



# ***A PRESENTATION ON BENCHMARKING OF IRRIGATION SCHEMES IN MAHARASHTRA, INDIA***

***18th ICID Congress MONTREAL CANADA JULY 22, 2002***

***PRESENTATION BY***

**Mr. S. V. SODAL**

**Secretary(CAD) ,Irrigation Department, Govt. of Maharashtra, India**

# CONTEXT

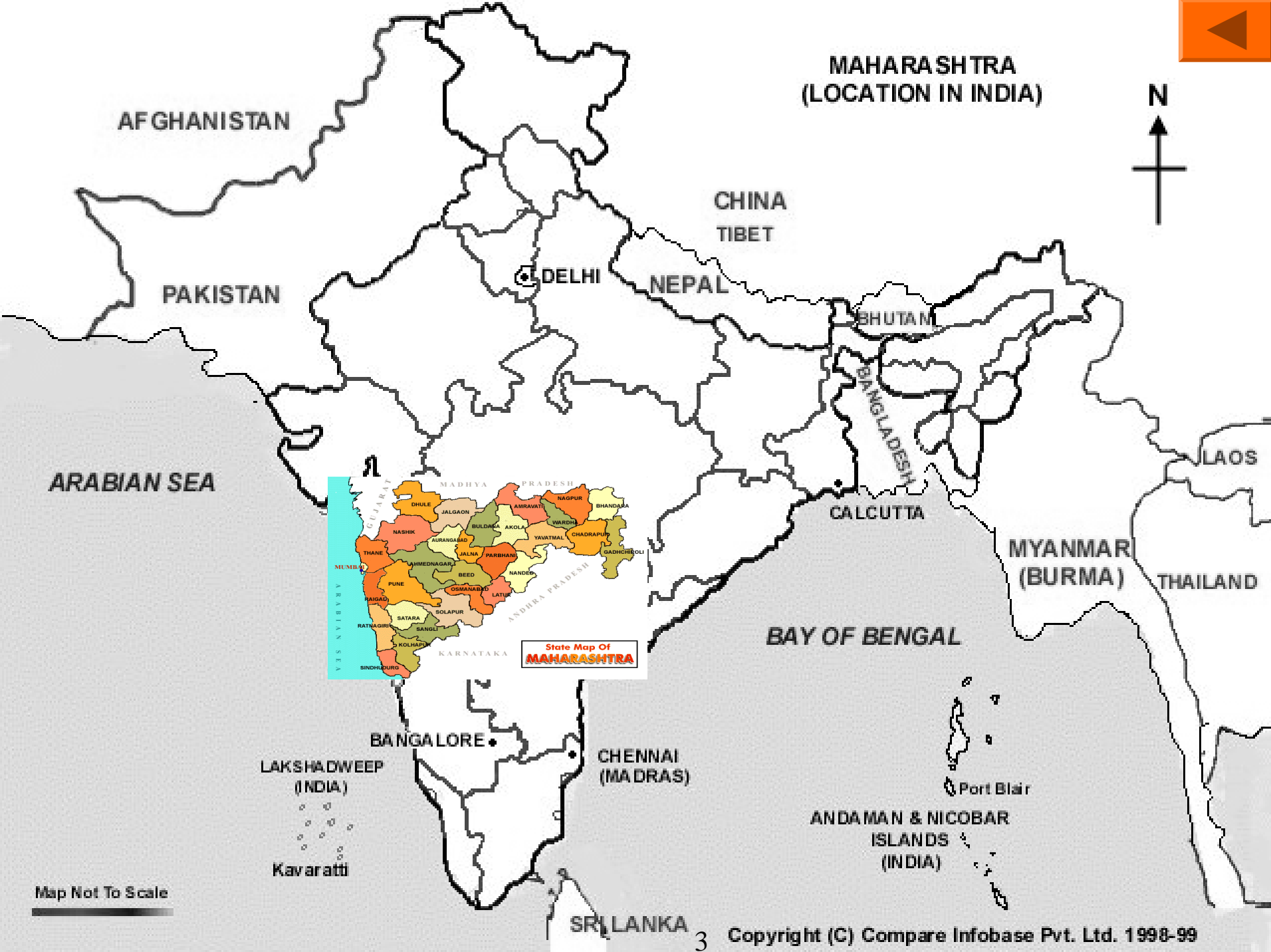
A National Workshop was held at Hyderabad (India) on February 4, 2002 jointly by GOI and WB, participated by many States including Maharashtra.

As a follow-up of this, GOM has selected four Irrigation Schemes for piloting the benchmarking with immediate effect.

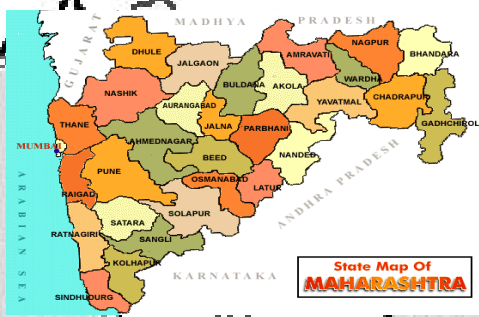
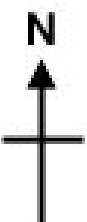
1. Bhima
2. Ujani
3. Bagh
4. Itiadh

GOM on our own, knowing the importance of all other aspects, started work on Benchmarking.

The same I am going to present now.



MAHARASHTRA  
(LOCATION IN INDIA)



Map Not To Scale



# **Information collected for last 5 years on following 15 indicators for 3 projects selected for Benchmarking :**

- 1. Annual Irrigation water supply per unit irrigated area.**
- 2. Output per unit irrigated area.**
- 3. Output per unit water supply.**
- 4. Cost - Recovery Ratio.**
- 5. O & M Cost per unit area.**
- 6. Revenue per unit volume of water supplied.**
- 7. Mandays for O & M per unit area.**
- 8. O & M cost per unit volume of water supplied.**



# **Information collected for last 5 years on following 15 indicators for 3 projects selected for Benchmarking :**

- 9. Land damage index (Water logged area / CCA).**
- 10. Change in average ground water depth.**
- 11. Wells in command of Project.**
- 12. Equity performance.**
- 13. Water use performance for winter season.**
- 14. Benefit status of Farmers.**
- 15. Yearwise irrigation on Projects.**

# SALIENT FEATURES OF PENCH PROJECT



- **Sub basin** - **Wainganga**
- **Average Annual Rainfall** - **1137.62 mm**
- **Live Storage** - **180.00 Mm<sup>3</sup>**
- **Water for irrigation use** - **689.00 Mm<sup>3</sup>**
- **Water for non irrigation use** - **243.00 Mm<sup>3</sup>**
- **Year of commencement of Irrigation** - **1976**
- **Culturable command area** - **126913 Ha.**
- **Irrigable command area** - **101200 Ha.**
- **Total No.of farmers** - **46000**
- **No.of villages in benefit zone** - **407**
- **Average farm size** - **1.0 to 2 Ha.**
- **Main crops** - **kh Paddy, Cotton, Wheat, Gram.**
- **Area covered under WUA** -



# SALIENT FEATURES OF BHIMA PROJECT



- Sub basin - Krishna/Bhima
- Average Annual Rainfall - 500 mm
- Live Storage - 1517.20 Mm<sup>3</sup>
- Water for irrigation use - 1444.70 Mm<sup>3</sup>
- Water for non irrigation use - 116.43 Mm<sup>3</sup>
- Year of commencement of Irrigation - 1977
- Culturable command area - 198035 Ha.
- Irrigable command area - 182683 Ha.
- Total No.of farmers - 101564
- No.of villages in benefit zone - 384
- Average farm size - 1.0 to 2.5 Ha.
- Main crops - Sorghum, Wheat, Gr.Nut, Sugarcane.
- Area covered under WUA - 17700 (11 %)

