Regional Workshop : Capacity Development to Support National Drought Management Policies

NENA Region Sudan Presentation



The country

Sudan located in North Eastern Africa, The Republic of Sudan (RoS) is bounded by Egypt, the red sea, Eretria, Ethiopia, Republic of South Sudan (RSS), Central Africa, Chad and Libya. The total area is 1,882,00 Km.

The population number was estimated 30.9 million





Irrigated schemes (Gazira)



• Rain fed mechanized agricultural sector





Traditional Rain – fed Sector



- Rangelands Resource
- With reference to Sudan Land Cover Classes (FAO 2012), rangelands covered an estimated area of more than 48,2 million hectare (25.7% of total country area). • The rangelands of importance to traditional livestock raising are confined to the arid zones.

Livestock Resources

• Sudan is endowed with large and diverse wealth of domesticated livestock species, which include cattle, sheep, goats and camels is estimated in 2013 at 105.3 million (Cattle, sheep, goat and camel) head 3.8 million is equine (Donkey &horses) and 36 million head poultry.

• <u>Drought:</u>

- The important disaster that threatens Sudan is drought. The total area considered drought prone is about 69 000 sq Km and this area produces 90% of the cultivated food crops and 85% fire wood.
- Severe droughts affecting the country were in 1886, 1967-1973, and 1980-1984. Successive years of drought in certain parts of the country in 1985-1993 caused severe shortage of food, social disruption and widespread health and nutritional problems.
- In the 1984 drought 8.5 million people were affected and 7.8 million livestock were lost.



<u>Drought:</u>

- Effect of drought in Sudan differs in different parts of the country:
 - Widespread at the western part
 - Moderate at the eastern and southern part
 - Lesser at central part
- Drought affects mainly human and livestock causing feed and water shortages and displacement.
- Human and livestock displacement sometimes causing tribal conflicts.
- During this season wide spread drought was recorded in western Sudan and to lesser extent in southern Sudan

Drought impacts on livestock

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Desert creeping to the Nile





Agriculture Adaptation & Mitigation

- The main impacts of the drought take place in the traditional rain fed sector, this sector provides:
- 1-90 % staple food (sorghum millet).
- 2- Employs 66 % of the total population.
- Predominant production system:
- * Western Sudan.
- * Over fast areas in Blue Nile, White Nile, Kassala and Red sea areas.
- * More than 75% of the population in these areas
- depends on traditional as a main source of income and food.

Agriculture Adaptation & Mitigation

- The traditional farming system features:
- 1- small size of holding (5 20) feddans.
- 2- farming operation are entirely manual family labour using traditional hand tools.
- 3- little or no external inputs are used.
- 4- farming have limited resources and poor access to market, credit and improved production technologies.
- 5- farming is cured out under risky environmental conditions.
- 6 low agriculture inputs.

Crops in traditional rain fed sector



Production in Agri. Traditional rain fed sector



Agriculture Adaptation & Mitigation

- **Physical conditions:**
- * Agro ecological zones extending from semi arid in the north sub – humid and humid in the south.
- * The semi arid zone covers the largest part.
 *the average annual rainfall varies from less than
 150 mm in the northern border of western Sudan to more than 1000 mm in the southern regions.
 - * entirely dependent on natural rain fall water which the most critical factor to the crop production.

Drought impacts on agriculture The most important current and potential Drought impacts are:

- 1- reduction in the length growing season and period of crop growth.
- 2- reduced agricultural productivity.
- 3- Changes in distribution and incidence of insects, diseases and weeds.
- 4- Accelerated land degradation (declined soil fertility and soil erosion).
- 5- Increased likelihood of crop failure and increase in the diseases mortality of livestock.

 The research strategy should be oriented to develop: Shorten and medium – term strategy: to cope with current climate variability as essential first step to adapted to future climate change.

Adaptation & Mitigation

- 1- Crop varieties adapted with the local conditions:
- * Early maturity.
- * Constant productivity.
- * Adapted with the shorten of rain fall season.
- * Resistant to the pests and insects.

Three local groundnut adapted species; Sodary, Waed and Gibash



Adaptation & Mitigation

 2- Water harvesting crops in both micro and macro level in order to suitable water conservation and using.

Water harvest techniques





Water Harvest



Adaptation & Mitigation

- Promising Technology:
- Seeding Priming and micro dose of Fertilizer.
- A- Seed Priming:
- Seeds should be priming for a period about 8 hours, a little drying and treated against pests before seeding.
- Priming in water accelerate the germination giving a strong plant.
- Priming in water for along time resulting loose the plant.

Adaptation & Mitigation

- B Adding a micro dose of Fertilizer. (NPK)
- * Adding a micro dose of fertilizer (less than gram) in with the seeds in planting lead to increase in the productivity.
- * Methods & quantity of adding fertilizer very simple ,low cost and without hazard.
- Raised the resistance of the plant against environments stress.

Sorghum (yrosha) treated (Priming + Fertilize)





Adaptation & Mitigation

- 3- Intercropping:
- To growing to types of crop in the same area utilize deferens levels of soil and air vegetation e.g. (legume with sorghums).
- 4- Agro forestry:
- Combining Acacia Senegal with filed crop.

Intercropping; Sorghum + Groundnut



Intercropping Agro forestry; Sesame + Acacia (Arabic gum trees)



Indigenous Knowledge

Storage water in trees



Reserving rain water



Indigenous knowledge to resist desert creep



Micro water harvest



Small scale water harvest (Sherrak)



Harvest Arabic gum after harvesting crop season



