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Condition Survey Of Drainage Facilities In Kore Sector Of Kano River Irrigation Project (KRIP) Phase I, Kano State, Nigeria.

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ABSTRACT
A study was conducted during 2006/2007 irrigation season to assess the condition of drainage facilities of Kore sector in Kano River Irrigation Project (KRIP) phase I. A total of three hundred and seventy eight field drains and forty six collector drains in the sector were surveyed. The result shows that a total of two hundred and two (202) drains 53.44 % are not functioning (NF) as a result of blockage, cropping, water logging, weed infestation and merger with the rest of the farmland. The number of the drains functioning (F) stand at thirty (30) 7.94 % and one hundred and forty six (146) drains 38.62 % are out of operation because of non existence of irrigation activities due to lack of water reaching those areas which rendered the area to be completely transformed into rainy season farms a such these irrigation and drainage structures are not in place.
Key words: Sector, Field drain, Collector drain, Kano River Irrigation Project.

I. INTRODUCTION

Irrigation and drainage is an enterprise dating back to human civilization that requires constant but continuous assessment for it to be sustainable. It has been estimated that as little as 15-20% of the total land cultivated worldwide is irrigated which is contributing as much as 30 to 40% of gross agricultural output (FAO, 1993) However, about 40% or more of the applied water is wasted either through deep percolation or surface run off which in turn lead to waterlogging and increased soil salinity over time (FAO, 1993) which Arora (2007) attributed to over irrigation, high water table rise and poor water management, which consequently affect productivity and fertility of the agricultural land. The amount of water and land resources available for agriculture is limiting and with increasing demand for cities and industries in many developing countries it is rapidly shrinking (IWMI, 2004) perharps, efficient use of these scarce resources become necessary. One way of ensuring utilization of these resources is proper drainage of all irrigable land (Luthin, 1973). Drainage is the natural process that enable water to stabilise itself in position of minimum energy (Fagoyinbo and Abdulmumin, 1991), where there is an obstruction to the natural system the need for artificial drainage become necessary to remove such excess water which may be at the surface (surface drainage) or by lowering of the ground water level (sub surface drainage).

II. MATERIALS AND METHODS

Detail location of the study area.

Kano River Irrigation Project (KRIP) lies between longitude 8^o 30' E to 9^o 40'E and latitude 11^o 30'N to 12^o 03'N within the Sudan savannah zone of Nigeria (NEDECO, 1974). It has three distinct climatic seasons; warm rainy season June – September, cool dry season October – February and hot dry season March – May. Rainfall is highest in July and August with an average of 860 mm. Mean daily temperature ranges from 20^o to 38^o C with highest temperature in the month of May and Lowest in the month of January.

The project has a total of 38 sectors with Kore sector been the largest in the project area, having an area extent of 2,315.2 ha and is about 40 km away from Kano city along Kano – Zaria express ways. The sector receives water from Main canal (West Branch Canal, WBC) via Kore lateral canal (Kor. LC) and sub laterals (1SLC, 2SLC, 3SLC and 4SLC) lined canals with total length of 11,93m. The Kore distributary canals (DC) having total length of 26,976m takes water from this lines canals to irrigate the area through 204,046 m length of field channels (NECCO, 1981).

Network survey

The purpose of the survey was to assess and evaluate the current condition of field and collector drains network in the sector. The reconnaissance survey depends on the sector size, farmers' participation attitudes and its physical and management problems. The features observed and examined includes: blockage (B), cropping (C), silt deposition: moderately or heavily silted (HS or MS), waterlogging (WND), merger (ND), area with no irrigation activities (NIA) as result of no water reaching those areas and those area that are completely out of operation such that no irrigation

and drainage facilities are in-place which further led to categorization of the examined drains as

i. Functioning (F)
ii. Not functioning (NF}
iii. Out of operation (OP)