# SALIENT FEATURES OF ITADOH PROJECT

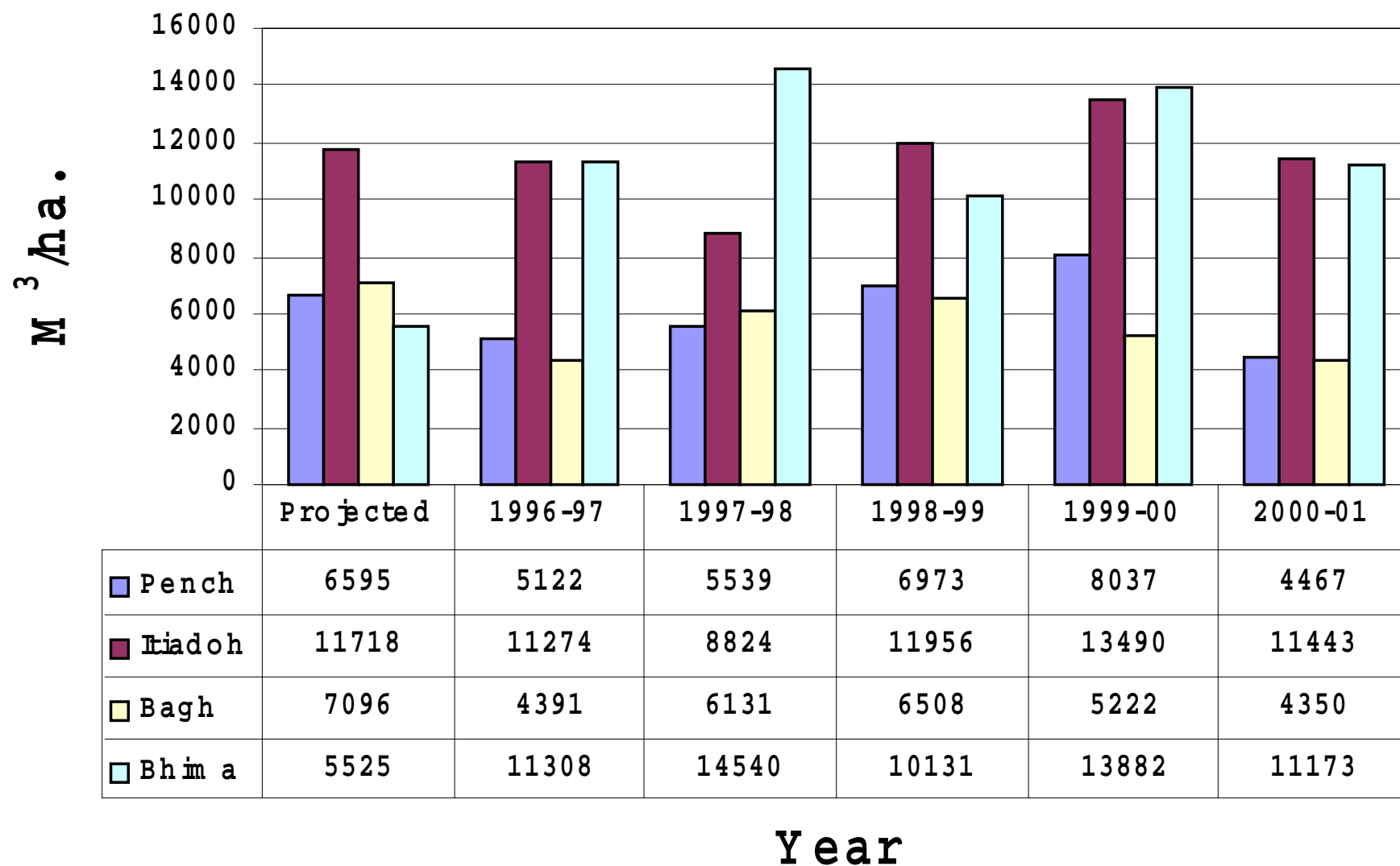
- **Sub basin** - **Wainganga**
- **Average Annual Rainfall** - **1336 mm**
- **Live Storage** - **252.12 Mm<sup>3</sup>**
- **Water for irrigation use** - **322.00 Mm<sup>3</sup>**
- **Water for non irrigation use** - **NIL**
- **Year of commencement of Irrigation** - **1971**
- **Culturable command area** - **22752 Ha.**
- **Irrigable command area** - **17500 Ha.**
- **Total No.of farmers** - **17429**
- **No.of villages in benefit zone** - **100**
- **Average farm size** - **1.0 to 2 Ha.**
- **Main crops** - **kh Paddy,Summer Paddy.**
- **Area covered under WUA** - **Nil**



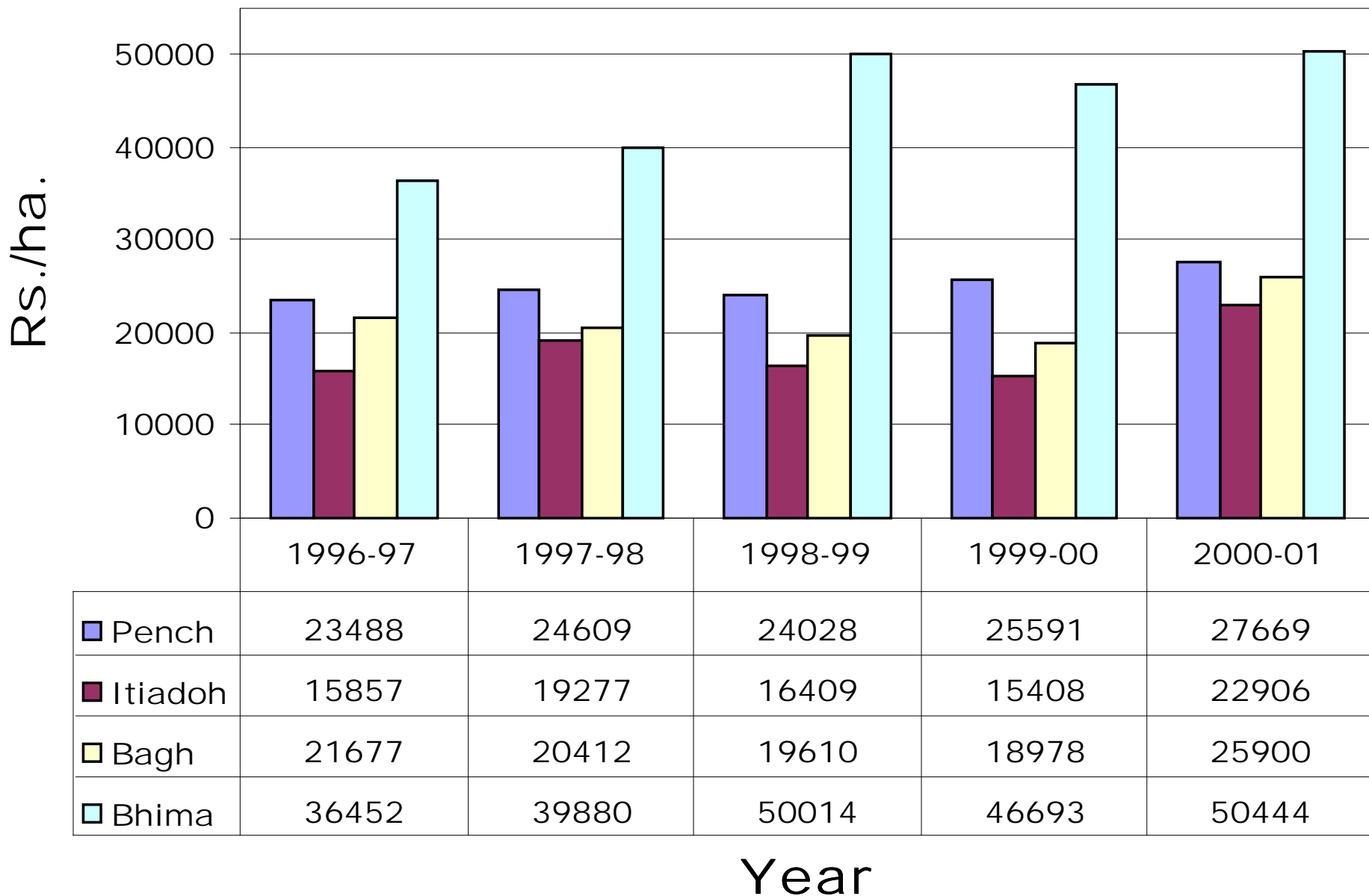
# SALIENT FEATURES OF BAGH PROJECT

- **Sub basin** - **Wainganga**
- **Average Annual Rainfall** - **1325 mm**
- **Live Storage** - **192.55 Mm<sup>3</sup>**
- **Water for irrigation use** - **240.06 Mm<sup>3</sup>**
- **Water for non irrigation use** - **NIL**
- **Year of commencement of Irrigation** - **1971**
- **Culturable command area** - **44676 Ha.**
- **Irrigable command area** - **35546 Ha.**
- **Total No.of farmers** - **27571**
- **No.of villages in benefit zone** - **164**
- **Average farm size** - **1.0 to 2 Ha.**
- **Main crops** - **kh Paddy, Summer Paddy.**
- **Area covered under WUA** - **Nil**

