The Effect of Drought in the North Eastern State

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Introduction

WATER is responsible for the very existence of all living creatures and vegetation. An animal can lose all its fat, and over half of its protein and live, but a loss of a tenth of its water could result in death. So water is life and without it no life.

We are now discussing drought which is an abnormal shortage of water, a condition quite distinct from aridity. It is important, therefore to distinguish between these two phenomena.

Strictly speaking drought can only occur in areas which normally receive adequate rainfall, capable of sustaining established agricultural practices. When such areas suffer from shortage or abnormal distribution of rains, resulting in partial or total crop failure, the condition is described as a drought condition. Whereas an arid area is an area normally characterised by scanty erratic rainfall, incapable of sustaining established agricultural practices, but could support a pastoral economy.

The so-called drought-affected area in the North Eastern State is a transitional area lying between the Sahara Desert with its scanty rainfall, and the tropics with high humidity. It comprises the arid Sahelian Zone along the northern boundary with Niger Republic and the semi arid zone further south, bordering the tropical region. It is more than 340km wide.

Examination of the rainfall records in this area for many years shows that

the rainfall is cyclical, and at present we are at the lowest point of the cycle, hence the drought condition which caused much suffering to both man and beast. It is most likely, however, that the rainfall will readjust to the normal mean average within the next few years or so (Figure 1).

The level of Lake Chad has been abnormally low since 1972. Although the Lake does not depend on local rains for its re-charge, yet its lowest level for several years has coincided with the drought, making a bad situation much worse. Many Hippos were reported to have died by sticking in the mud.

Also River Ebeji and River Yobe did not flow for two seasons 1972/73 and 1973/74. This resulted in complete failure to the pilot experimental irrigation schemes at Ngala and Yau respectively.

Maiduguri rainfall for the past 42 years, 1930-1972 has been very erratic (Figure 2). This fact should be noted when planning for proper land utilization so that only land use capable of survival under the lowest rainfall conditions should be allowed, particularly in the arid zone.

According to Winstanley, 1973, the isohyets moved southwards at the rate of 8 km per year between 1960 and 1970, compared with the much lower rate of 0.8 km per year during the period 1926-1961. This is very serious, as it indicates that the Sahara desert is moving southwards.

FIG 1. ANNUAL RAINFALL IN SOME PARTS OF NORTHERN NIGERIA: FIVE-YEAR RUNNING MEAN (1905-1970) FOR KANO, SOMOTO, MAIDUGURI, NIAMEY, ZINDER, SEGOU, MARADI AND FORT LAMY (FROM JENKINSON A.F. 1973).

FIG 2. ANNUAL RAINFALL AS PERCENTAGES OF MEAN FOR MAIDUGURI (1931-1973) AND YAU (1961-1972)

Moreover, man activities in this area have contributed greatly to the encroachment of the desert. These involve indiscriminate cutting of plants for fire wood and building poles, destruction of vegetation by bush fires which retard plant growth and destroy any possible regeneration of perennial species, and overgrazing by livestock, particularly goats. If these activities are not controlled serious consequences are to be expected.

This reminds me of a famous saying that goes: "A nation deprived of its liberty may win it, a nation divided may unite, but a nation whose natural resources are destroyed must inevitably pay the penalty of poverty, degradation and decay".

THE LOCATION OF THE DROUGHT AFFECTED REGION IN THE NORTH EASTERN STATE

The drought affected area in North Eastern State comprises the whole of Bornu Province, and the northern parts of Bauchi, Sardauna and Adamawa Provinces, about 98,600 km². An area immediately south of this about 77,600 km² is indirectly affected due to the great pressure exerted on it by vast migration of herds and people from the North. Therefore one can safely say that about two third of the state is directly or indirectly affected by the drought.

It is necessary however, to divide the drought affected area into 3 Zones, depending on the severity of the drought conditions.

The Disaster Zone, North of latitude 12° 30' comprising an area of 71,600 km², has a human population of 1,944,172, and livestock population of 2,000,000 *animal units*.

In this zone the rains come during July and August, but they are erratic

and scarce and they hardly continue for more than one month particularly in the North Eastern corner of the zone. The animal population appears to be high in this zone, but most of them migrate southwards early in the dry season on account of the very limited amounts of fodder and water resources. Overgrazing is a common feature in this zone, but it was at its worst in 1972/73 Season. The natural grasses are generally annual grasses, of rather poor quality, and they are available only during a short period. In 1972/73 crop failure was 80 to 100% in this zone, including fodder.

The Severely Affected Zone, lies between 11° and 12° 30' parallels, comprising an area of 57,000 km² with a human population of 1,794,525, and a Livestock Population of 1,000,000 *animal units*.

The majority of the people in this zone are sedentary farmers, but the crops they can grow are limited, namely guinea corn and millet, and the rest of the people are groziers who migrate with the herds southwards. Even most of the farmers keep livestock. The fodder in the ranges of this zone is normally adequate, but unfortunately a large part of it is destroyed by bush fires every year.

Because of uneven distribution of water, many areas in this zone are severely overgrazed, due to the concentration of stocks near the watering points. The situation here was made worse by the influx of herds from Niger Republic.

