

Drought conditions and management strategies in Yemen

By:

Dr. A. M. AL-SHARJABI¹ and Dr. M. A. ALSAGHIR²

¹ Ministry of Agriculture & Irrigation

Sana'a

Yemen

Email: <amaash@yahoo.com>

² Mansour A. ALSaghir

Agricultural Research and Extension authority

Dhamar, Yemen

Background

Yemen is an Asian country that has an area 527,970 km² and occupies the southwestern corner of the Arabian Peninsula between 12° and 18° latitudes and 43° and 53° longitudes. The climate of Yemen generally ranges from sub-humid to hyper arid. About 90% of the country has an arid to hyper-arid climate but Yemen's highlands have a generally mild temperate climate.

Two seasons of rainfall can be observed in Yemen, viz a viz, March-May and July-Sep. The coastal areas have arid tropical climate with low and irregular amount of precipitation that ranges between 50 - 300 mm annually. The highlands receive the great amount of rainfall usually between 400-800 mm. Records report that the eastern desert plain receives less than 50mm of rainfall per annum.

Many definitions and classification are reported in the relevant records and literature, however, as considerable part of Yemen receive significant rainfall the appropriate drought classification that suites Yemen is the Meteorological drought. This type of drought is defined as precipitation's departure from normal over some period of time. Yemen witnesses a Meteorological drought cycle every 10 – 15 years with 2-3 years of duration for each episode. However, the magnitude and impacts, due to different reasons, are rarely documented or draw public and government authorities' attention compared to the attention given to the magnitude and impact of the floods. The impact of drought directly hit the rain fed agriculture which constitutes around 60% of the total cultivable lands (47% rain fed, 17% run off and 3% irrigated through check dams and small dams). This means that the impacts of drought affect Almost 65% of the population who are living in the hilly areas and valleys and depend mainly on rain fed agriculture. In addition to agriculture and farmers the drought impact will affect the ranges and Yemen's herders who possess 1.3 millions of livestock heads. The urban population hardly notices the impact of drought except through the rise in the prices of rain fed agricultural products who drought impact affect the

Drought monitoring and early warning systems

There are many government bodies who are interested and monitoring the hydro climate data. However, none of these bodies has ear marked drought monitoring data. Nevertheless, information concerning drought monitoring would be inferred from the available data as a secondary data resource.

There are three major authorities who have monitoring agro-climate and hydro climate stations in many governorates. These are: National Water Resources Authority (NWRA) that has 76 stations for climate data, rain fall and surface running data. The second is the Civil Aviation & Meteorological Authority (CAMA) has 16 stations dealing with climate data. Agencies interested in to agro-climate data would include Tiham Development Authority (TDA) that has 65 stations in three governorates. The Agricultural Research and Extension Authority (AREA) has three stations for climate data. In addition, there are other authorities who are mainly concern with the surface running and groundwater and include: National Water & Sewage Authority (NWSA),

National Irrigation Programme (NIP) and Wadi Hadramout Agricultural Development Project (WHADP).

There are no records highlighting or monitoring the soil state, physical or chemical characteristics with respect to the drought phenomenon in Yemen. The same could be said for the socioeconomics indicators. However, this can be referred to prejudices rather than negligence or awareness.

The main body that is supposed to take the role of hub of climate information does not have stations covering all governorates. This situation has initiated and obliged the respective organizations to cooperate at the minimum level, mainly depending on personal contact. However, though networking is of utmost importance in drought monitoring, it is hard to pin point to formal networking between the working organizations and also far to achieve in the proximate future.

The need for capacity building is required at all level and in all meteorological and agro-climate working organizations at least to update technicians with the recent development in the drought issue. This could only be achieved through regional and international workshops and conferences. But with the current tight budget deficit and obstacles placed in the abroad participation way, in form of regulations, very little is expected from the government side.

Vulnerability assessment

According to the drought definition by UNCCD that considers drought as a naturally-occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems, many sectors are directly or indirectly will be feeling the impact of drought (Anon, 2004).