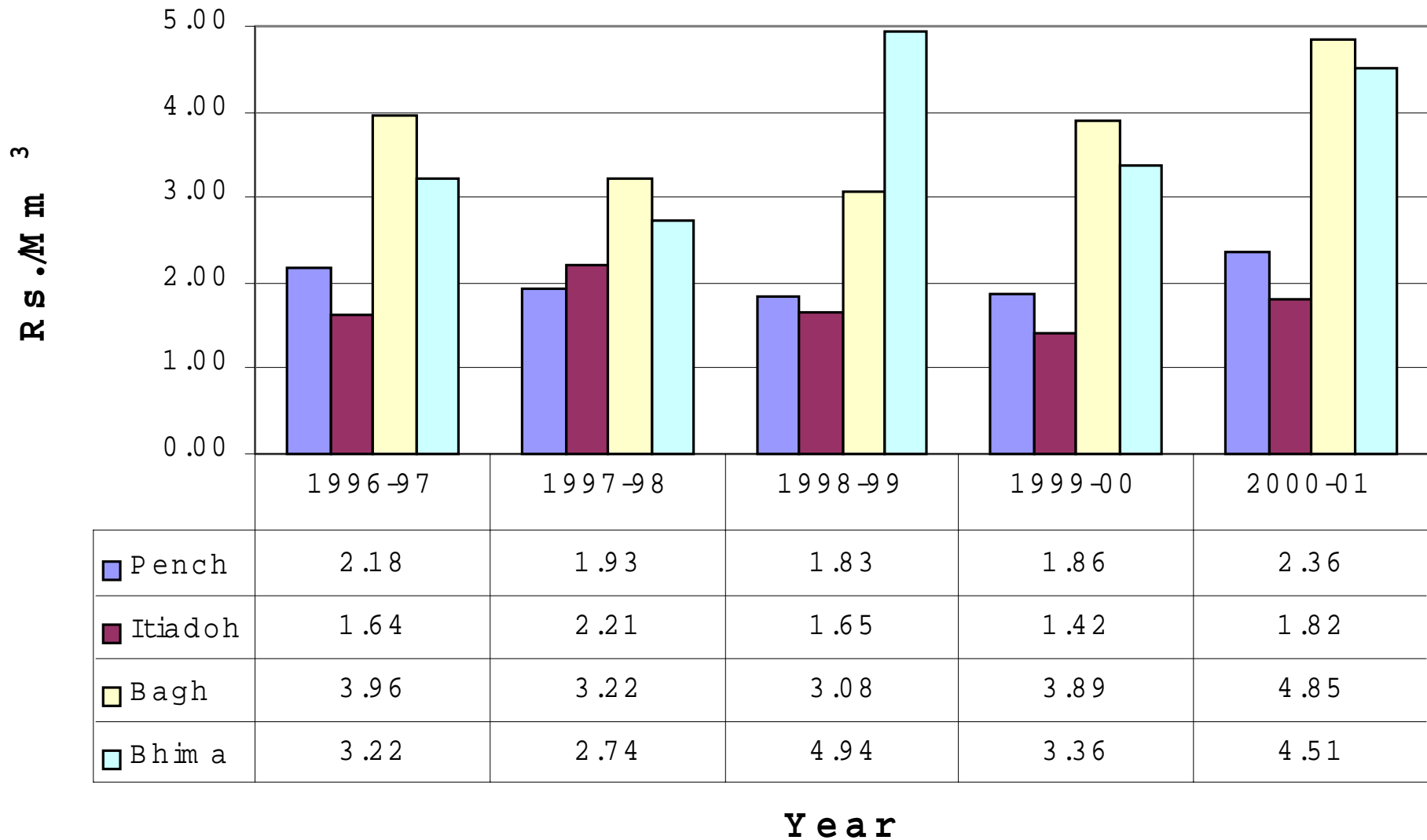
## Annual Irrigation Water Supply Per Unit Irrigated Area



