

IRRIGATION UNDER NOOR MUHAMMAD KALHORA

(Being extract from M.H. Panhwar's book "Six thousand years of irrigation in Sindh" in press)

BY
M.H. PANHWAR

Irrigation in Sindh dates back to the Indus Times i.e., about 3,000 BC. It appears that around Amrian Times (3500 BC) irrigation had yet not started but by Kot Dijjian Times (2800 BC), rudimentary irrigation had already begun. Next 500 years were the period of its ascendancy and by the beginning of Mohenjo Daro Times (2300 BC), irrigation had spread to most of the Central Indus Plains. A vast civilization, more than ten times bigger than contemporary Mesopotamian and Egyptian Civilization, in an arid land, could only have survived on irrigation summer crops like cotton, could not have been grown, only on rain water to support large populations in a vast area, and could have produced enough surplus food and clothing to support city population, artisans, religious centers and administrative set up. From the present experience of arid areas of Thar and Kohistan it is evident, that they produce only a small percentage of their cereal requirements. The surplus can only come from irrigational area.

The behavior of the river Indus in Sindh has become clear only during the past 100 years. The river comes laden with silt, which in the inundation season, easily reaches 6 parts per thousand parts of water. In Sindh, the slopes do not permit adequate velocities to water, to hold all this silt in suspension. This specially happens in areas where water overflows the bed of the river. The silt thus gets deposited on the banks and in the bed of the river. The process continues for many decades, until the river flows on a ridge above the surrounding country. One of the days, then, it leaves the ridge and starts flowing in a low lying area, gradually raising it again. This process of the river Indus has been in action, throughout Sindh's recent geological history.

The ancient courses of the river Indus were almost parallel to its present course and they have left ridges, on which the major canals of to-day are aligned. The branch canals are also aligned on some other ridges and so are the minors. The courses drawn from aerial photographs show that there is no place in Sindh more than 5 miles long and 5 miles wide, which has not been in turned by the river Indus at one time or another, during the past 10,000 years, after Sindh emerged out of receding sea, which 20,000 years back had flooded the whole of Sindh up to Multan. I have drawn a map of these courses from aerial photographs, on one inch to 4 miles scale and size 40" to 90". The ridges so left

have served for alignment of canals since the times of the Early Indus Civilization. Some old beds of the river were actually utilized as canals as much by ancients, as by latest ruling dynasties, Kalhoras and Talpurs and also the British. When the river changed its course, the irrigation system in the affected area was totally destroyed, bringing about migration of people, chaos, disease, famine, starvation, death and decrease in population. This has been the history of Sindh for the past 5000 years; that of prosperity, high population, depression, reduction in population, change of dynasties, and rise and decline of civilization.

The irrigation system in Sindh invariably consisted of short length canals, taking off from the river and running obliquely to its course.

If river was stable in its course for considerable decades, a large number of canals were constructed over years, the population increased and so did the cultivated area.

But a disaster usually took place almost once in a century or two, when river changed its course, the canals dried up, lands were abandoned, people had to migrate and usually turn into pastoral nomads, grazing their flocks in Thar and Kohistan after summer rains and returning to the Indus plains in winter, where after being in spate in summer, the receding river Indus left enough moisture in the soil, to support grasses for winter and spring.

Sufficient portion of Sindh's population thus became, alternatively cultivator and pastoral. In practice each farmer was part time pastoral. They maintained cattle, goats and sheep for milk, butter, meat, wool and hides and grazed them on agricultural wastes like straw, barn, oil cake and natural grasses supported on the preserved moisture, left by flood waters of the Indus.

Whenever a major river change took place in the course of the river Indus, lands, village and towns depending on canal system of the old course were abandoned. The turmoil depended on the extent of abandonment of old course and if it was large, there was misery, famine, starvation, migration and reduction in population.

This reduced revenue of the government and also their hold on the old settlements. The inter-action of economic forces caused resentment against the government, rebellion, new loyalties, rising of new forces and finally changes of the government, either by internal revolts or foreign conquest. This has been the process of Sindh's history since introduction of irrigation some 5000 years ago and is evident from following major historical incidents.

