



Welcome

Water Management in System C

Flow of the Presentation

- Agriculture Background
- Location of System C
- Irrigation System
- Water Management
- Management Structure
- Performance Indicators

Agricultural Background

Employment in Agriculture Sec. – 46%

Sector contribution to GDP – 20%

Total Irrigated Lands – 570,000 ha

Average Cereals Yield – 3,190 kg/ha

Mahaweli Development Programme

Initiated in 1968

Target Irrigation Lands – 365,000 ha

Target Hydropower – 540MW

Major Reservoirs – 5 Nos

Projects – 13 (A-M)

About System C

Located at the Right Bank of River Mahaweli

Gross Area – 66,700 ha

Irrigated Lands – 24,000 ha

Water Resource – Reservoir + River

Management Blocks – 7 Nos

D-Canal Farmer Organisations – 197 Nos

Cultivation Seasons – Yala (Dry) & Maha (Wet)

Main Crop – Low Land Rice

Irrigation Infrastructure

- ✓ Main Canals - 29 km
- ✓ Branch Canals - 125 km
- ✓ Distributory Canals - 559 km
- ✓ Field Canals - 1326 km

Operational Responsibilities

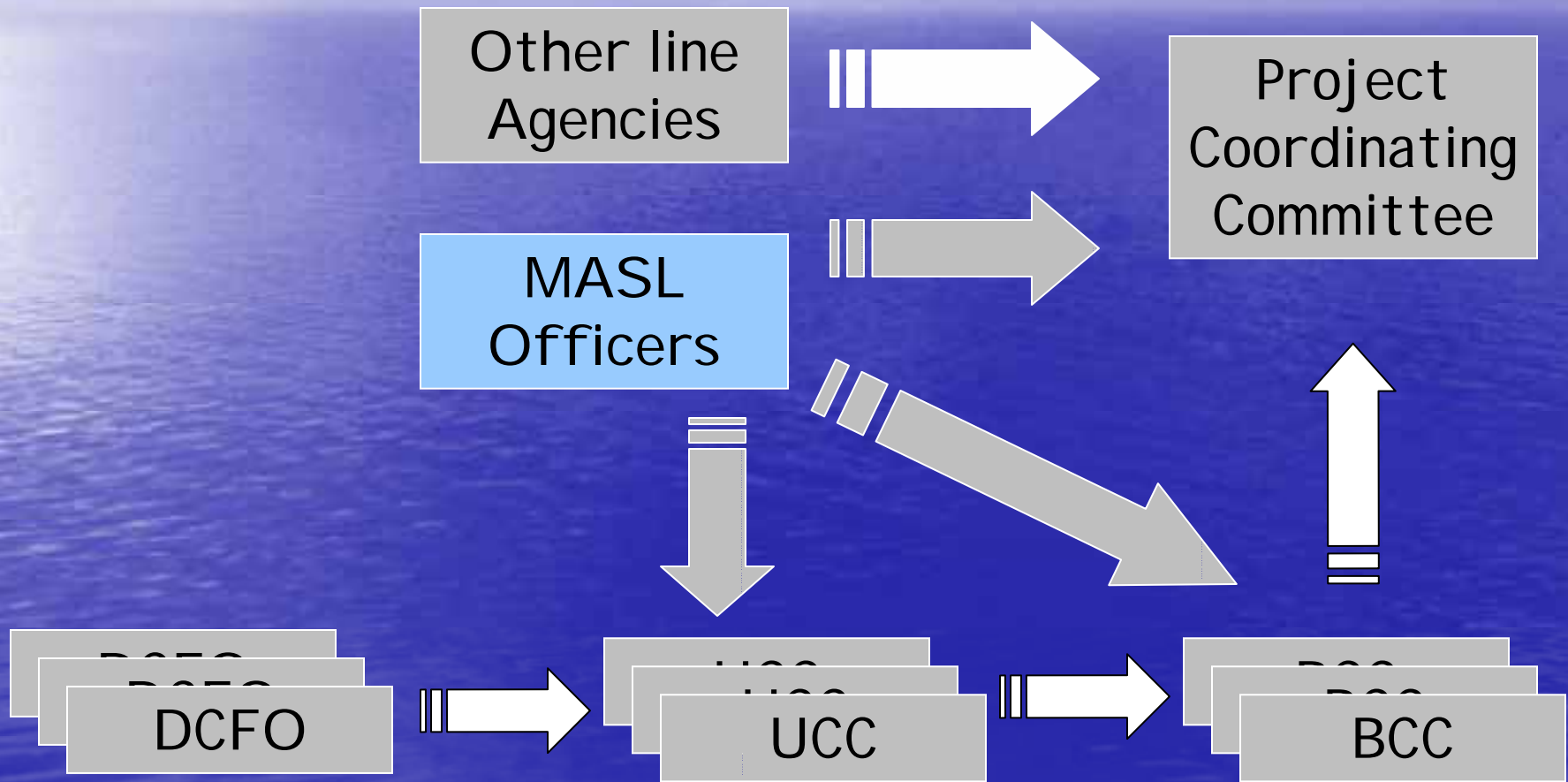
- Main and Branch Canals – MASL
- D & F Canals – Respective DCFO

Water Management

Influencing Factors

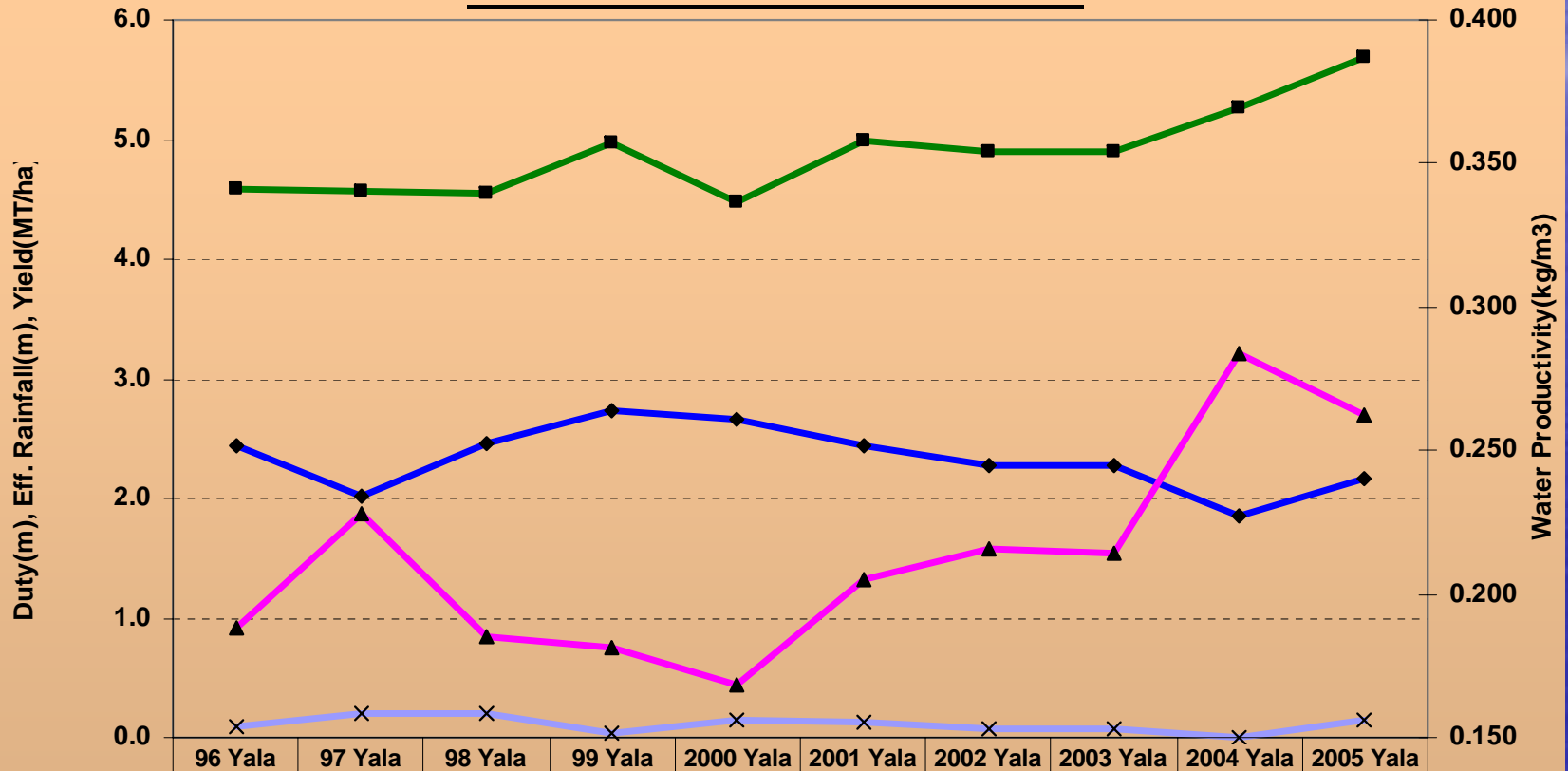
- Maintenance of Irrigation System
- Crop Water Requirements
- Soils and their Properties
- Make use of Meteorological Data
- Suitability of Irrigation Schedules
- Operational Strategies
- On-Farm Activities
- Communication