# Output Per Unit Irrigated Area

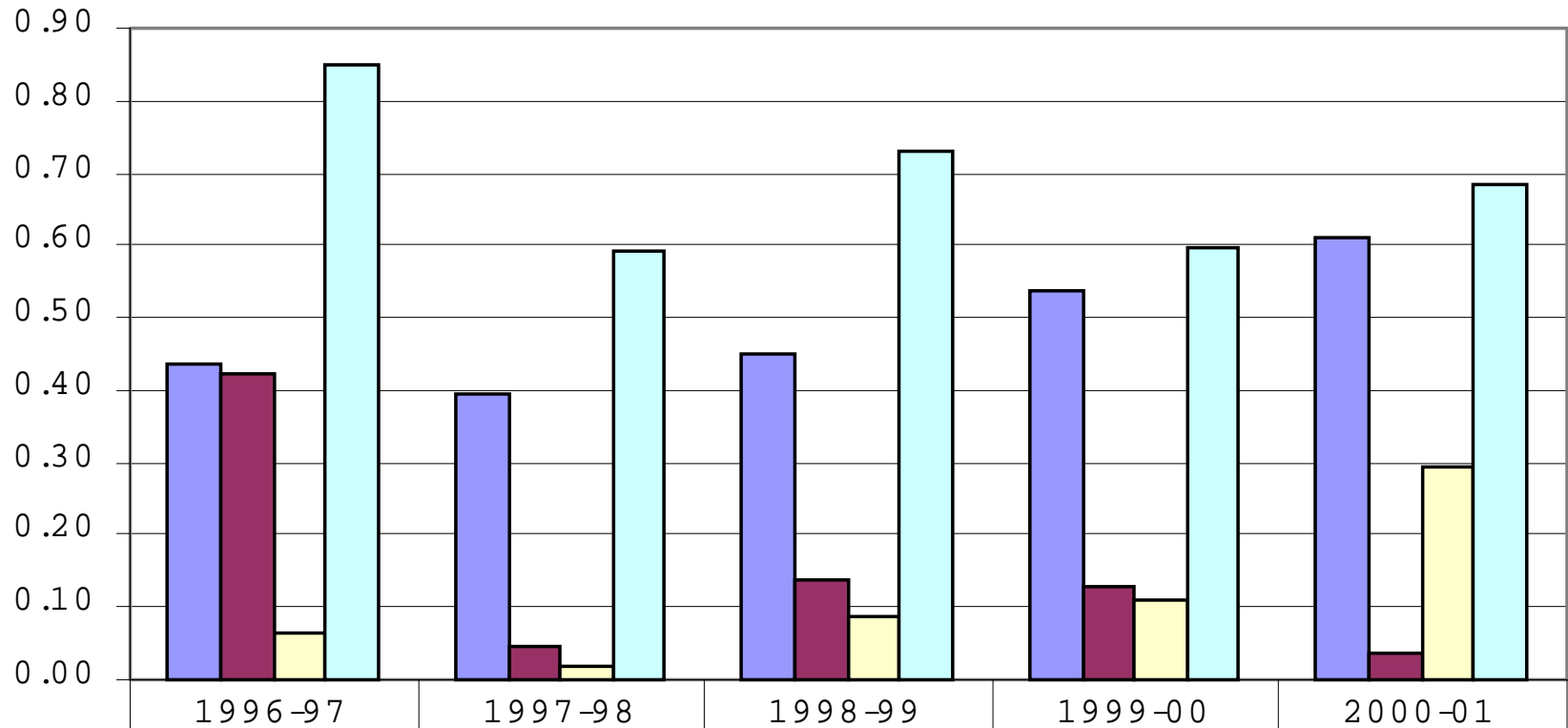


# Output Per Unit Irrigation Supply



# CostRecovery Ratio (Receipt/O & M Cost)

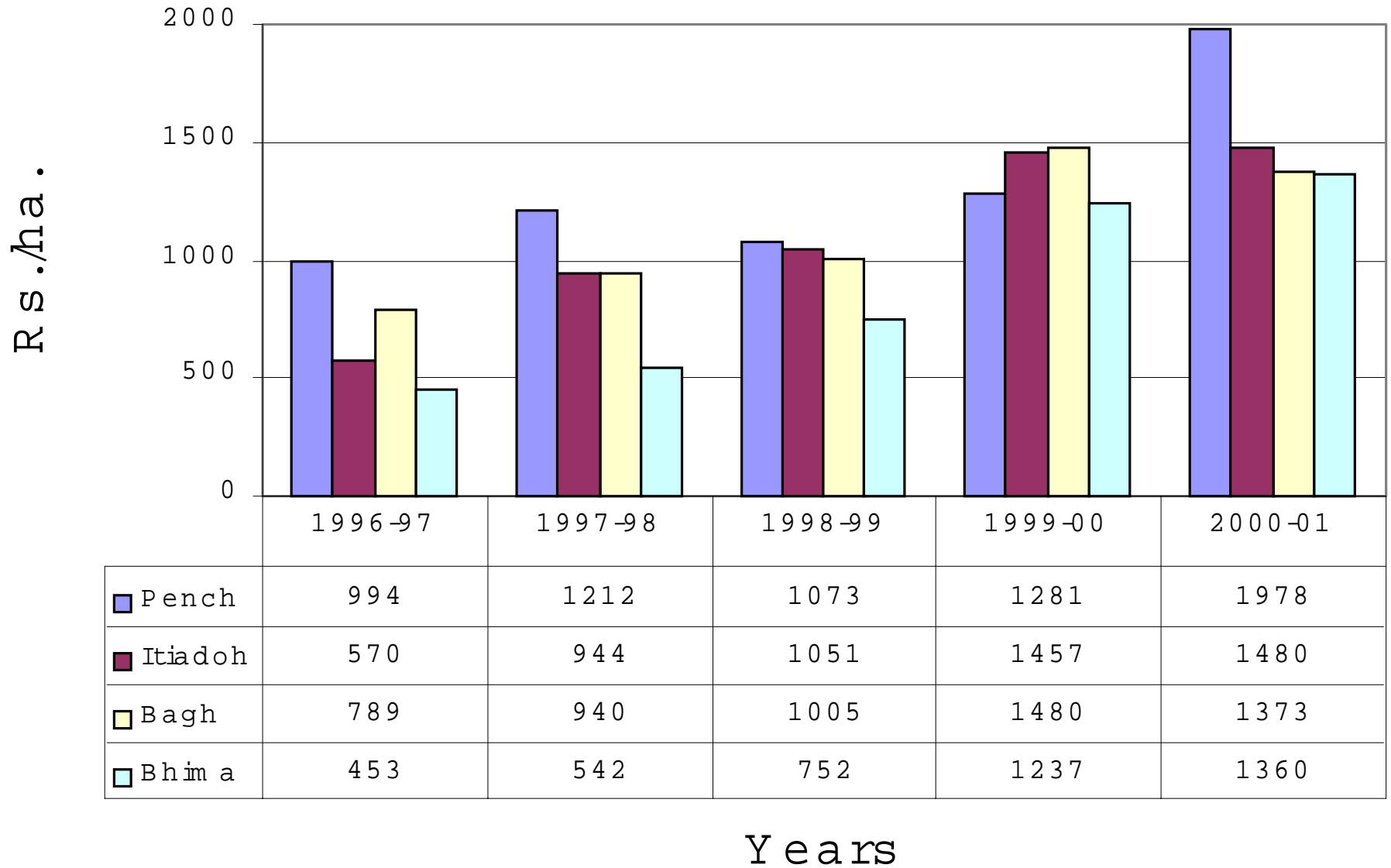
Ratio



<span style="color: blue;">■</span> Pench	0.43	0.40	0.45	0.54	0.61
<span style="color: maroon;">■</span> Itiadoh	0.42	0.04	0.14	0.13	0.04
<span style="color: yellow;">■</span> B agh	0.07	0.02	0.09	0.11	0.29
<span style="color: cyan;">■</span> B him a	0.85	0.59	0.73	0.60	0.68

Year

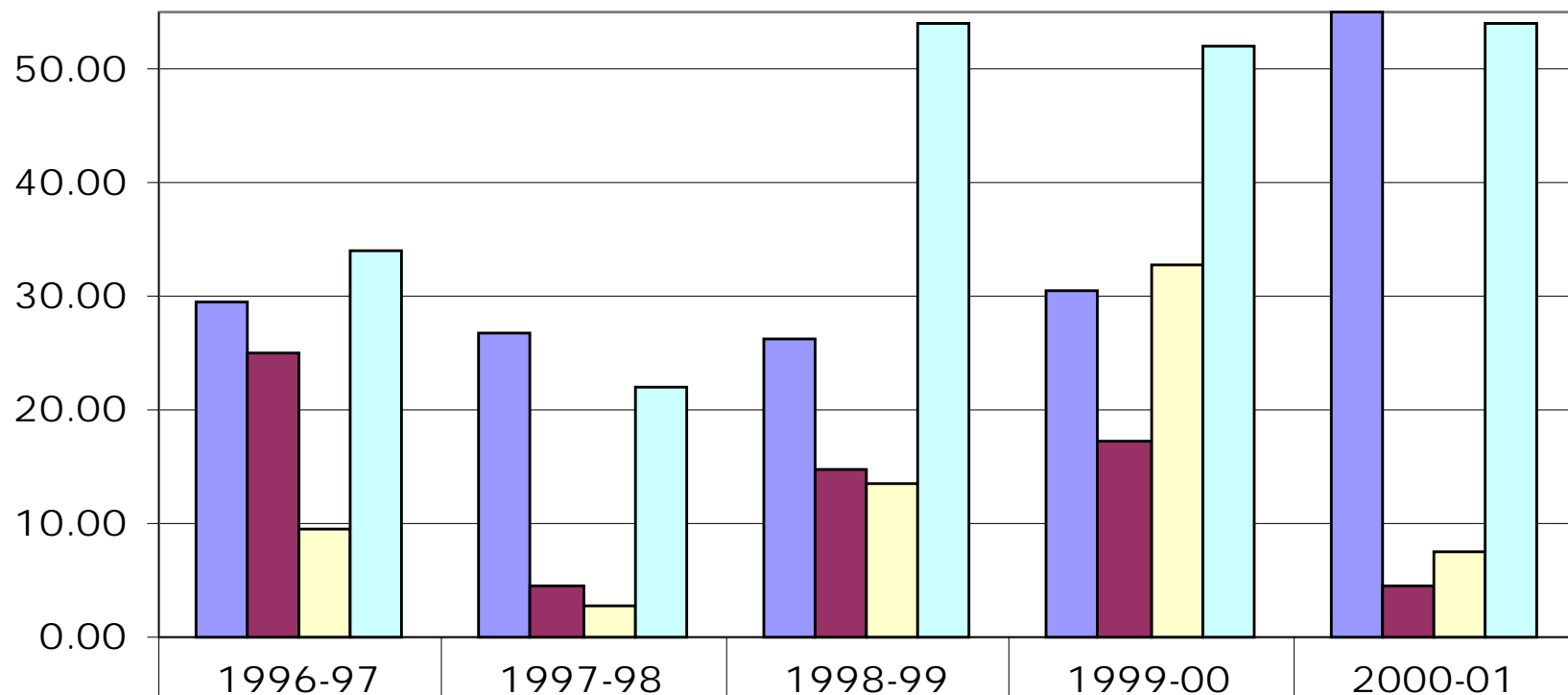
# Total O & M Cost Per Unit Area





# Revenue Per Unit Volume of Water Supplied

Rs.in Thousand/Mm<sup>3</sup>

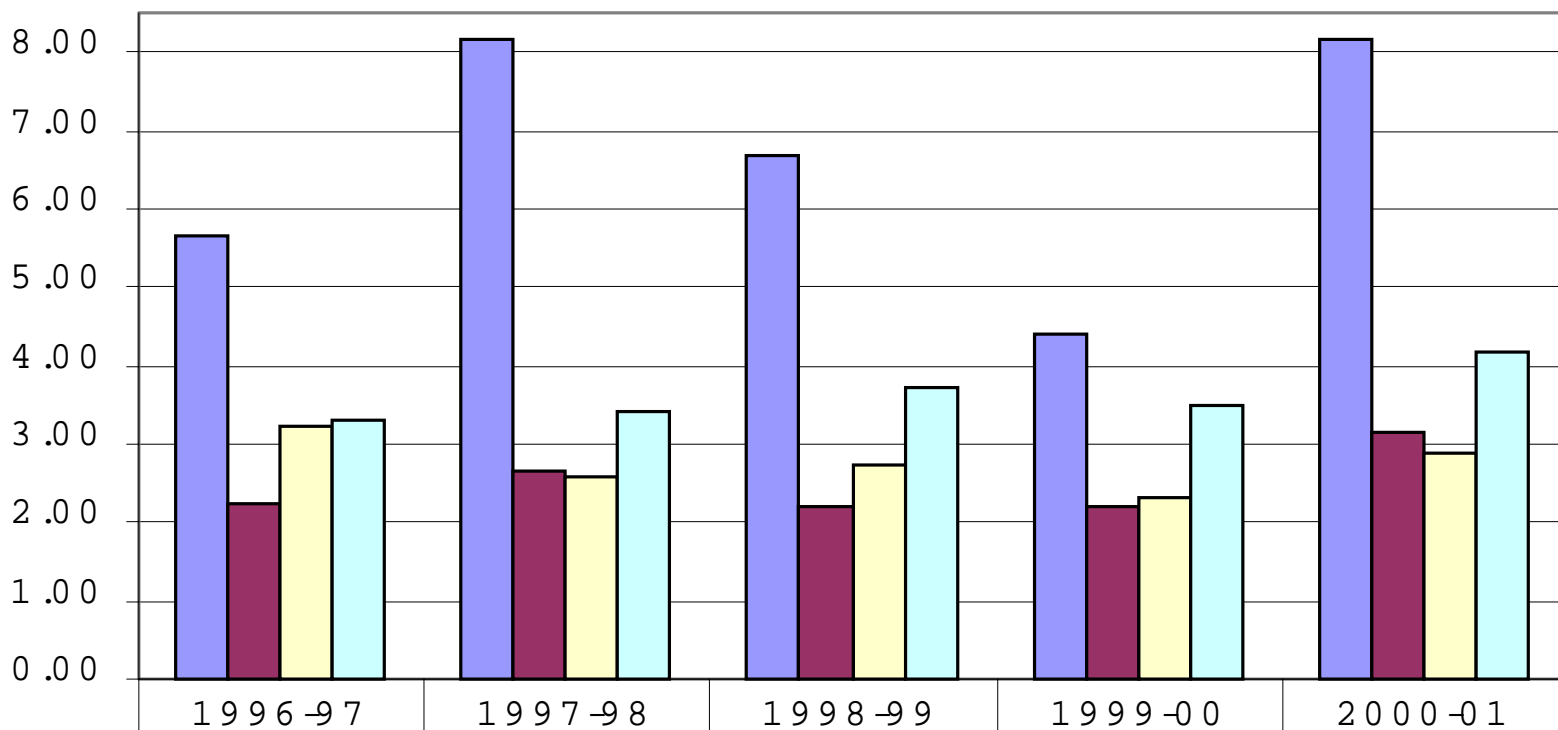


	1996-97	1997-98	1998-99	1999-00	2000-01
Pench	29.52	26.75	26.23	30.50	54.99
Itiadh	24.92	4.42	14.83	17.29	4.56
Bagh	9.47	2.70	13.53	32.78	7.56
Bhima	34.00	22.00	54.00	52.00	54.00

Year

# Man Days for O & M Per Unit Area

Man days/ha.