- (a) Decline of Mohenjo Daro came due to abandonment of old course of river which passed near Mohenjo Daro, Lohamjo Daro (Piarogoth railway station) and Chanhu Daro, either too far to the east or too far to the west, from where water could not be brought to the central plains near the abandoned cities. The Civilization started its quick decline in 1650 BC, and for another 1000 years conditions were chaotic, canals if restored did not cover areas large enough to cause any cultural impact. Consequently, the population declined. Rough estimate of population of Sindh is 250,000 from 3000-2700 BC, or Mid Kot Dijian Times and 500,000 to 600,000 mid Indus Times or 2000 BC.
- (b) Somewhere in early 6th century BC, or in the late 7th century BC canal system was restored, area became populated, cultivation extended and area of Sindh below Multan became the richest area in the world, Darius-I conquered Sindhu for its wealth and got 1/4th of total revenue of his Empire from Sindh. The canal system seems to have been restored for the first time, after about 1000 years and caused much prosperity.
- (c) Some where at the middle or the later part 5th century BC, the river again had a major change in its course? Achaemenians lost their hold on Sindh. Small independent local rulers rose to power. They built the canal system again. The old course of the Indus and abandoned lands were witnessed by Alexander's men with surprise. These lands were at such help that water could not be laid to them from the new course adopted by the Indus. The abandoned course was in Khairpur, Nawabshah, Sanghar districts and the new course was in the same districts to the west of it. On this new course enough land was cultivated that full prosperity had returned to Sindh, as Alexander's historians perceived and area was annexed to the Greek Empire. Sindh's population during (b) and (c) above may have been 500,000 to 1,000,000 and area under irrigation 400,000 to 700,000.
- (d) There is not enough information on irrigation in Sindh from Mauryan rule (323 BC) to the rise of Vahlikas in 356 AD, due to lack of excavation of Buddhist cities in Sindh. However under Vahlikas 356-415 AD, Sindh was very prosperous, its king strong and Chandra Gupta-II failed in his attempt to conquer Sindh.
- (e) This disappearance of Vahlikas from Sindh's scene may have been due to a major change in the course of the river Indus and destruction of irrigation system.

- (f) Irrigation system was again restored and with this change, rose Rai Dynasty, (499-641 AD), to be replaced by Brahman Dynasty (641-711 AD). The Indus was stable and irrigation system helped to extend boundaries of Sindh to Baluchistan, Multan, Bhatinda and Kutch. By about 700 AD or soon after, there was a major change in the course of the river in the Lower Sindh, causing destruction of irrigation system, abandonment of agricultural land and settlements. Brahman dynasty had repelled fifteen Arab attacks on Sindh in the past 50 years but in the 6th attack, the Arabs conquered the Lower Sindh without shedding blood and facing any resistance. The area was vacated due to abandonment of irrigation lands and the farming population, which was mostly Buddhist, joined Arabs under the hope that the irrigational system will be restored and they will be re-settled on some suitable agricultural lands.
- (g) Arab governors of Umayyids and Abbasids ruled Sindh from 714-854 AD. Since Arabs were not familiar with irrigation requirements of a river like the Indus, the canal system was not restored quickly enough as the Buddhist population who mostly were farmers, had expected and rebellion started. The 140 years of the Arab rule saw wars, chaos, removal, dismissal and recall of governors. Out of this chaos rose a local dynasty, the Habaris, who descended from a local Arab chief settled in Sindh for more than a century and involved in agriculture in Sindh.
- (h) Habaris (851-1011 AD) being familiar with canal irrigation, seem to have restored canal system. To their luck was not only stability of the Indus but natural establishment of a few major branches of the Indus in the upper and lower Sindh, which also supported canals. Habaris had a stable and prosperous period in Sindh's history.
- (i) Soomras ruled from 1011 to 1351 AD. It was a peaceful take over from Habaris. During their rule, the Indus changed its course three times, twice it was another Soomra family that took over but the third time after 1333 AD when river changed its course, Samma's first replaced Soomras in the Central Sindh and soon after 1351 they took over the whole of Sindh. Cultivated area under Habarians may have been 1,600,000 acres and population 2,500,000.
- (j) Sammas had good luck of no major change in the course of river Indus until the end of their rule in 1525 AD, a total period of 175 years. The prosperity brought by the irrigation system resulted in a series of defeats of Feroz Tughlaq at the hands of Sammas between 1365-1367

AD. The same factor got the Sammas independence from the Delhi Sultanate and the Central Asia Mongols, although both had designs on Sindh, from time to time. Area under cultivation under Sammas may have reached 1.6 – 1.7 million acres and population 2.5 million.