Participatory Management Structure



Past Performance

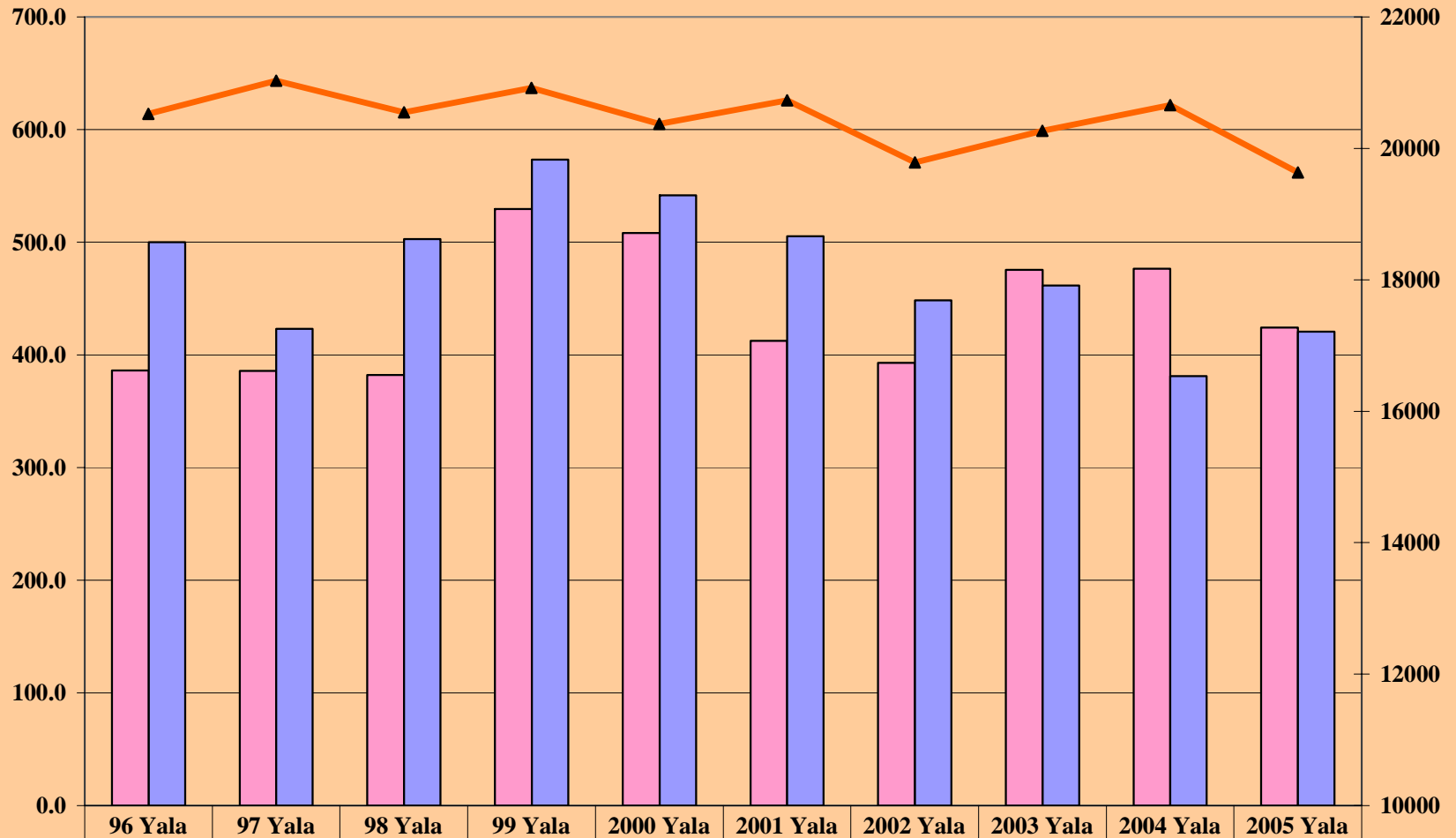
Water Duty, Eff. Rainfall, Yield and Water Productivity in Yala Seasons at Scheme level



◆ Duty	2.44	2.01	2.45	2.74	2.66	2.44	2.27	2.28	1.85	2.17
× Eff. Rain (m)	0.090	0.196	0.209	0.036	0.143	0.122	0.066	0.078	0.000	0.139
■ Yield	4.588	4.576	4.545	4.964	4.478	4.996	4.894	4.890	5.257	5.691
▲ Water Productivity	0.188	0.228	0.186	0.181	0.168	0.205	0.216	0.214	0.284	0.262

Past Performance

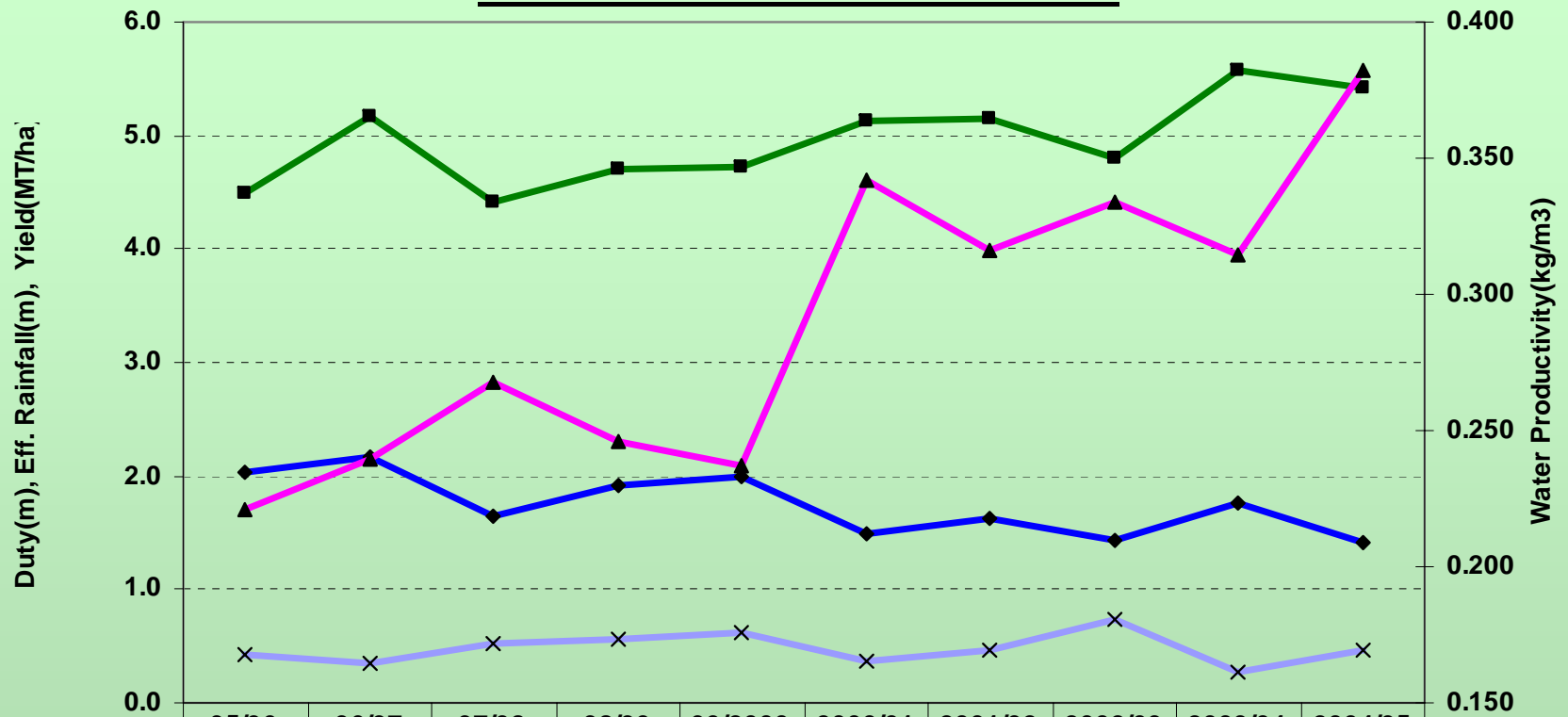
Irrigation Water Allocation (WMS) vs Consumption - Yala Seasons



Alloc. (MCM)	386.2	385.8	382.2	529.7	508.2	412.6	393.0	475.3	476.5	424.3
Cons. (MCM)	499.9	423.3	502.8	573.2	541.7	505.5	448.5	461.4	381.3	420.6
Cul.Ext (ha)	20525	21030	20550	20920	20371	20734	19787	20270	20660	19635