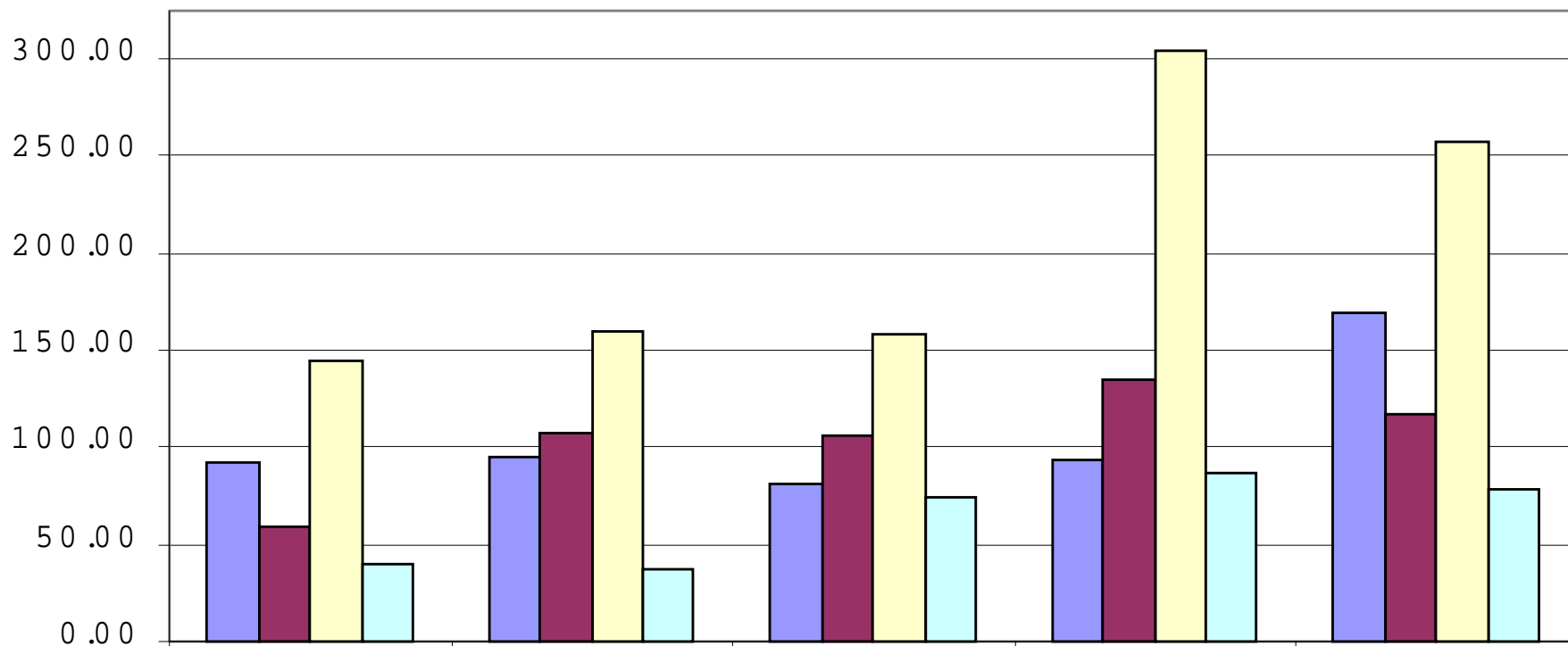
Pench	5.67	8.17	6.70	4.39	8.15
Itiadoh	2.24	2.64	2.21	2.20	3.15
Bagh	3.23	2.58	2.72	2.32	2.89
Bhim a	3.31	3.40	3.72	3.50	4.16