- (k) Sindh was conquered by Arghoons in 1525 AD. They were replaced by Tarkhans in 1555 AD and by Mughal governors in 1587 AD (Upper Sindh) and 1591 AD (Lower Sindh) Mughal governors ruled different parts of Sindh up to 1736 AD, although they had lost control over most of Sindh soon after 1680 AD.

The Mansabdari system adopted by them was not suitable to the conditions of Sindh, where a land-owner or Zamindar was responsible for digging new canals, maintaining old ones by annual de-silting, land clearance and leveling, bringing new areas under cultivation by extending canals and etc. The Mansabdars or Jagirdars, imposed on the cultivators, being unfamiliar with the Indus canal systems, were not in a position to provide proper planning for canals, organizing labor cooperatively and relax taxation in case of crop failure. They used armed forces to recover the taxes. Farmers rebelled lands were abandoned, canals silted up and more land went out cultivation. People of Sindh turned pastoral and fought the government forces. By 1644 AD the whole of the Upper Sindh was in rebellion. Local tribes organized militarily. Local chiefs took over various areas, restored canal system and paid no taxes to the Mughals. Due to political turmoil area under cultivation in 1700 AD may have been about 1000,000 acres and population on 1500,000.

In this chaos, Kalhoras the local land-owners also rebelled. They were also hereditary Pirs or holy men. They started organizing resistance against Mughal governors. More and more land-owners and farmers joined them. By the end of seventeenth century, they were a formidable force to be reckoned with. Between 1650 and 1700 AD, they had occupied most of the present Jacobabad, Shikarpur and Larkana districts. Upper Dadu (i.e. Sehwan, Dadu, Johi, Khairpur Nathan Shah, Mehar Talukas) and some parts of Kambar Taluka were occupied by Panhwar's with headquarters at Gharhi and Samtani. Panhwars were loyal to Multan's governor Muizuddin son of Aurangzeb. They, therefore, became target of Kalhoras. Kalhoras had hitherto used mostly local Zamindars but hereafter they used Baluchi tribes of Sibi, Karachi, Dera Bughti and D.G. Khan, as mercenaries, to fight the Mughals. Baluchi had accepted Kalhoras as their spiritual guides or Pirs. Kalhoras had never suspected that these disciples of theirs one day will chop off their descendant's heads and occupy Sindh. In 1701 AD they displaced Panhwars. Mughal governors having become helpless

accepted them as governors of areas occupied Under Yar Muhammad Kalhora (1701-1718 AD), more areas were added to their principality.

Noor Muhammad Kalhora became ruler of Sindh on the death of his father Yar Muhammad Kalhora. The task of expansion and occupying more territories continued until 1736 AD when the Thatta, Sarkar of the Lower Sindh, was also handed over to them by Delhi, on a nominal acceptance of Mughal sovereignty. Task before Noor Muhammad Kalhora was to reorganize irrigation system, as his father and uncle had done before him.

Kalhoras were master builders. Their secret lay in quick restoration of the canal system and settlement of farmers on it. There are different estimates as to the area under cultivation in Sindh, under Kalhoras. Lambrick thinks that they had achieved a figure of 30 lakh acres, while Chhablani (Economic History of Sindh) considers it as 21 lakhs. The present writer accepts conservative estimate of 22 lakh acres as each acre of land needs and supports about 1.36 persons in the rural community, and Sindh's population could not have been more than 30 lakh by about 1757 AD, when under Kalhoras cultivation reached its zenith. What canals did Kalhoras build? This is a matter which could be worked out only by considerable research. Sir Charles Napier's canal department had collected some records, which soon were lost. No attempt was ever made to put this information together again.

