-	-	-	-	2.5	Arjun-300, Mahogony-300, Jam-200, Ghora Neem-100, Neem-200, Jack fruit-100, Mengium-200, Sissoo-300, Koroi-200, Jam-100, Gamar-200, Jarul-100, Rain tree-100, Boroi-100, Akashmoni-200. Total = 2500 #
To tal		4 ha	10 km			10,000 #	2.5km/ 1 ha	2500 #	3.5km/ 1.4 ha	3500 #	4 km/ 1.6 ha	4000 #

Note:

1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the whole growing season up to October to establish and put appreciable growth.

   ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and should be done almost on a day to day basis so that the sites do not dry up abnormally rendering less chance of survival of planted seedlings due to desiccation or requiring painstaking and costly irrigation in the forthcoming dry season following planting.

2. Seedling Procurement: If the planned seedlings are available in commercial nursery, no need to establish project's own nursery. Contrary situation will call for establishment of project's own nursery. When purchased from commercial nursery, seedling should be booked latest in March. Otherwise good quality seedlings cannot be ensured because the buyers always do creaming off and late buyers have to be satisfied with second and third grade leftovers.

3. Establishment of Live Fencing: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year wise abstract of seedling requirement: MACH-CARITAS Sherpur Center

Serial #	Name of species	2001		2002		2003	
		# Seedling	Source of seedlings	# Seedling	Source of seedling supply	# Seedling	Source of seedling supply
1	Arjun	300	Forest Deptt. Nursery, Sherpur; and Commercial nurseries in and around Sherpur	300	Forest Deptt. Nursery, Sherpur; CARITAS beneficiary, group nurseries; and Commercial nurseries in and around Sherpur;ur.	400	Forest Deptt. Nursery, Sherpur; CARITAS beneficiary, group nurseries; and Commercial nurseries in and around Sherpur.
2	Mahogony	500		600		700	
3	Ghora neem	200		100		100	
4	Jati Neem	-		300		300	
5	Jam	200		200		200	
6	Jarul	-		350		200	
7	Gamar	150		200		200	
8	Jackfruit	200		200		100	
9	Mangium	200		200		300	
10	Akashmoni	300		350		300	
11	Sissoo	300		400		500	
12	Boroi	-		100		200	
13	Koroi	150		200		200	
14	Ipil-Ipil	-		-		100	
15	Rain tree	-		-		200	
Total		2,500		3,500		4,000	

3. Plantation Establishment and Seedling Procurement / Nursery Raising Plan (2001-2003) for MACH- CARITAS Sreemongol Center

Sl. #	Location of plantation	Extent of planting fit land				# seedlings required (including vacancy filling)	Year wise plantation and nursery seedling procurement plan					
							2001		2002		2003	
		Area (ha)	Length (Km)	Slope width (m)	# planting rows possible		Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required	Extent of plan. (km/ha)	Species wise # seedlings required
1	Gazi sarak, Baulashir, Mirzapur	0.40 (≡ 1 km)	1	<2	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
2	Baulashir Bazaar- Hail Haor Sarak, Baulashir, Mirzapur	0.40 (≡ 1 km)	1	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-
3	Kaashipur-Hail Haor Sarak	0.40 (≡b bbbb 1 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40,

												Krishnachura-10, Eucalyptus-20
4	Mohiniganj-Hail haor sarak	0.40 (≡ 1 km)	1	Do	1	1200	1	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-		-	-
5	Ehsanipara-Hail Haor road	0.40 (≡ 1 km)	1	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-
6	Satgaon Iasna-Kamarp Sarak	0.40 (≡ 1 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20
7	Rohim Nagar-Noyonsree Sarak	0.40 (≡ 1 km)	1	Do	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
8	Hazipara-BakiyaBeeel Saarak	0.40 (≡ 1 km)	1 0	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200,	-	-

										Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20		
9	Baruna-Noyonsree Sarak	0.40 (≅ 1 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-3000 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20
10	West Varaura Sarak	0.40 (≅ 1 km)	1	<2	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
11	Sabujbagh-Hail Haor sarak	0.40 (≅ 1 km)	1	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-
12	Hail Hhaor Sarak, Uttar uttarsur	0.40 (≅ 1 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20

13	Bilashchara-Fatki Sarak	0.40 (≡ 1.0 km)	1	<2	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
14	Langla Chara Ashidrawn	0.40 (≡ 1.0 km)	1	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-
15	Naharpur-Udnarpar Sarak	0.40 (≡ 1 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20
16	Office Bazaar-Gram Sreemongol	0.40 (≡ 1 km)	1	<2	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
17	Mohammad pur-Anikalibuda Sarak	0.40 (≡ 1.0 km)	1	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack	-	-

										fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20		
18	Imambazaar -Budar Ghat Sarak	0.40 (1.0 km)	1	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20
19	Atghar-Manik Haor Sarak		1 (≡ 0.40 ha)	<2	1	1200	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-	-	-
20	Daskahnia Sarak, Nazirabad		1 (≡ 0.40 ha)	Do	1	1200	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20	-	-
21			1 (≡ 0.40 ha)	Do	1	1200	-	-	-	-	1 km	Akashmoni-300 Arjun-100, Jam-20, Mangium-150, Mahogony-200, Chambal-150, Sissoo-200, Jack fruit-10, Neem-40, Krishnachura-10, Eucalyptus-20

To tal		8.4	21			25,200 #	7 km/ 2.8ha	8,400 #	7 km/ 2..8ha	8,400 #	7km/ 2.8ha	8,400 #

Note:

1. Planting Time/Season: i). For all potential planting sites other than wetland, planting time will be the normal planting season practiced in the country i.e., May-July. Best result is obtained if planting is completed by 30th June; in that case plants get the whole growing season up to October to establish and put appreciable growth.
   ii). For wet lands, best planting season is the receding flood i.e., from October to December; planting will closely follow the water recession, and planting should be done almost on a day to day basis so that planting sites do not dry up abnormally rendering less chance of survival of the planted seedlings due to desiccation, or requiring painstaking and costly irrigation throughout the forthcoming dry season following planting.
2. Seedling Procurement: If the planned seedlings are available in commercial nursery, no need to establish project's own nursery. Contrary situation will call for establishment of project's own nursery. When purchased from commercial nursery, seedling should be booked latest in March. Otherwise good quality seedlings cannot be ensured because the buyers always do creaming off and late buyers have to be satisfied with second and third and third grade leftovers.
3. Establishment of Live Fencing: Establishment of live fencing of Arhar (*Cajenus cajen*) / Boga medula (*Taphrossis candida*) will be done in case of only roadside and embankment slope plantations. Live fencing will not be necessary for wetland and riparian plantations.

Year wise abstract of seedling requirement: MACH-CARITAS Sreemongol Center

Serial #	Name of species	2001		2002		2003	
		# Seedling	Source of seedlings	# Seedling	Source of seedling supply	# Seedling	Source of seedling supply
1	Mangium	1050	Maa Nursery, Hobiganj and other local commercial nurseries.	1050	Caritas beneficiary group nurseries and local commercial nurseries	1050	. Caritas beneficiary group nurseries and local commercial nurseries
2	Mahogony	1400		1400		1400	
3	Chambal	1050		1050		1050	
4	Sissoo	1400		1400		1400	
5	Jam	140		140		140	
6	Jack fruit	70		70		70	
7	Neem	280		280		280	
8	Krishnachura	70		70		70	
9	Eucalyptus	140		140		140	
10	Arjun	700		700		700	
11	Akashmoni	2100		2100		2100	
Total		8,400		8,400		8,400	

Abstract of Total Plantation Activity and Cost for MACH-CARITAS Plantation Program for the Period 2001-2003.