Past Performance

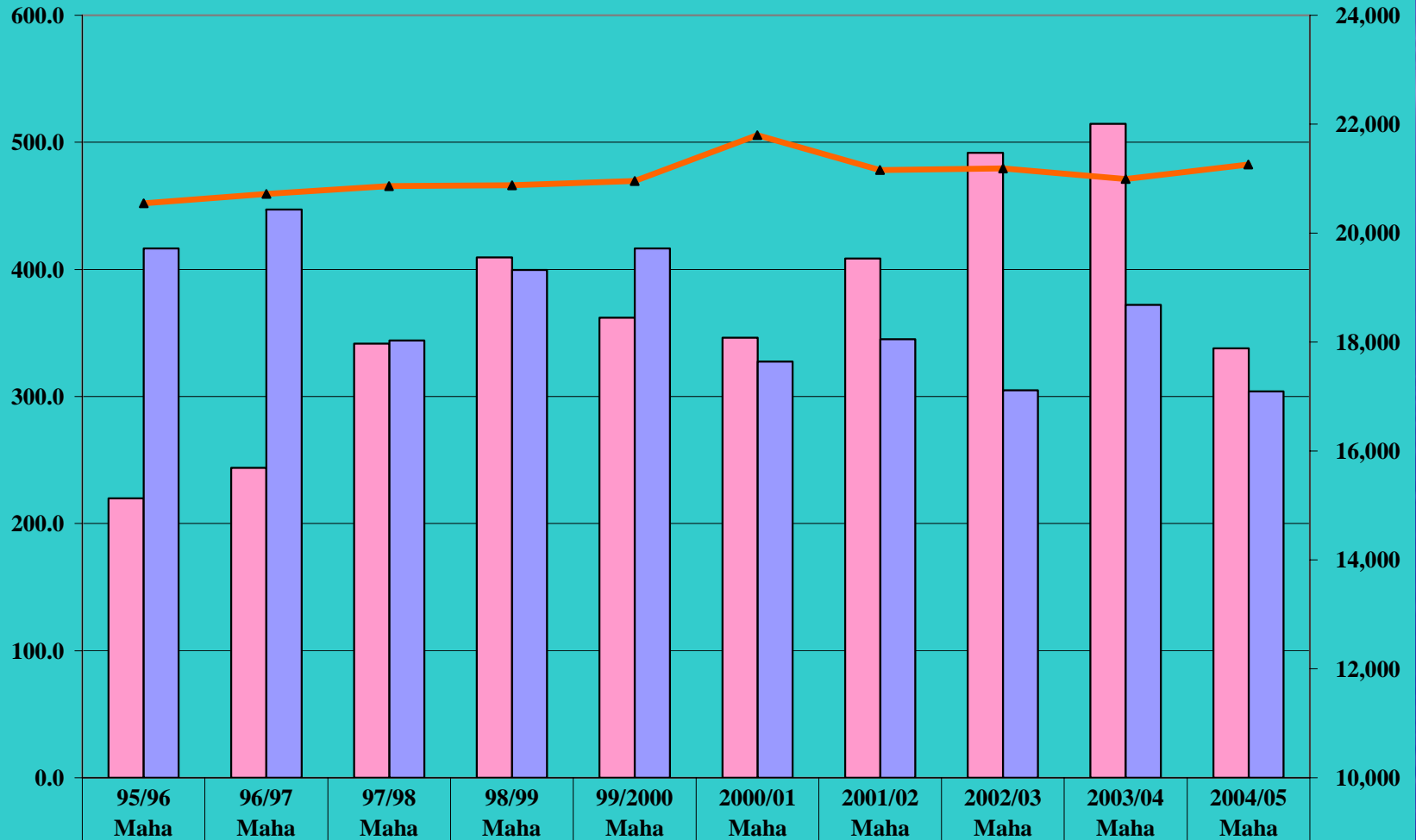
Water Duty, Eff. Rainfall, Yield and Water Productivity in Maha Seasons at Scheme level



	95/96 Maha	96/97 Maha	97/98 Maha	98/99 Maha	99/2000 Maha	2000/01 Maha	2001/02 Maha	2002/03 Maha	2003/04 Maha	2004/05 Maha
◆ Duty (m)	2.03	2.16	1.65	1.91	1.99	1.5	1.63	1.44	1.77	1.42
× Eff. Rain (m)	0.430	0.340	0.531	0.568	0.611	0.364	0.467	0.734	0.271	0.466
■ Yield (MT/ha)	4.492	5.174	4.418	4.702	4.720	5.124	5.151	4.805	5.574	5.423
▲ Water Productivity	0.221	0.240	0.268	0.246	0.237	0.342	0.316	0.334	0.315	0.382

Past Performance

Irrigation Water Allocation (WMS) vs Consumption - Maha Seasons



Alloc. (MCM)	219.9	243.8	341.7	409.5	362.0	346.4	408.4	491.9	514.5	337.8
Cons. (MCM)	416.4	447.2	344.2	399.6	416.6	327.3	345.0	304.9	372.1	304.1
Cul.Ext(ha)	20550	20722	20865	20875	20954	21800	21158	21184	20992	21256



Thank You!