On the basis of scanty information available, Kalhoras excavated the following canals:-

- (a) Shah-ji-Kur, constructed by Shah Buharo, Vazier of Noor Muhammad Kalhora.
- (b) Nusrat Wah, excavated by Nusrat Khan Chandio, in the days of Noor Muhammad Kalhora.
- (c) Murad Wah, excavated by Murad Khan Kalhora.
- (d) Feroz Wah, excavated by Feroz Vir during Kalhora dynasty's rule.
- (e) Sarfraz Wah, excavated by Mian Sarfraz Kalhora.
- (f) Bag Wah, excavated by Bag of Sial clan, who were brought to Sindh from the Punjab by Kalhoras.
- (g) Nur Wah, from Begari canal, excavated by and named after Noor Muhammad Kalhora.

- (h) Nur Wah from Ghar, excavated during Noor Muhammad Kalhora's rule.
- (i) Nur Wah from Western Nara also excavated during Noor Muhammad Kalhora's rule.
- (j) Nur Wah from Nasrani to Dadu and South.
- (k) Begari, as the name implies, excavated by statutory labor may have been commissioned during early Kalhora rule, from which Nur Wah, a branch canal took off.
- (l) Ghar appears to be a natural branch of river Indus, which may have been commissioned by Kalhoras or it may even have been the Abro canal of Summa period.
- (m) Western Nara was natural branch of river Indus and was in commission during Kalhora-Talpur rule.
- (n) Date-ji-Kur (constructed by Dato Dhuhawar).
- (o) Shah-ji-Kur (constructed by Noor Muhammad Kslhora).
- (p) Naulakhi, Dad and Dhambhro Wahs are old channels of the river Indus and were converted into canals by Kalhoras.
- (q) Gungro, a natural branch of Indus, which may have been commissioned by Kalhoras after 1758 AD, when the Indus took the present course below Hala.
- (r) Baghar, a natural branch of Indus in 1699 AD, may have become a non-perennial stream after 1758 AD, and therefore, may have been commissioned as canal by Mian Ghullam Shah Kalhora.
- (s) Same could be said of Ocho or Hajamro and Kairi canals of Thatta district.
- (t) Three canals from Makhi Dhand, namely Mithrao, Din and Heran, which started operating, when Fife gave new mouth to Eastern Nara above Rohri, may have been old canals belonging to Samma. Soomra period and may have flowed occasionally as and when spill waters from the Indus and the Sutlej discharged into the Eastern Nara. They

were probably in use occasionally during Noor Muhammad and Ghulam Shah Kalhora's rule, as the latter took care that no spill water from Eastern nara reached Kutch via Puran. Many of old canals belonging to Kalhora, Talpur and British period were absorbed in the new canal systems of Guddu, Sukkur, and Kotri Barrages. Only by extensive local investigation at the level of sub-divisional engineers, could the antiquity and history of old canal system be ascertained. Unfortunately, this study does not have any engineering applicability's, and so the irrigation department will have little use for it. It is hoped that some day economic and social historians and anthropologists would undertake this study.

Kalhora period's irrigated agriculture reached a minimum area of 22 lakh (2.2 million) acres by 1740 AD, but a major hydrological change took place in 1755-58 AD. The Indus changed its old course at Hala deserting its main branch which passed near Uderolal, Nasarpur, Shaikh Bhirkio, Thari, Old Badin and Rahimki Bazar.

It swung westwards, taking the present course thus destroying the old irrigation system below Hala. At least one million acres must have gone out of cultivation bringing about economic chaos. Kalhoras do seem to have taken immediate steps but to revive the canals through almost half of the irrigated area which was deserted would take about 50 years. In the meantime, internal feuds held Kalhoras in their grip for the next 25 years, after which this dynasty was replaced by Talpurs.

The British historians seem to have had great regard for the canal management of Kalhoras and even as late as 1937 AD, Lambrick (Journal Sindh Historical Society, 1937) stated, that by 1930, within 87 years of their rule, the British had just achieved what Kalhoras had already done, by the mid 18th century.

By 1758 AD, even if Lambrick's figure of 30 lakh (3.0 million) irrigated acres is replaced by Chhablani's conservative estimate of 21 2.1 million acres.

Article from: Journal Sindhological Studies, Winter 1989, pp.60-69.