Center	Yr: 2001		Yr: 2002		Yr: 2003		Total		
	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Seedlings	Plan. area (ha)	# Planned Seedlings	**Total cost (in million Tk.)
Sreemongol	2.8	8,400	2.8	8,400	2.8	8,400	8.4	25,200	1.31
Sherpur	1.0	2,500	1.4	3500	1.6	4,000	4	10,000	0.52
Kaliakoir	2.7	6,200	3.2	8,000	1.2	3,000	7.1	17,200	0.89
Grand Total	6.5	17,100	7.4	19,900	5.6	15,400	19. 5	52,400	2.72

** Basis of detailed cost estimate is enclosed as Annex- A of this work plan

Cost Estimate for MACH-CARITAS Plantation Activity (2001-2003).

Sl #	Particulars of work	Unit cost (Tk.)	Average cost / 1000 plants. (Tk.)	Year wise cost of plantation activities planned for						Total	
				2001		2002		2003		# Plant	Cost (mill. Tk)
				# plant	Cost (mill. Tk)	# plant	Cost (mill. Tk)	# plant	Cost (mill. Tk)		
1	**FY – 1** Site reconnaissance to ascertain area available for planting, site quality and species suitability: cleaning ground of jungles and weeds to prepare ground for plantation: 1-4 person day (PD)/km.	70	140								
2	Establishment of live fencing/hedge row of Arhar/Boga along the road edge road: a). Arhar/Boga seed @ 12 kg/km b). Labor wage for soil working and seed sowing in lines, 25 cm wide and 15cm deep: 4 PD.	30 70	360 280								
3	Material and labor cost for making bamboo stake for using as support to planted seed-lings (stake height =2.25m; width=4 cm; 4-6 # stakes to be made out of a round bamboo piece)--1000 stakes /km	3	3000								

4	Labor wages for digging planting pit, size 30cm x 30cm x 30cm at a distance of 2m center to center as per plan- 25 PD/1000pits.	70	1750								
5	Cost of fertilizer for pre-planting application in the planting pits as follows (material estimate/1000 pits). a). Decomposed cow dung @2 kg / pit =2000kg b). TSP @ 100 gm/pit=100kg c). MP @ 100 gm/pit= 100kg d). Polythene twine for tying seedlings to stakes = 2kg/100plants	1 16 12 60	2000 1600 1200 120								
6	Pulverizing dug out earth earth, mixing soil with organic and chemical fertilizer and filling the pits with manure mixed soil at least three weeks before actual tree planting—10 PD/100 pits	70	700								
7	Cost of 1.82m (6 ft) and above height seedlings delivered at the planting site (cost also includes price of seedlings died during transportation and after planting—roughly 20%)	10-15	13000								
8	Cost of planting individual seedling in pre-dug pits including carrying seedlings from local stock to individual site ,fixing stakes alongside each plant as support-20 PD/1000plants	70	1400								
9	Engagement of caretaker for protection and upkeep of plantation @ 1 caretaker / km (or 1000 plants) for 1 month in the FY	1200	1200								

10	<u>Miscellaneous expenses</u> iv. An umbrella/caretaker v. 2 sign boards at the beginning and end of plantation (assuming average plantation length of 2km) vi. planting and maintenance tools/caretaker (tools include a *Nirani* and a *Dao*) Ls.	160 300 50	160 300 50								
	Sub total of year –1 cost	-	**27,260**	17,100	0.47	19900	0.54	15,400	0.42	52,400	1.43
12	Engagement of caretaker for protection and upkeep of plantation @ 1 caretaker / km (1000 plants) for 12 months.	1200	14400								
13	(i). Cost of seedlings (1.82m and above in height) for replacement of dead and damaged plants (assuming 15% vacancy) = 150 # (ii). Stake cost for the replaced seedlings = 150 #	10-15 3	1950 450								
14	Urea fertilizer application—4 doses, once in each of July, August, September and following May-June @ 30gm per plant/application = 1200	6.5	7800								
	Sub-total of year-2 cost	-	**24,600**	17,100	0.42	19,900	0.49	15,400	0.38	52,400	1.29
	Grand total of costing	-	**51,860**	17,100	0.89	19,900	1.03	15,400	0.80	52,400	2.72