Years

# Total O & M Cost Per Unit Volume of Water Supplied



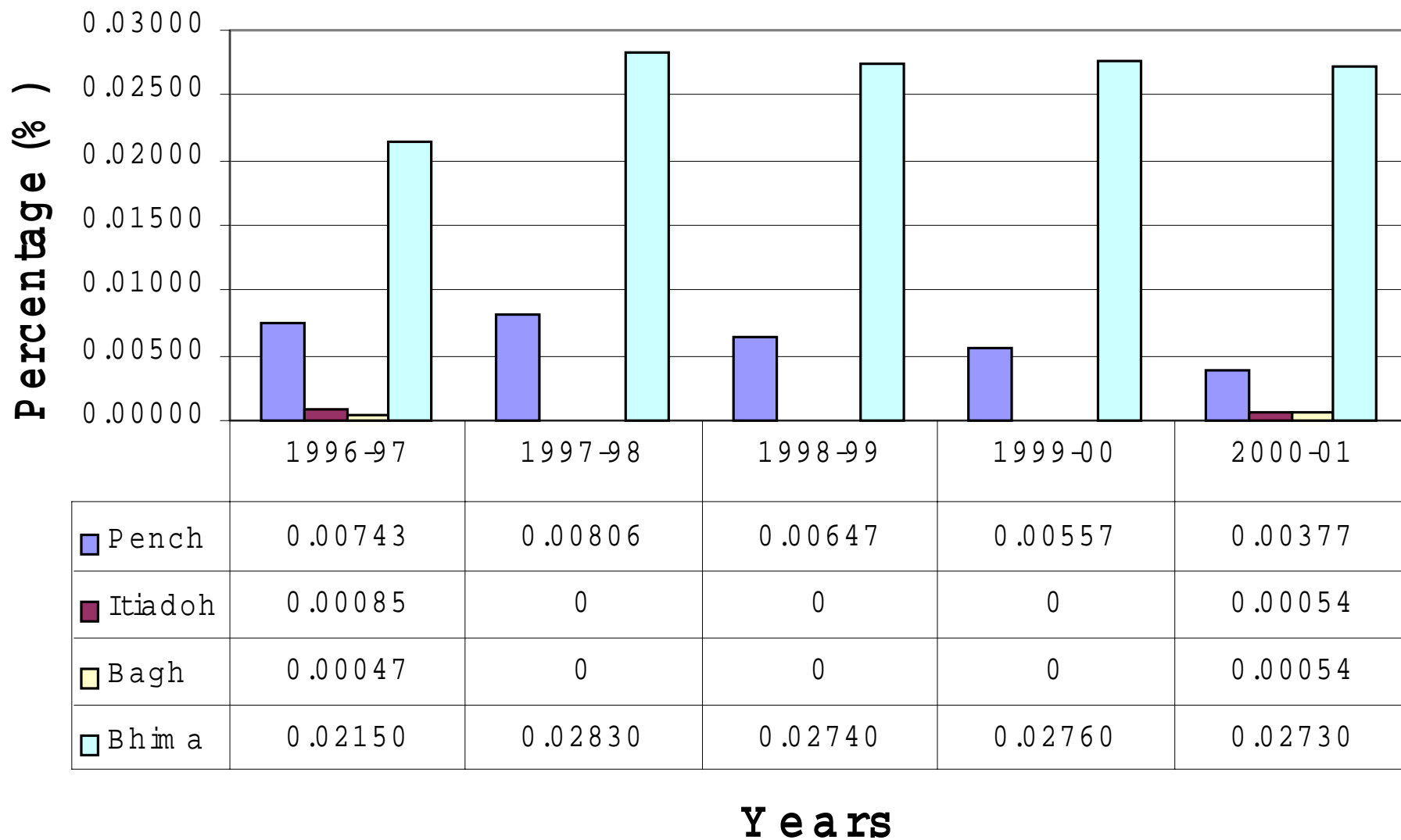
Rs. in Thousands/M m<sup>3</sup>



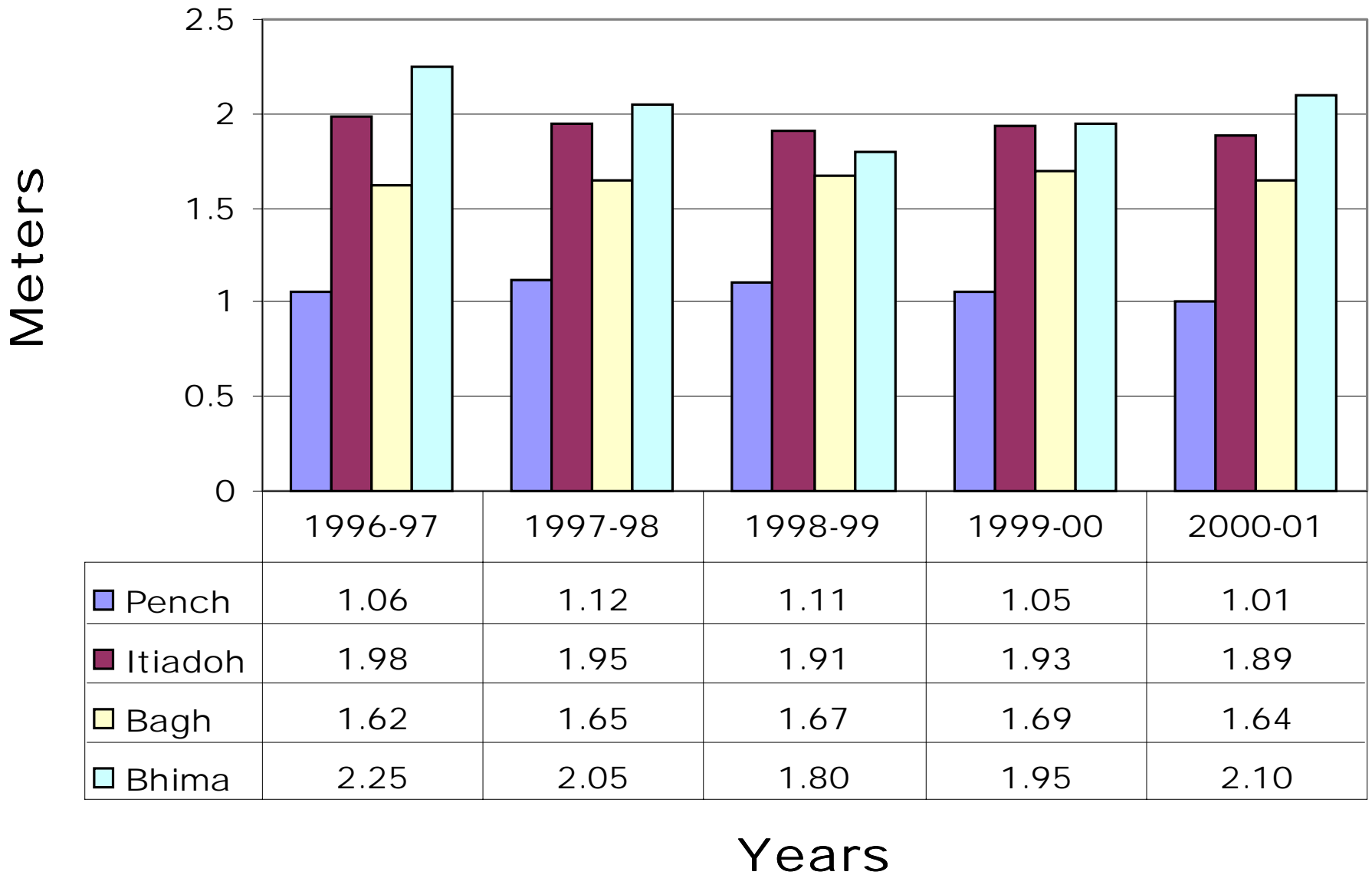
Pench	92.42	95.23	81.71	93.23	168.92
Itiadoh	58.98	108.05	105.93	135.44	117.23
Bagh	144.31	159.06	157.80	303.79	257.05
Bhima	40.00	37.00	74.00	87.00	79.00

Years

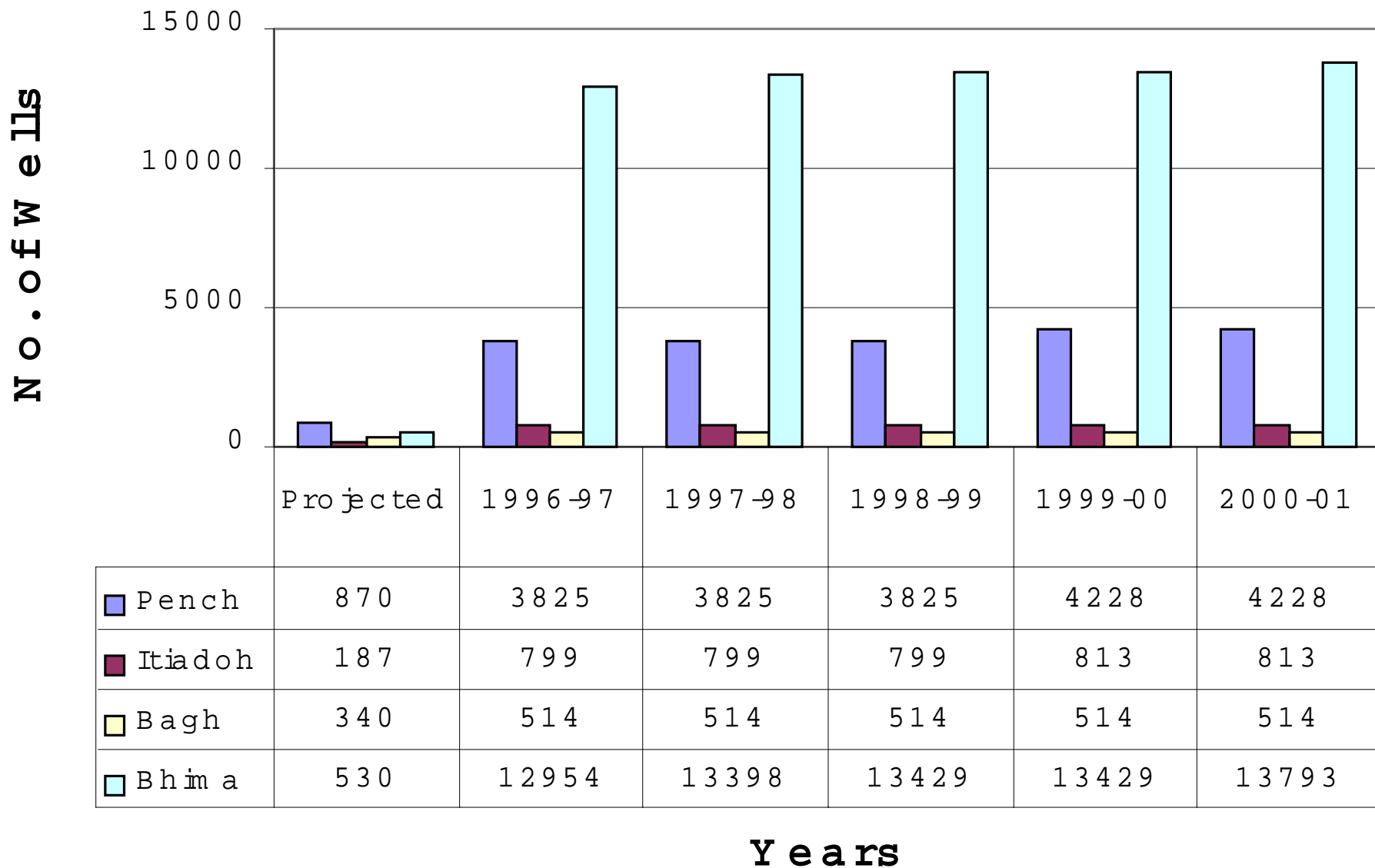
# Land Dam aged Index (W aterLogged/C C A )