III. RESULT AND DISCUSSION

Collector and Field drains

The sector comprises of areas I to VI and the result of the survey shows that there exist three hundred and seventy eight blocks and forty six collector drains in the whole sector. Six collector drains were found to be obliterated as the area is completely transformed to rainy season farming area with little or no irrigation facilities. Moreover, the rest of collector drains were generally observed to be moderately to heavily silted with high degree of weed infestation, the impacts of which include changes in the carrying capacity, low flow velocity, stagnating water that consequently saturate the area by induced seepage a common phenomena in many sectors of the project (Othman et al, 2006). However, as for the field drains, two hundred and two (202) field drains that is 53.4 % are not functioning due to blockage, cropped, water logging, weed infestation and merger as presented in table 1 and figure 1 below. Thirty (30) field drains accounting to 8 % were found to be functioning with varying degree of silt deposit. Problems reported (Othman et al, 2006) to exist in Agalawa, Boko and Agolas sectors of the project. Whereas one hundred and forty six (146) field drains representing 38.6 % are out of operation as a result of absence of irrigation activities due to lack of water reaching those areas and this makes the farmers to tactically destroyed the field drains by expanding their farm sizes for rainy season cultivations. About ninety two percent of the drains are either out of operation or not functioning which indicate the poor condition of the drainage facilities and considering the size of the sector it means that so much water will be retained within the area during both seasons which will further deteriorate the situation. Moreover, considering the area out of operation (38.6 %) potential areas which will have engaged a lot of farmers are now out of production rendering farmers either jobless or forced them to exact more pressure on the available land. It is very important for the agency to rescheduled their water delivery system to cater for the affected areas (mostly at the tail end) to improve on the livelihood of the farmers and at the same time safeguard the conveyance and control structures in the area.

Table 1: Distribution of field drains status in Kore sector

Field drains	No of drains	Percentage %
Not functioning (NF)	202	53.4
Functioning (F)	30	8.0
Out of Operation (OP)	146	38.6
Total	378	100.0

IV. CONCLUSION

The situation in the sector revealed that the drains are generally in a state of bad conditions. It is therefore; very important to embark on rehabilitation work to save the irrigation project from further deterioration which may lead to environmental pollution, health hazard and land degradation through waterlogging and salinization which will make the project unproductive.

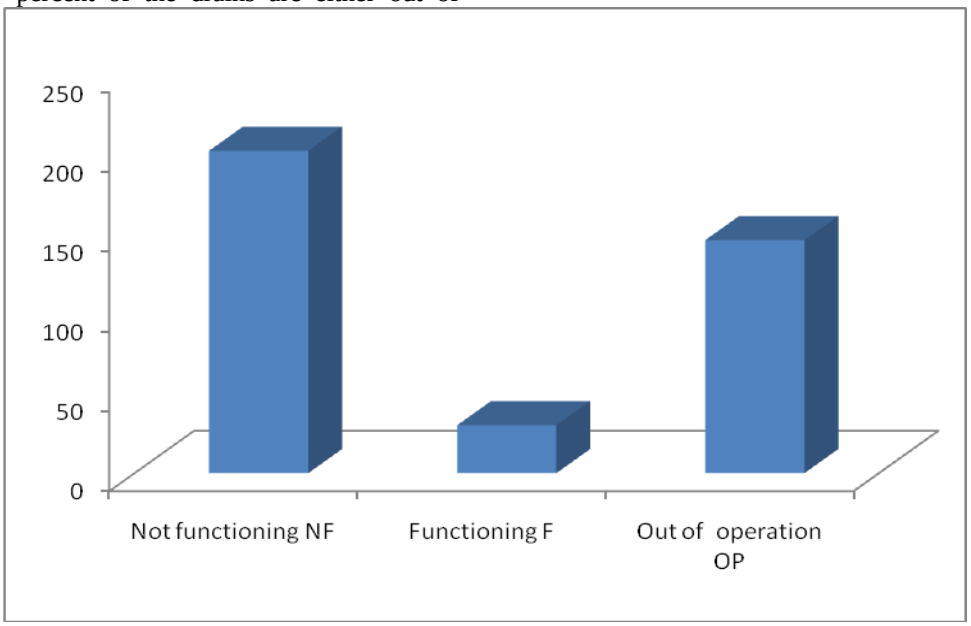

Figure 1: A bar chart showing field drains status in Kore sector.

Status	Quantity	Percent	Remark
Blocked (B)	43.0	11.38	NF
Cropped (C)	18.0	4.76	NF
Blocked and cropped (BC)	28.0	7.41	NF
No drain ND merged	86.0	22.75	NF
No Drain ND Waterlogged	27.0	7.14	NF
Moderately silted MS	16.0	4.23	F
Heavily silted HS	14.0	3.70	F
Out of operation (OP)	68.0	17 .99	OP
No irrigation activities (NIA)	78.0	20.63	OP
Total	**378.0**	**100.00**	

Table 2: Showing detail drains condition of Kore sector

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