The rainfall in this zone is generally adequate, but in 1972 it was low. Nevertheless, our survey showed that even in a bad year like 1972 many grazing areas could not be fully utilized on account of lack of drinking water for livestock. Such areas are now earmarked for water development. In this zone crop failure

in 1972/3 was ranging from 20% to 60% including fodder.

The Vulnerable Zone lies between 9° and 11° parallel, comprising an area of 77,600 km², with a human population of 3,795,266. The Livestock population cannot be determined because of the continuous movement of herds into and out of this area. However, permanent animal population in this zone is about one million animal units, but it is estimated that during the dry season the zone carries more than 2,000,000 animal units.

The rainfall in this zone is always good, and it was not directly affected by the drought, but most of the livestock from the other two zones and also from Niger Republic migrated there, taxing the pastures very heavily-especially near watering points.

Many localities of this zone cannot be fully utilized during the dry season due to lack of water. For this reason indications of over-grazing are noticable in certain areas with abundant water supply, while other areas with no water in the dry season, look intact, being luxuriously covered with vegetation. *Here again bush fires, which are usually started by bush meat hunters, cause enormous losses of valuable fodder annually.*

Intensification of water development and proper management of ranges are needed in this zone, which is of great importance as a grazing resort for livestock from the north during the dry season, especially in bad years.

Losses due to drought

Livestock Losses. It was rather difficult to estimate losses in livestock as many died or were slaughtered in the bush. For cattle, however, the losses were estimated at about 400,000, including about 120,000 head emergency slaugh-

tered, valued at ₦12,000,000. This represents about 20% of the cattle population in the area affected with drought. These losses also include cattle which migrated from Niger, the number of which cannot be determined, but it is likely that most of these cattle slaughtered for salvage, if not all of them, came from Niger.

Losses in Food Crops. The main food crops grown in the drought area are Guinea Corn and Millet. The average annual production of these in the drought area is about 2,351,000 tons. As it was mentioned above, losses due to drought in 1972/73 ranged from 20% to 100% with an average of 50% total loss due to drought i.e. 1,175,500 tons, valued at ₦82,250,000 (₦70 per ton)-See Annex III.

In many localities in Bornu Province, there was acute grain shortage in 1972/73, and when some grain could be found, the prices were two high-10-16 Naira per bag. For this reason the Government had to come into active drought relief operations, making grain available in those reas.

Measures taken by the Government

The Government has set up a high powered Drought Relief Committee to deal with the immediate problem of drought. The activities of this Committee have been directed mainly towards the distribution of grain for human consumption in the affected areas, provision of water in the form of dug wells, boreholes, dams, tapkis, and the distribution of supplementary feeds to the livestock owners in the affected areas. About 28,000 tons of food stuffs, mainly grain were distributed from April 1973 to January 1974. Likewise the supplementary feeding programme for livestock was

intensified and during the dry season of 1972/73 (October 1972 to July 1973) more than 8,000 tons i.e. 160,000 bags of feed were distributed to livestock owners in the affected areas, at a nominal price of 30k per bag.

The high powered Committee has set up a Technical Committee to study the situation and formulate long term measures for dealing with such drought conditions in the future. The Technical Committee is still sitting, and it is hoped that its report will be out in the very near future.

Recommendations

Since it is evidently clear that the rainfall in the drought affected area is cyclical, and therefore a similar drought condition may be faced within a span of time, it is essential to plan for certain long term measures which would help to alleviate the effect of such a drought condition in

future.

The losses caused by the drought, particularly in livestock were very serious indeed, and we have to take all possible measures so that similar losses should not occur again. Therefore the following measures are recommended:

1. The creation of as many reserves as possible, i.e. grazing reserves forest reserves and game reserves (Tables 2 and 4).
2. Intensify the Water Development Programme in the Grazing Reserves and in certain grazing areas (Table 1).
3. Improve pastures and properly control and manage the ranges, by reseedling, deferred grazing etc.
4. Control bush fires by fire traces and mounted guards.
5. Introduce quick-maturing varieties of grains into the drought areas

Table 1 Present and proposed water supplies

Present Source of Water supply

Boreholes				256
Dams/Tapkis	...	...	...	100
Wells	...	...	...	36
Total Water points				392

Proposals for Expansion (for Livestock) in Grazing areas

Province	Division	No. of Bore holes	Additional Wells	Dams
Bauchi	Bauchi	8	8	20
	Gombe	12	12	25
	Misau	8	8	7
	Ningi	9	9	8
	Katagun	14	14	26
	Jama'are	9	9	14
Borno	Borno	14	6	17
	Biu	20	6	18
	Fika	20	8	15
	Bedde	11	5	15
	Kikwa	10	5	15
Sardauna	Gwoza	15	10	10
	Total	150	100	200

1. The distribution for the Divisions is judged on the type of water development that best suits a particular locality.
2. Boreholes in Bauchi and Sardauna Province may require some geological information being sunk.