D & F Canal Rehabilitation

Topographic Survey



D & F Canal Rehabilitation Implementation



D & F Canal Rehabilitation Implementation



D & F Canal Rehabilitation

Handing Over

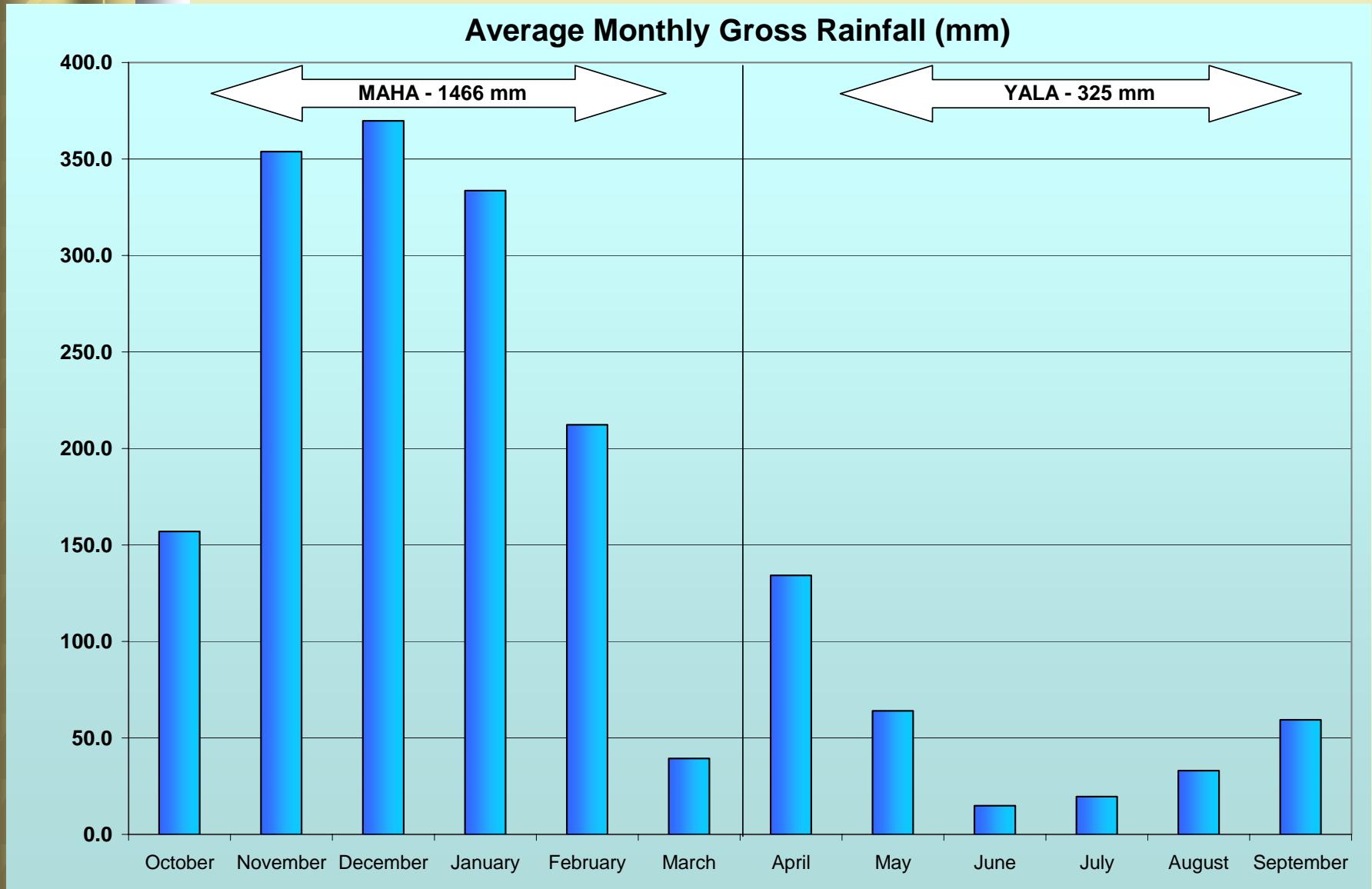


D & F Canal Rehabilitation

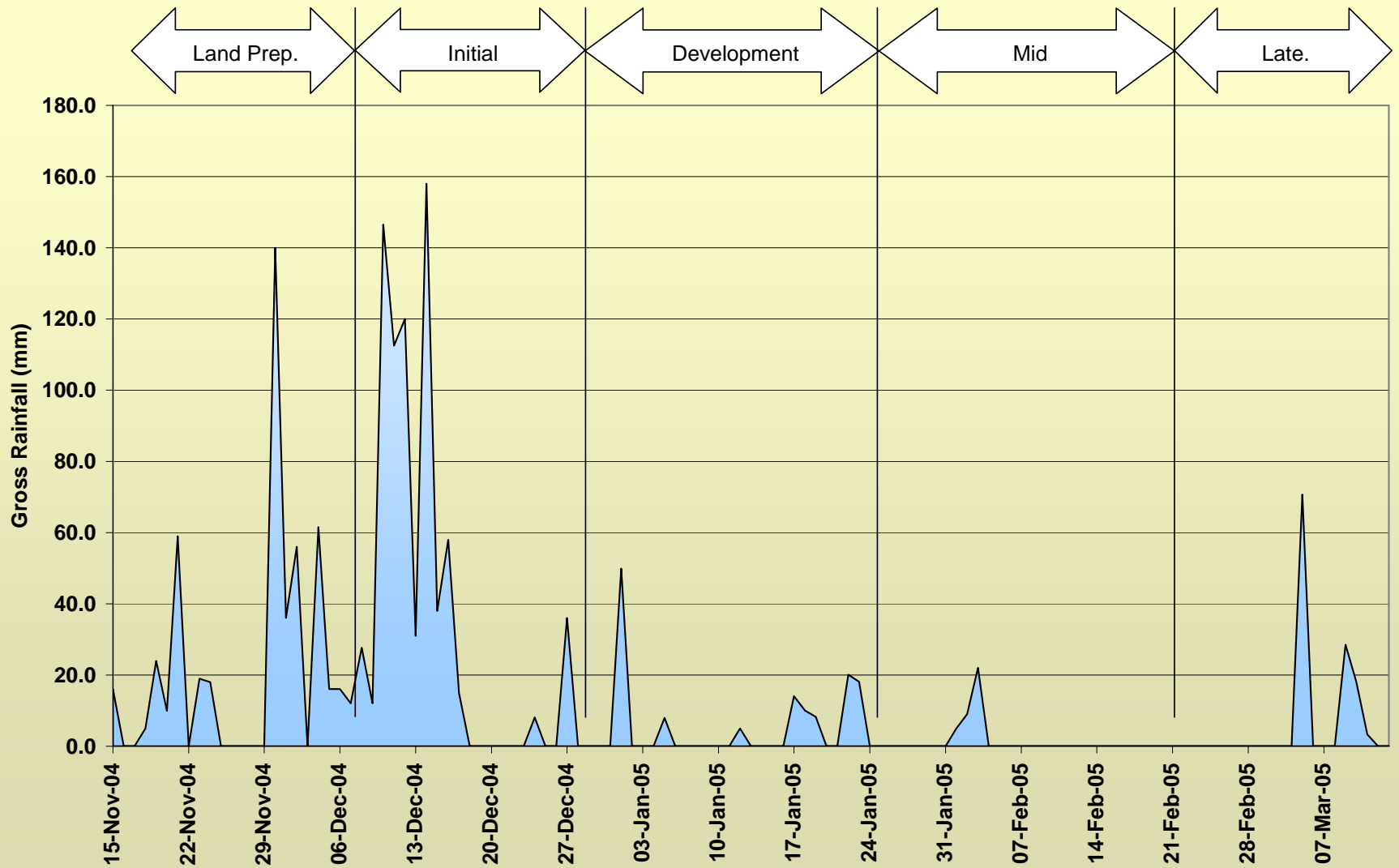
Handing Over



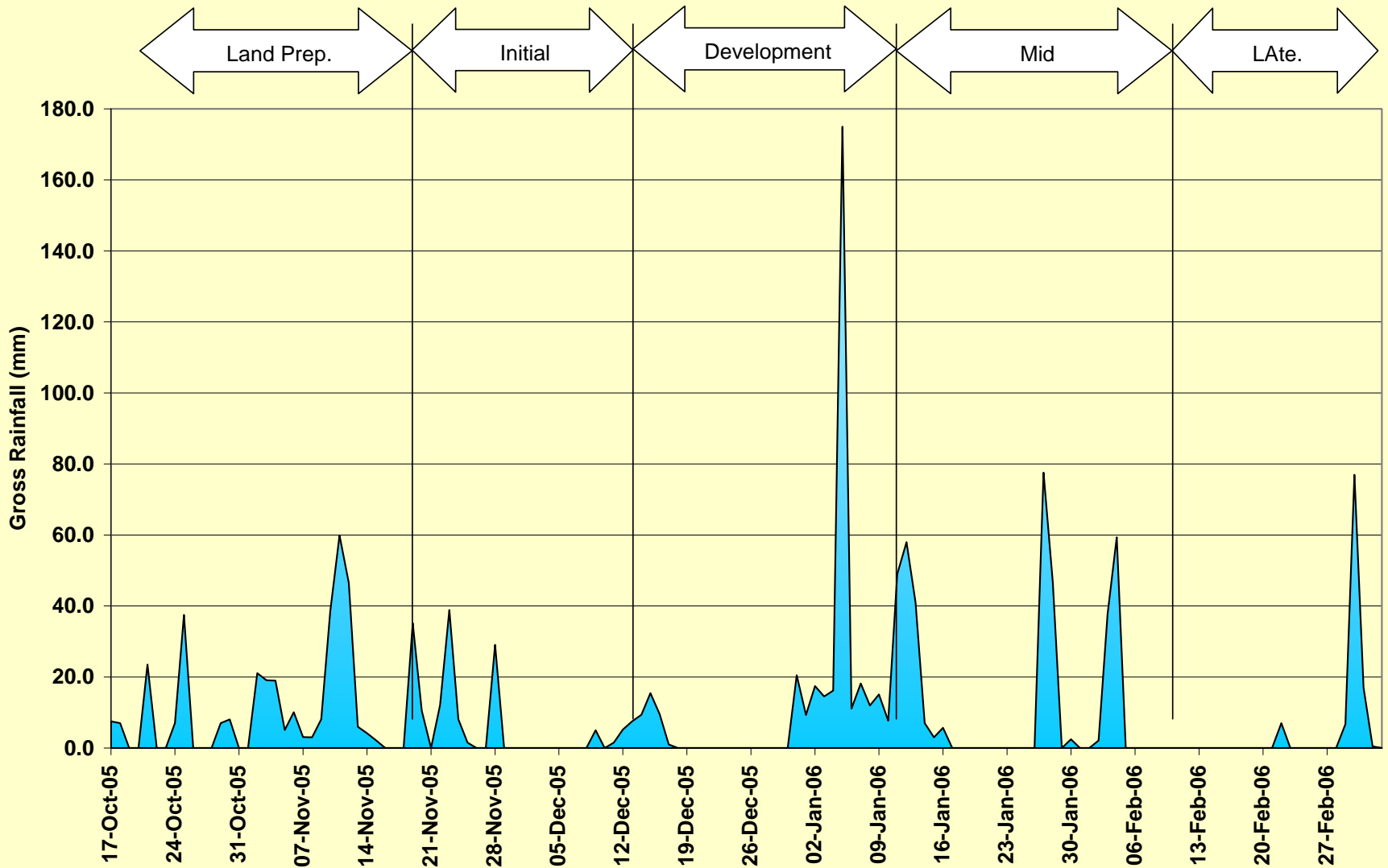
Average Monthly Gross Rainfall