# Change in Average Ground water Level

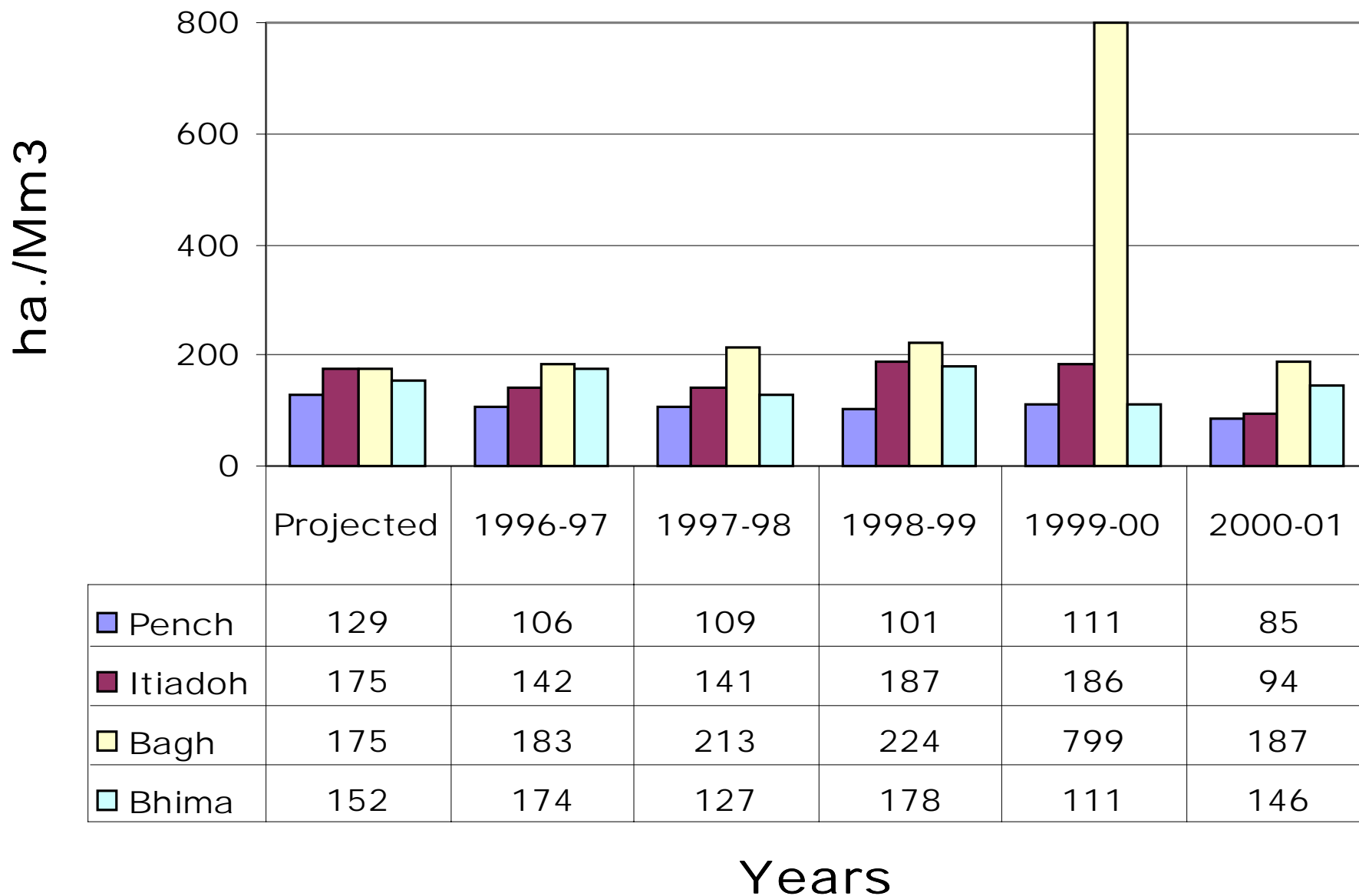


# W e l l s i n C o m m a n d A r e a





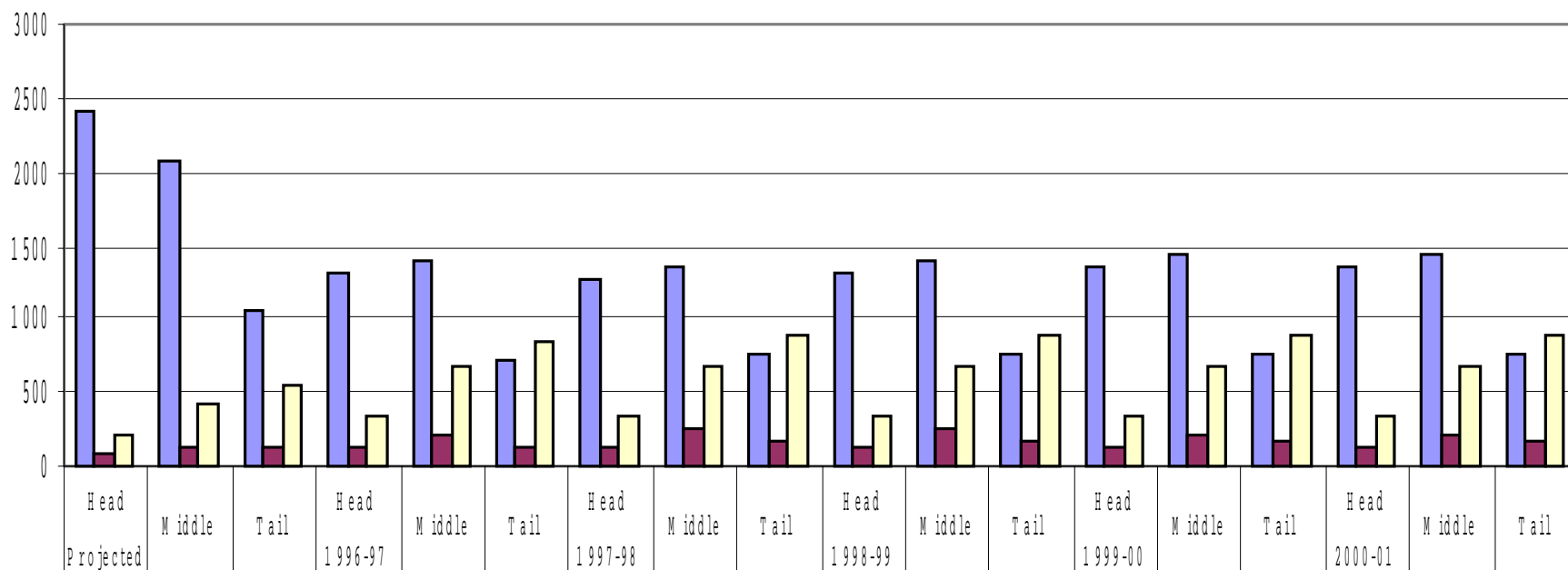
# Water Use Performance for Winter(Rabbi)/Mansoon(Kharif) Season





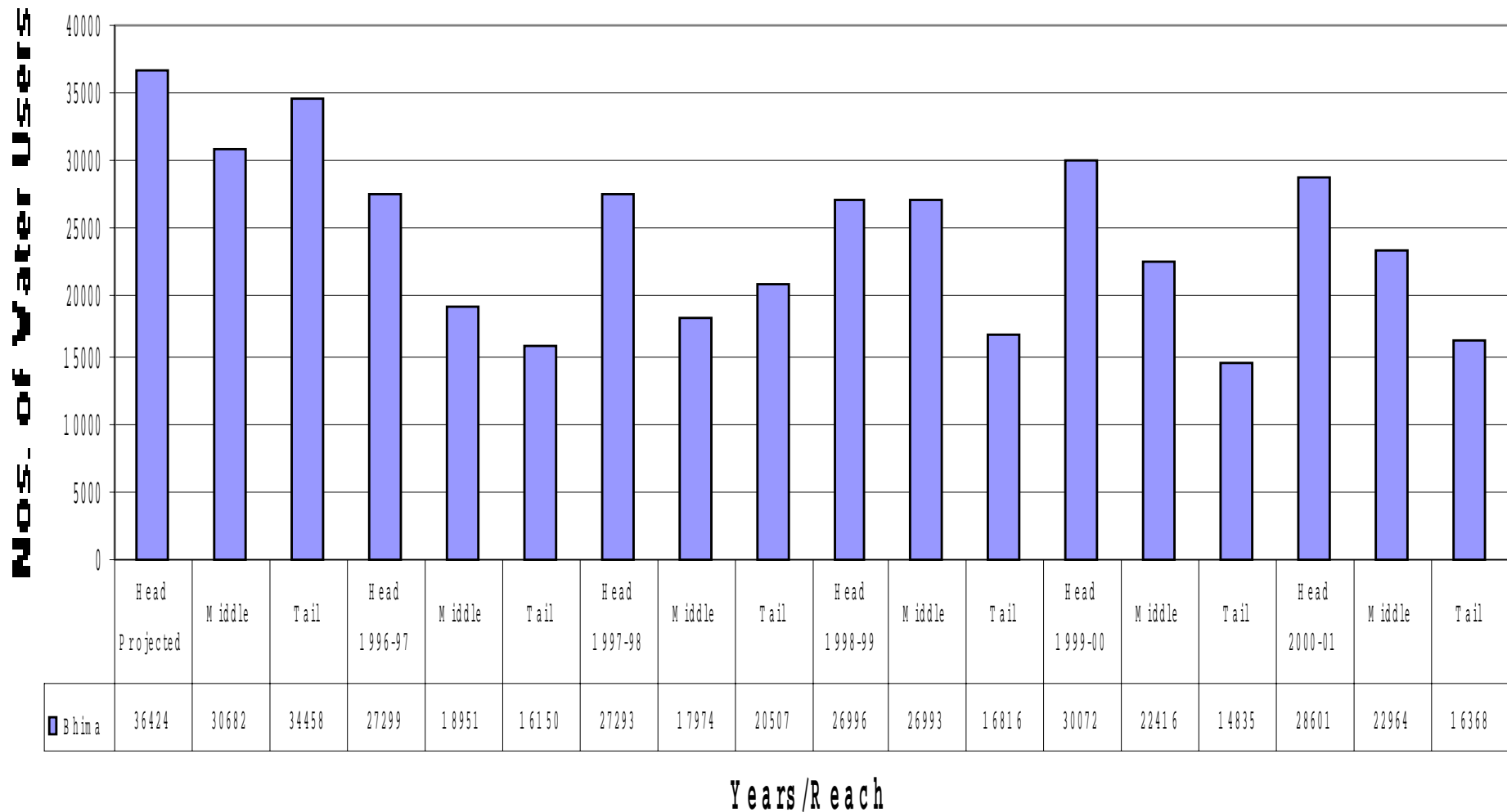
# Equity Performance of Pench, Itiadh & Bagh