Table 2 Total number of Grazing Reserves and Areas by Division

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<i>Province</i>	<i>Division</i>	<i>Number of Grazing Reserves</i>	<i>Total Area Sq. miles</i>	<i>New Pro- posals</i>
Borno	Borno	15	487.79	16
	Biu	8	472.87	4
	Bama	9	46.68	21
	Fika	9	191.85	3
	Total	42	1,509.19	44
Bauchi	Bauchi	5	336.98	4
	Gombe	9	362.00	5
	Katagum	5	132.87	16
	T/Waja	3	29.12	8
	Ningi	1	4.00	4
	Jama'are	1	17.00	3
	Misau	2	11.04	6
	Total	26	893.01	46
Adamawa	Adamawa	8	783.44	10
	Numan	3	194.00	5
	Muri	3	101.50	5
	Total	14	1,078.94	20
Sardauna	Mubi	7	75.30	5
	Gwoza	7	120.96	10
	Ganye	4	73.64	5
	Total	20	269.90	20
	Grand Total	102	3,744.04	130

Table 3 Annual Average food Crop Yields

<i>Local Authority</i>	<i>Total area (sq. miles)</i>	<i>Area under food crops (acres)</i>	<i>Estimated yields (tons.)</i>
Adamawa	8,723	857,280	277,184
Bauchi	14,516	1,299,860	539,958
Bedde	2,000	248,000	74,400
Biu	2,900	359,600	107,880
Borno	32,005	3,968,620	1,190,586
Dikwa	4,220	523,280	156,978
Fika	1,669	207,080	62,124
Gombe	4,481	554,280	166,184
Gwoza	1,000	124,000	37,200
Jama'are	149	18,600	5,580
Katagum	5,000	620,000	186,000
Misau	890	111,600	33,480
Mubi	1,600	198,400	59,520
Ningi	1,000	124,000	37,200
Total	80,053		2,352,988

Table 4. Areas of Forest and Porposed Forest reserves in Drought-affected areas of North Eastern State, Nigeria (Square miles)

<i>Province and local Authority</i>	<i>Area</i> 1	<i>Forest Reserve</i> 2	<i>% of Area</i> 3	<i>Proposed Forest Reserve</i> 4	<i>% of Area</i> 5
A. Borno Prov.					
1. Borno L.A.	32,005	2,261.0	7.1	551.0	1.7
2. Bedde „	2,000	77.5	3.9	54.0	2.7
3. Fika „	1,669	128.3	7.7	—	—
4. Dikwa „	4,220	49.4	1.2	—	—
5. Biu Div. L.A.	2,198	189.4	8.6	—	—
Total	42,092	2,705.6	6.4	605.0	1.4
B. Sardauna Prov.					
1. Gwoza L.A.	1,000	63.0	6.3	—	—
2. Muhi Kiv. L.A.	1,076	—	—	5.0	0.5
Total	2,076	63.0	3.0	5.0	0.5
C. Bauchi Prov.					
1. Ningi L.A.	1,000	93.0	9.3	52.6	2.3
2. Katagum Div.	5,000	215.4	4.3	26.3	.5
3. Misau L.A.	890	39.1	4.4	—	—
4. Jama'are	149	0.7	.45	—	—
Total	7,039	348.2	4.9	78.9	1.1
Totals	51,207	3,116.8	6.1	688.9	1.3

6. Intensify large scale mechanised food crops production south of the drought area where rainfall is reliable.
7. Introduce cattle farming where suitable, particularly in the southern regions of the State.
8. Create grain storage facilities in strategic points throughout the state, where grain reserves are purchased and stored annually by the Government for emergency situations of this nature, and for price stabilisation of grain.
9. Mechanise fodder conservation (cutting and baling) early in the dry season for use later in the dry season.
10. Intensify reforestation aimed at checking desert encroachment, production of fuel wood, production of poles for construction, shelter belts etc.
11. Prohibit cutting fodder trees such as Gawo (*Acacia Albida*), and establish a joint Forest-Range Management Programme for propagation of fodder plants and trees in the area.
12. Introduce improved agricultural and soil conservation techniques
13. Intensify extension work to educate the local people in the proper management of their environment
14. Stimulate conservation of rain water for crop and pasture irrigation where feasible.
15. Construct dams in certain suitable rivers for irrigation purposes, etc.

16. Create a high-powered Land Utilization Board, to make sure that land is properly utilized for the purpose it is most suited for
17. Establish Meteorological Stations in all districts for proper data collection.

In planning a general economic development for the drought-affected area, the disaster area comes out as a very critical zone. This area is suited for livestock development during the wet season only, although in some particular cases 1 or 2 more months can be added. Very few agricultural crops can be successfully grown because of scarcity of rains and limited number of growing days. While raising livestock is the most suitable and desirable business in the area, an increase

in the number of animals will bring about more ecological problems, and hence the need to migrate in mass to the south during the season.

Therefore, it is recommended that the livestock development programme should be well planned and controlled as to reduce the number of migrating animals and to attach the cattle farmers and the herdsmen to the land, by providing them with watering facilities, fodder and suitable crop seeds.

REFERENCES

1. Reports from various Technicians of the Ministry of Natural Resources, North Eastern State, Maiduguri-Nigeria.
2. WINSTANLEY D. 1973, Paper on Drought in the Sahel Zone.