Rainfall Distribution During Crop Stages - Maha 2004/05

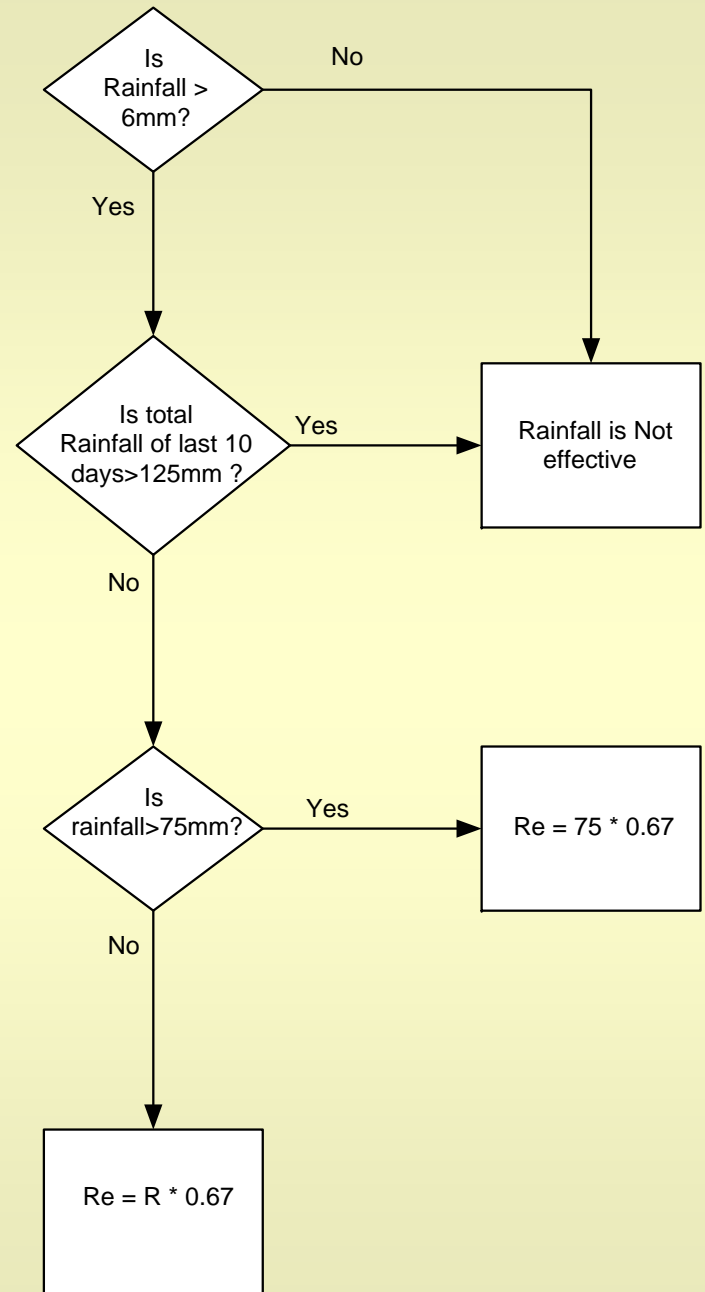


Rainfall Distribution During Maha 2005/06

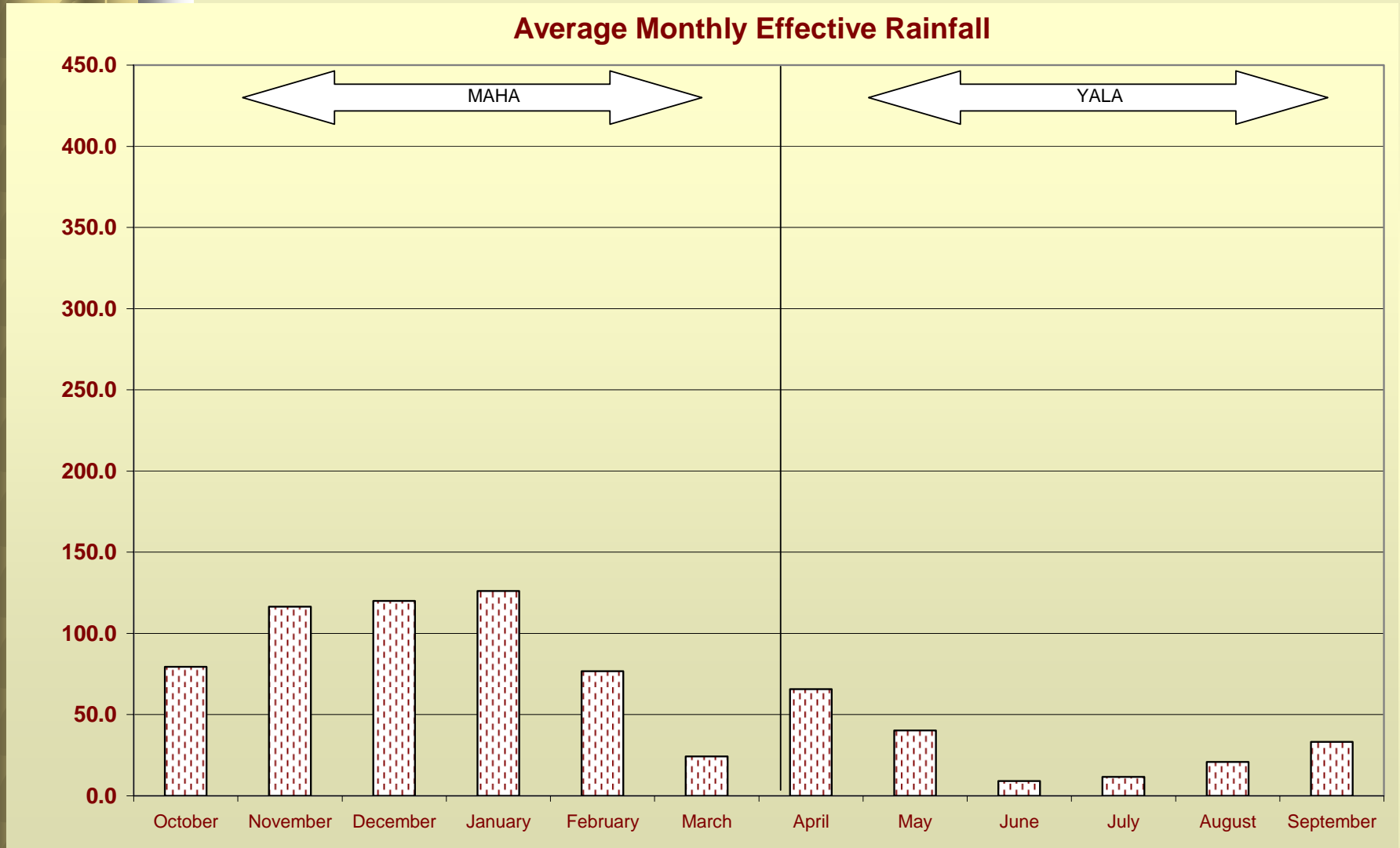


Effective Rainfall

Flow chart to calculate the effective rainfall

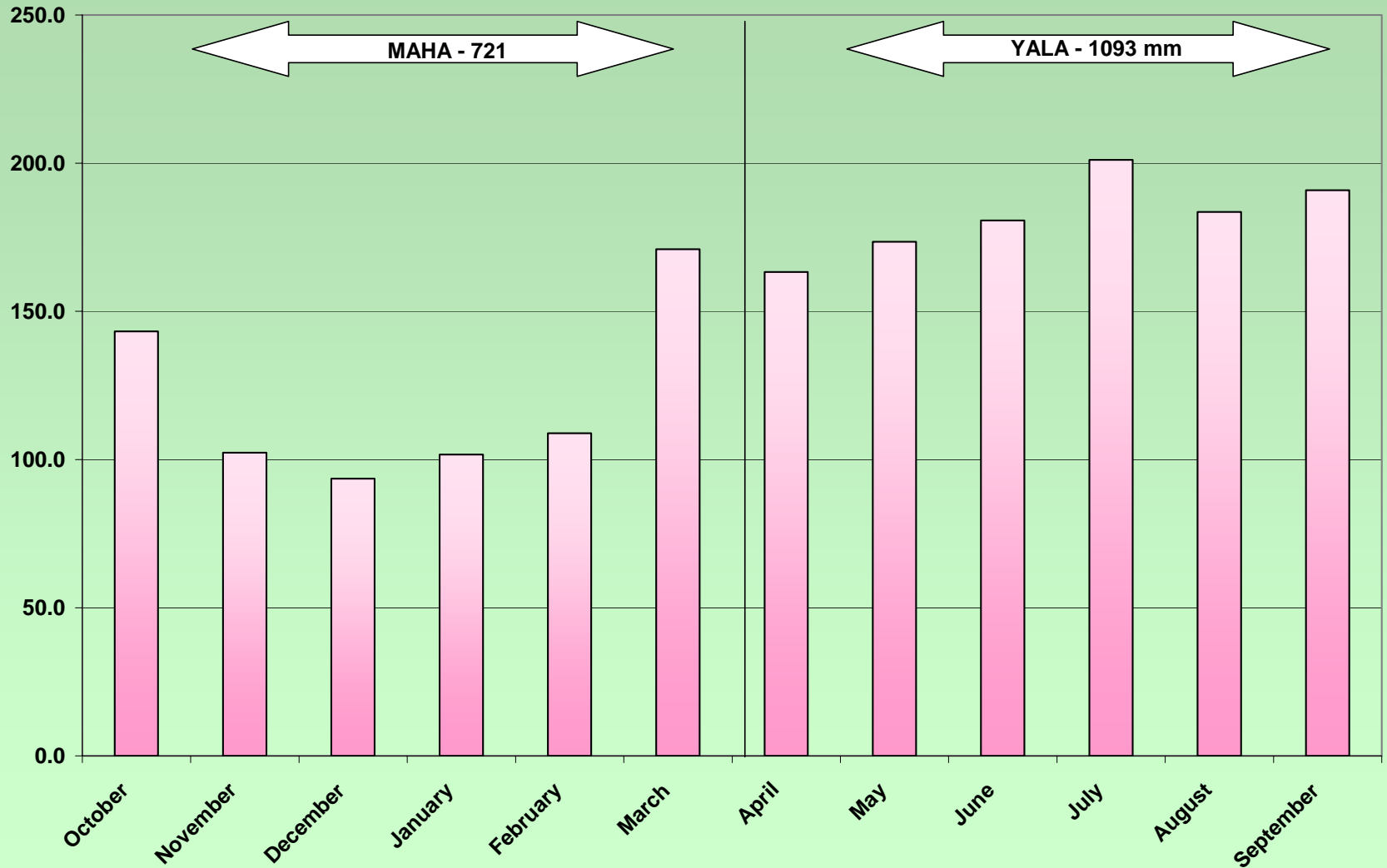


Monthly Average Effective Rainfall



Evaporation

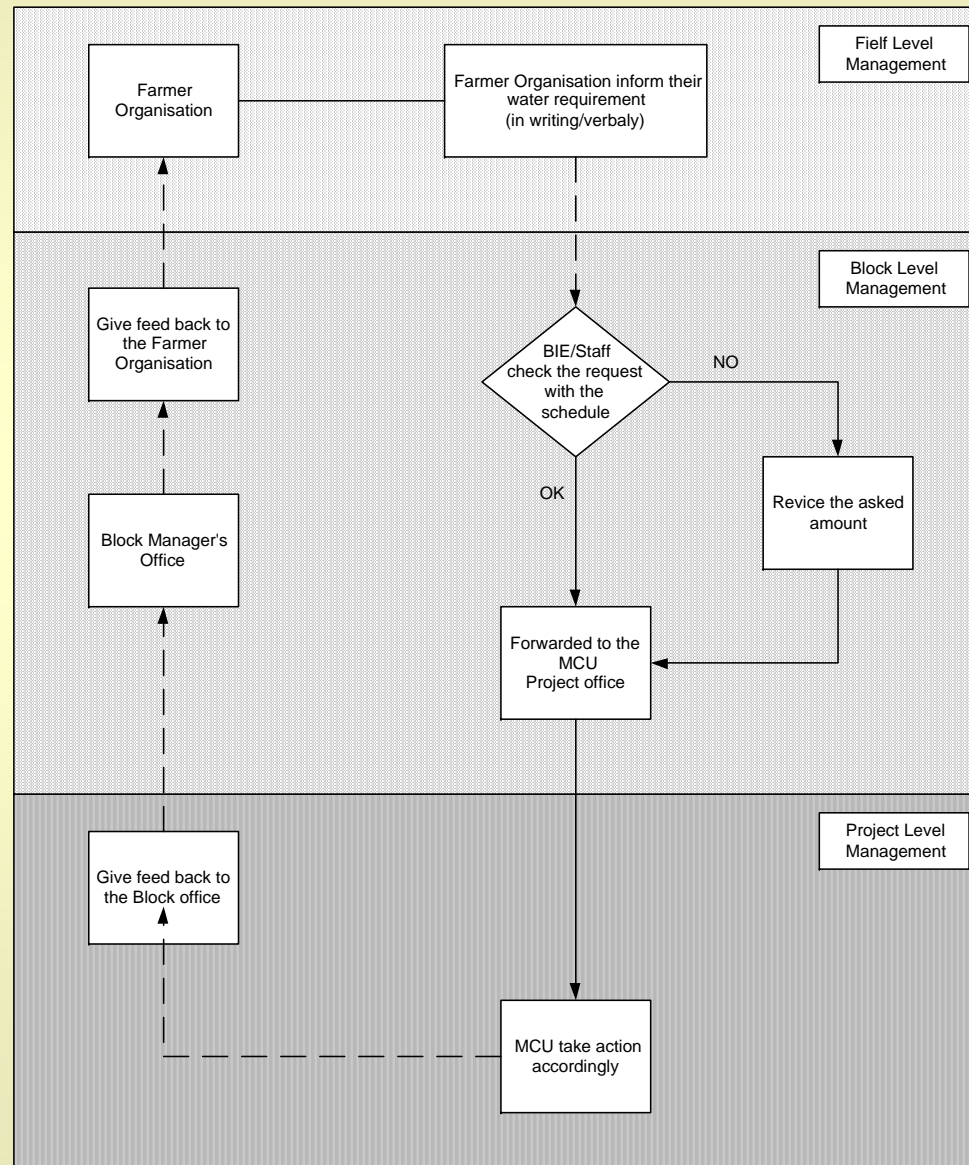
Average Monthly Evaporation (mm)