No. of Water Users



Years/Each

# Equity Performance of Bhima Project

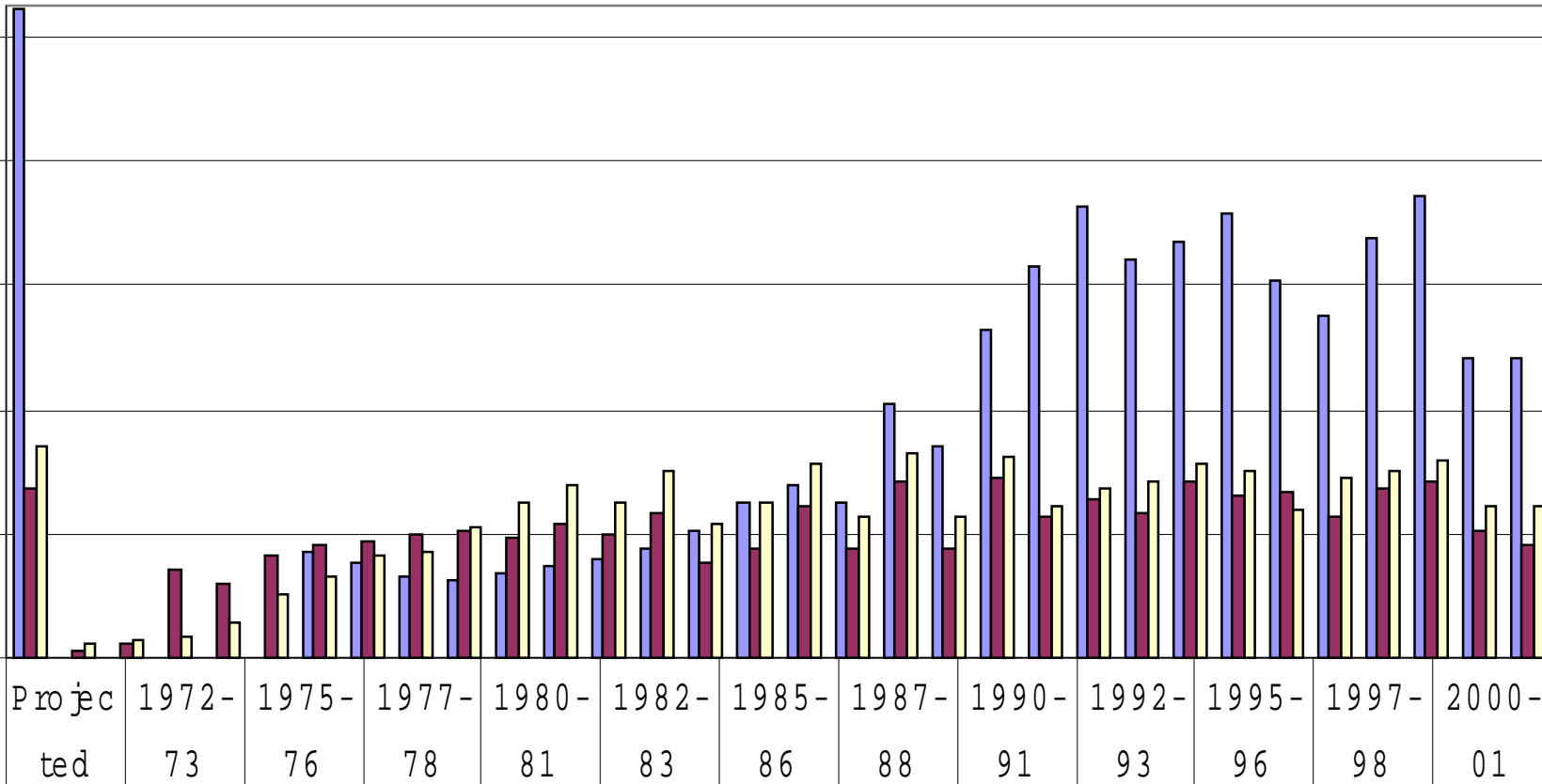


# Yearwise Irrigation Area in ha. (Pench, Itiadoh & Bagh)



Irrigation in ha.

100000  
80000  
60000  
40000  
20000  
0



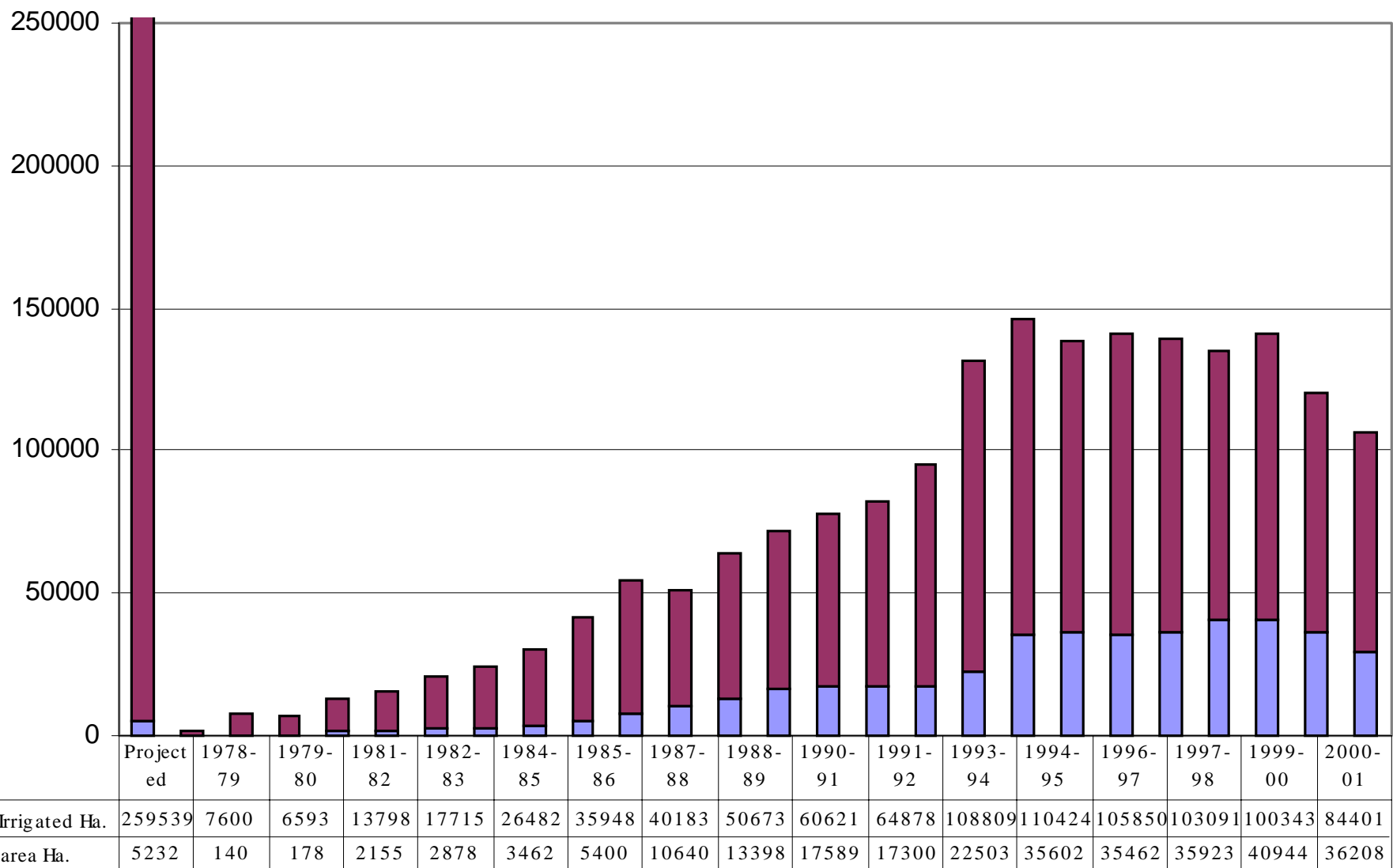
<div><div></div><div>Pench</div></div>	104476			15244	13614	16042	25171	25133	52537	72815	71578	55264	48430
<div><div></div><div>Itiadoh</div></div>	27500	2507	16538	18867	19529	19620	17855	17337	28945	25307	26330	22979	20635
<div><div></div><div>Bagh</div></div>	33832	2820	10376	16221	25229	25109	25053	22791	32522	27358	29978	28743	24198

Years

# Yearwise Irrigation Area in ha. (Bhima Project)



Irrigation in ha.



Years





# Conclusion :

Benchmarking is very powerful management tool for analyzing and improving performance of Irrigation Schemes.

It gives insight to improve performance of other Schemes.

The state Govt.has initiated steps to setup mechanism for bench marking of irrigation projects.