In Yemen, the sector that will directly be affected by the drought incidence is the agricultural sector. More specifically, the farmers who are depending on rain fed agriculture for their farming activities would be most the affected group by the drought. The situation will exacerbate if the drought occurs after the farmers prepare their lands and invest their saving waiting for rain that would not come. As almost all farmers in rain fed agricultural areas are considered as subsistence farmers, the loss of one season crop will mean that these farmers will have to find another job opportunity and may be forced to relocate.

The farmers' livestock would also be affected by the drought as they would not find enough fodder or drinking water. This will have its bearings on the dairy and non-dairy production reducing the already little farmer income.

The groundwater resource, which is the main water resource for people in Yemen, will be affected by the drought and balance between charging and discharging the ground water will be disturbed.

In addition to the above main two sectors, the third sector that will be affected by the drought are the honey bee keeping farmers. Honey bee production provide good return

for more than 16,500 farmers. According to the Ministry of Agriculture and Irrigation reports the honey bee production reported as 2600 tonnes. The Yemeni honey bee has an excellent reputation and the average price for the one kilo of Yemeni honey bee approach US\$100.

The effect of drought will indirectly hit the society specially women and children. The distance travelled by rural women to collect water during the drought term will be doubled or four folded. Children in general, but specifically girls, will be forced to leave school and help their mothers for bringing water for house consumption. This will not help the government activities in fighting illiteracy among rural people specially the females that have more than 65% of illiteracy.

Finally, although local crop production covers minute portion of the society need, any reduction in this amount will increase spending of foreign currencies and increase food security gap.

Emergency relief and drought response

There are no documents or cases where the government has provided assistance during drought emergency incidence. The government has not been exposed to drought relief and responses but if this happens no one is expecting generous assistance from the government. The government budget is already under the burden of taking care of the displaced communities due to the terrorism activities and some communities find shelters in some of the government schools and buildings. During previous floods war displacement disasters, there was no food assistance managed by the government. However, local charities, NGOs and the international organizations like IRC, CARE, OXFAM and UN agencies were and still are the major providers of tents shelters, health and education services.

The beneficiaries mainly are women, children, elderly and those who could not find supporting relatives or chances to move to nearby safe places. No criteria for selection but usually in the first comes first serve principle.

In the absence of drought relief cases in the country it is hard to estimate the cost of drought related relief activities and evaluating the impact of the drought, either. However, the costs of the relief and drought impacts in Somalia or Ethiopia would very good proxies for such.

Practices to alleviate drought impacts

Historically Yemeni farmers have realised that their water resources should be well managed to maximize the benefit and minimize the loss. The terrace system, canal and small dams are examples of rainfall harvesting and water conservation measures.

The government practices can be reflected through the steps taken in adopting drought early warning system (DEWS). Even though this step is at early stage with no real impacts felt so far, but it is a step in the right path.

AREA, as a government authority, persistently encourages its researchers to test and breed crop species that are fast growing, early maturing and drought resistant. Similar

activity is carried by agricultural faculties in highlighting drought, better management of soil and water resources. The Ministry of Agriculture & Irrigation as well as the Ministry of Water & Environment work in promoting modern irrigation system that increase the efficiency of the irrigation water and reduce irrigation water consumption. Almost there are no NGOs that work in drought precautionary measures like raising awareness or providing training session for technicians or farmers in rural areas. However, during different hazards, including drought, these NGOs become very active in raising fund and provide relief assistance to affected communities.

The need for knowledge and skills on drought management

The first step to deal with drought and reduce its impact is to understand the drought issue and learn from others who have experienced similar situation. With a quick surveillance over the countries that are adversely hit by the drought incidence, one will discover that these countries are missing much potential, the most important of them is knowledge. Knowledge about the drought incidence, magnitude and cycle will be obtained from researches and exchanging information among different stakeholders. In case of Yemen, the country is missing this drought think tank body. The current institutions only deal with reporting and documenting circumstances and impacts. Though such efforts are valuable but have less impact on resolving the problem of drought.

The international organizations have big role to play in harmonizing the regional isolated activities and facilitate the exchange of information. At the country level, technicians and professional require periodical training and development. Farmers and local rural communities should also be trained in issues related to drought management. Last but not least, the different authorities dealing with the drought issue should change the prevailing competing principle to the team working principle. As such, better result will be achieved and available resource will efficiently be used.

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