On-Farm Water Management

- Basin Size / No. of Basins
- Leveling of Basins
- Way of Irrigating Basins
- Size and Stability of Farm bunds
- Soil Properties

Communication System for Water Ordering



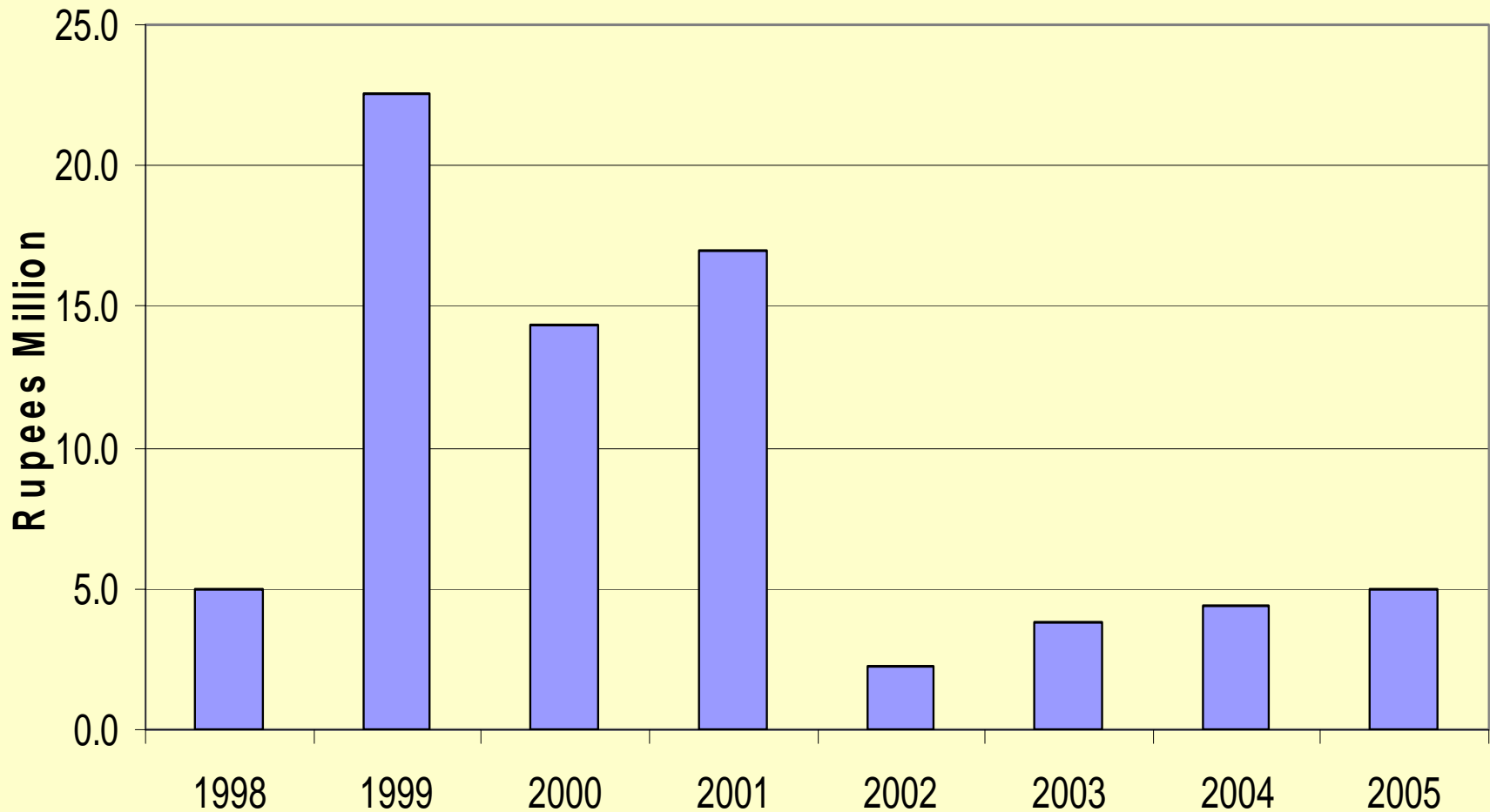
Irrigation System Maintenance

Main & Branch Canals

- ✓ Secondary Growth Clearing
- ✓ De-silting
- ✓ O & M Road Maintenance
- ✓ Repairs to Structures
- ✓ Repairs to Bunds

Allocations for Main & Branch Canals

Allocations

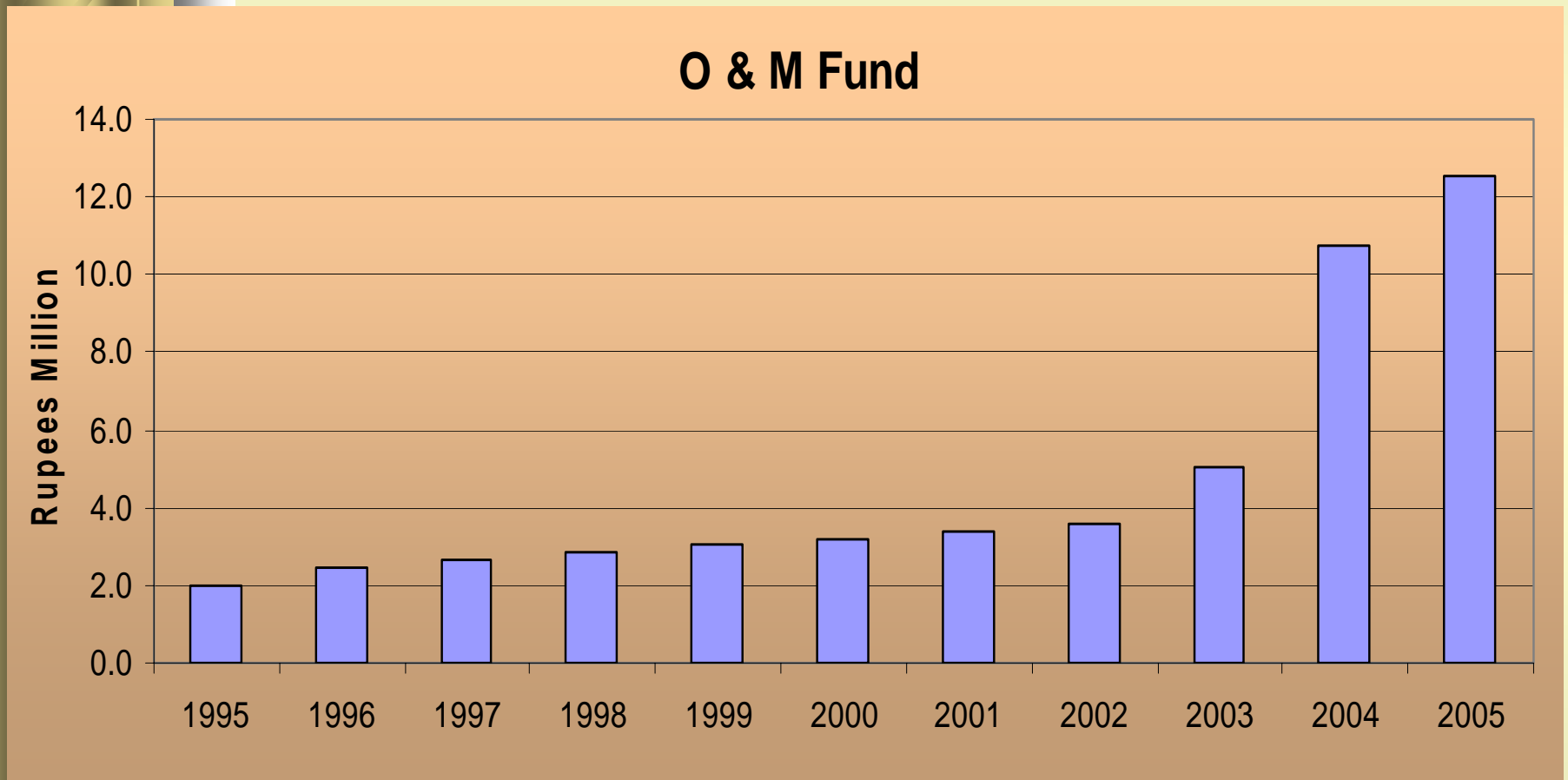


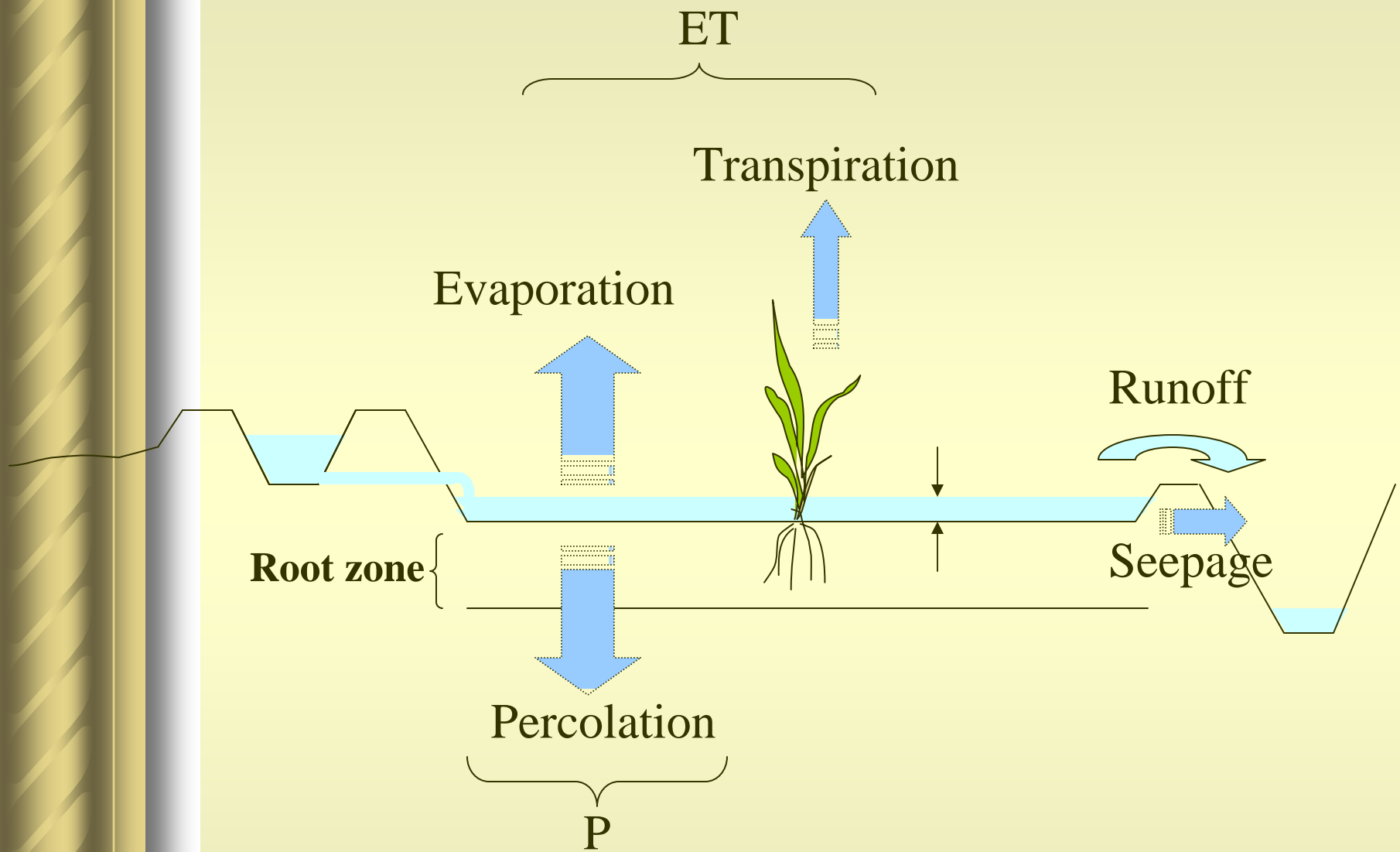
Irrigation System Maintenance

D & F Canals

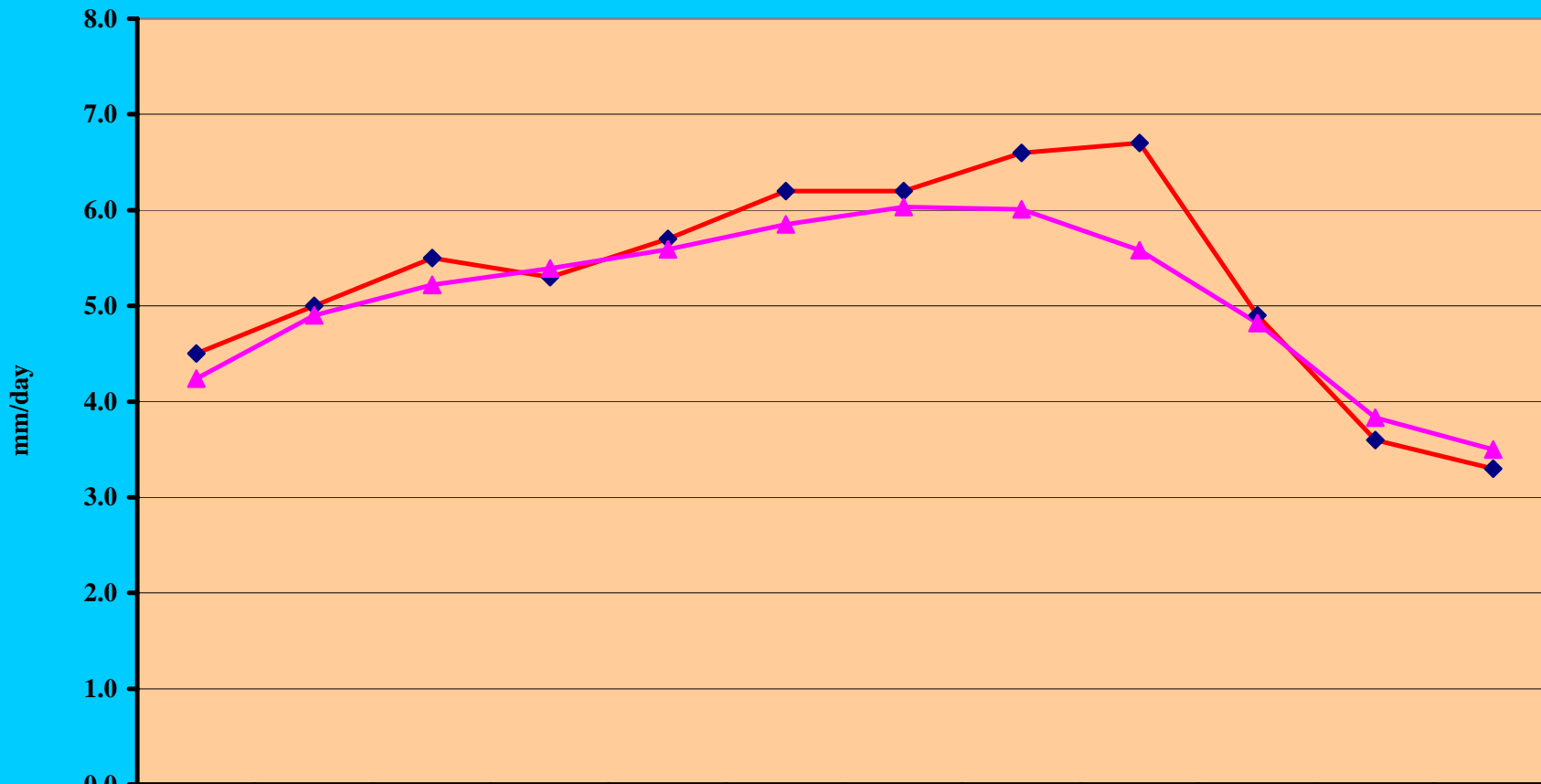
- ✓ Secondary Growth Clearing
- ✓ De-silting
- ✓ O & M Road Maintenance
- ✓ Repairs to Structures
- ✓ Repairs to Bunds

O & M Funds in DCFO





Monthly Average ET₀ Values, O&M Manual Vs Calculated



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
◆ Table 4-3	4.5	5.0	5.5	5.3	5.7	6.2	6.2	6.6	6.7	4.9	3.6	3.3
▲ PenMon	4.24	4.90	5.22	5.39	5.59	5.85	6.03	6.01	5.58	4.82	3.83	3.50

Crop Water Requirements

Crop – Low Land Paddy 3 – 3 ½ Months

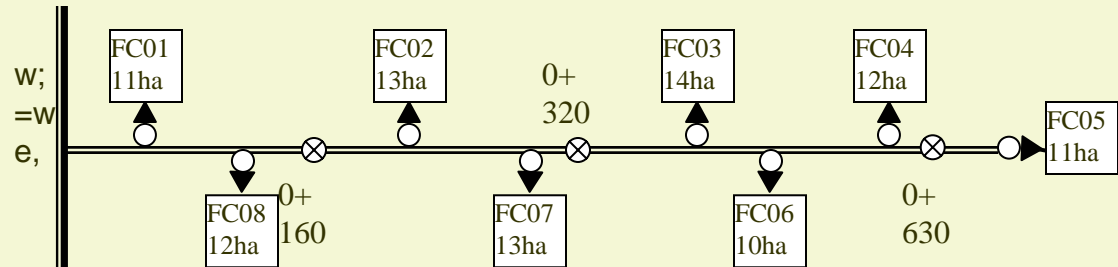
- Yala Season - 2.12 m
- Maha Season - 1.83 m

Irrigation Flow Rates

Maha Season

Crop Stage	G' kotte	Medaga ma	Sandun pura	Siripura	N' gala	M' wela	V' gala
Land Prepar.	1.92	1.92	1.96	1.93	1.94	1.90	1.98
Initial	1.12	1.12	1.16	1.13	1.14	1.09	1.19
Develop ment	1.11	1.11	1.16	1.13	1.14	1.08	1.18
Mid	1.23	1.23	1.27	1.24	1.26	1.20	1.30
Late	1.16	1.16	1.20	1.17	1.19	1.13	1.23

Main Features of a Irrigation Schedule



Rotational Schedule "Randiya" Distribution Canal for the Cultivation season

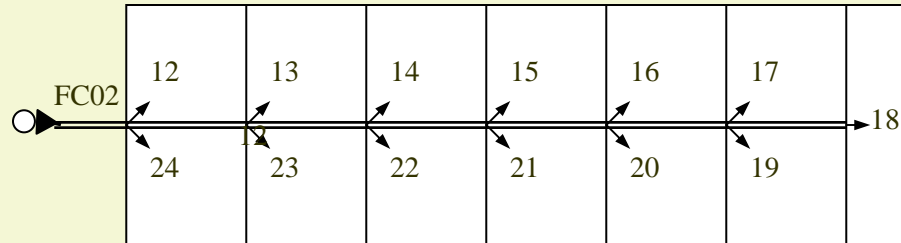
Canal	Extent (ha)	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Gauge height (cm)
		Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
FC01	11	1	1	1	1	1	1									13.5
FC02	13	1	1	1	1	1	1									16.5
FC03	12							1	1	1	1	1	1	1	1	14.5
FC04	12							1	1	1	1	1	1	1	1	14.5
FC05	11							1	1	1	1	1	1	1	1	13.5
FC06	10							1	1	1	1	1	1	1	1	13.0
FC07	13	1	1	1	1	1	1									15.5
FC08	12	1	1	1	1	1	1									14.5
Total	94	49		49		49		45		45		45		45		
Discharge (l/s)		133.48		133.48		133.48		133.48		133.48		133.48		133.48		12.0

Note : Discharges are calculated, using discharge coefficients of crops and efficiencies such as application, distribution and conveyance efficiency.

Application efficiency = 0.95

Distribution efficiency = 0.85

Main Features of a Irrigation Schedule

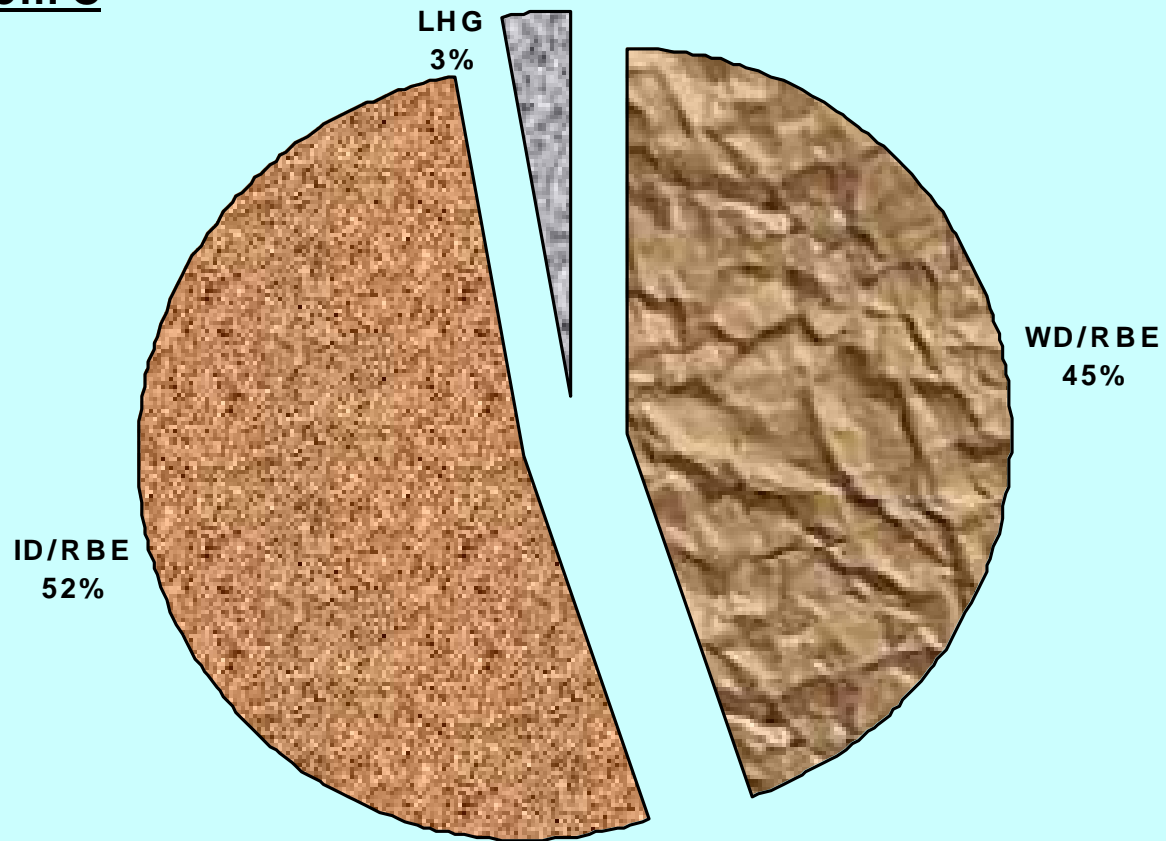


Rotational Schedule of "FC02" Field Canal for the Cultivation season

Lot Nos.	Extent (ha)	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Gauge height (cm)
		Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
12,24	2	☑														
13,25	2		☑													
14,22	2			☑												
15,21	2				☑											
16,20	2					☑										
17,19	2						☑									
18	1							☑								
Total	13	2		2		2		1		0		0		0		
Discharge (l/s)		31.38		31.38		31.38		31.38								15.5

Soils in System C

Soils in System C



Soil Composition in Blocks

Management Block	Soil Type			Deep Percolation (mm/day)
	WD/RBE (%)	ID/RBE (%)	LHG (%)	
Giranduruotte				3.7
Medagama	34	66	0	3.7
Sandunpura	49	51	0	4.0
Siripura	43	54	3	3.8
Nuwaragala	50	47	3	3.9
Mahawanawela	30	64	6	3.5
Veheragala	68	24	8	4.2