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Collection and Protection of Water in Desert Areas and Ways to Prevent Its Progress

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ABSTRACT

This article summaries the effects of water resource advance on the natural science of the arid zones Such hydrological variations caused of a obvious degradation of the situation, secondary salinization and desertification of terrestrial in the whole of basin Such deviations are principally attributable to the waste of water resources The main approaches mandatory to steady the environment and preserve maintainable progress of these basins, include general scheduling, which takes into attention to the benefits of the superior, central and minor scopes, rational spreading and use of water resources, and organization of relations between financial progress and safety of the environment.While climate change occurs over time and place. The global climate image stagnated over the last 2000 years. Therefore, the current desirability phenomenon should be attributed to human intervention and the application of new technology, not to drought. Although this is not the reason why the long-term drought has not accelerated desertification.

Problems caused by mismanagement of water resources in different land testing systems can be solved by appropriately using appropriate water-proofing techniques, water conservation, the use of advanced irrigation solutions, salt control, runoff management and flood control. Made

Each of the classified techniques can increase productivity and may stop desertification or change its processes and ultimately lead to degradation. These techniques can be used in seven earth systems.

In general, the majority of water resource management techniques mentioned in this article have a light desertification potential. Watershed conservation, desalination and drainage control and agriculture are exceptionally runoff and have a moderate to high potential for land degradation. Most of the techniques used in centralized or semi-centralized utilization systems are good start ups and high returns, and their costs are modest to high

Keywords: *Water Extraction, Desertification, Water Conservation, Water Resources Management, Degradation; Drylands; Land degradation; Sustainable land management; combat desertification*

INTRODUCTION

Poor ecosystems are dry, semi-arid and sometimes semi-humid under the pressure of human activity. This phenomenon reduces plant production, changes in risks, accelerates the degradation and increase biomass for human habitation. In a word, desertification can be the result of improper use of land and eventually desert the region.

The role played by the application of new technology has, on the one hand, been effective in reducing the depth of desertification, and on the other hand it has accelerated, which needs a balance in assessing the impact of technology on combating desertification. The low soil formation rate and high penetrability of carbonate rocks make a breakable and defenseless environment that is susceptible to deforestation and soil erosion.

In this article, technology is referring to human innovations. It is simple to use such circular gravel systems in artificial and complex rangelands, such as the use of advanced irrigation techniques. Simple methods are not necessarily the same as traditional or elementary methods. Technology can sometimes be inappropriate in some cases, and somewhere else. Maintainable use of cultivated desert soils is essential for agricultural output in desert ecosystems. But, how soil macrospore features may change as a consequence of agricultural exploitation remains indistinct.

Water reuse can be the biggest drop in pressure on water resources. The wastewater can be used for irrigation, industry and even for artificially feeding groundwater table. Long time wastewater irrigation enlarged salts, organic matter and plant nutrients in the soil.

Degradation methods for agricultural purposes are expensive, but can be used for drinking and sanitary purposes. In the future, through the construction of very large power plants, nuclear power can be used to sweeten the water. Apprehending the reasonable distribution of resources is possible to resolve the twin problems of resources and environment.

Sediment control methods, reduction of infiltration losses, evaporation prevention and water transfer system development techniques are other methods of water resources management. Underground water extraction requires knowledge of the capacity of aquifer discharge and demand. It is necessary to stop utilization of groundwater resources to prevent desertification. Soil erosion is frequently regarded as one of the main methods of desertification. This has led to the use of numerous desertification indicators that are related to soil erosion. Most of these indicators focus, however, on minor spatial units, while tiny consideration has been given to the quantity of sediment exported at the catchment scale. Such a minor spatial unit method neglects the transfer of sediment through catchments in addition to the scale-dependency of erosion methods. Furthermore, this method does not consider vital off-site effects of soil erosion, such as sediment deposition in reservoirs, flooding besides ecological effects.

Due to low rainfall with irregular distribution of time and place in arid areas. The need to build small water storage facilities is felt for human and animal consumption. Development of water supply centers after rangelands can help to produce rangeland coatings.

The best method of irrigation is the method that incorporates the highest yield of the product with the least amount of water and, in addition, does not damage the soil structure.

The use of saline water has limitations, including the relationship between saline water and plant physiological stress in different irrigation, fertility, soil conditioning, and leaching, hormonal, physical and chemical behaviors. One of the effective methods for controlling desertification is runoff management. This runoff for rainfed farming, pastures and forests can be used.

Flood control buildings are either essential or non-structural (or both) to reduce flood damage. Throughout the world, numerous millions of small ponds exist for water supply, irrigation, flood control or to control water quality downstream. The diminished flow velocity in these ponds reasons for sedimentation of transported elements.

Subsequent sections of the paper used water techniques, their exploration and explanation, potentialization, cost, land allocation system, type of operation system, and the degree of its technology.

There are several methods available in relation to water, and the characteristics and the relation of these techniques are mentioned in the table below.

TYPES OF METHODS

Water Supply

Degree of Technology	Cost	Operation System	Desertification Potential	Land Acquisition System	Method
Simple to complex	Low to high	Semi-focused to centralized	medium	Land revitalization - Land agriculture	Vertical wells
Medium to Complex	medium	Semi centralized	Light	Land revitalization - Land agriculture	Horizontal wells

medium	medium	Semi centralized	Light	Land revitalization - Land agriculture	Qanats
medium	Low	Semi centralized	Light	Land revitalization - Land agriculture	Springs
medium	Low	Wide	medium	Rangeland - Land Reclamation - Aquaculture	The wind force for pumping
Complicated	Much	Centralized	No	Land revitalization - Land agriculture	Dictation
Advanced and complex	medium	Centralized	No	Land revitalization - Land agriculture	Reuse of water
Simple	Low	Comprehensive and extensive	No	Land Reclamation	Solar distillation
Simple	Low	Semi centralized	No	Land Reclamation	Collect water from the back surface
Simple to complex	medium	Semi centralized	No	Land Reclamation	Collecting fog

Degree of Technology	**Cost**	**Performance-Based System**	**Desertification Potential**	**Land Survey System**	**Method**	**Row**
Medium to Complex	medium	Semi centralized	No	Water cultivation, Drought farming, Land reclamation, Range pasture, Forestry	Feeding groundwater	1
Stash						2
Simple	Low	Semi centralized	No	Renewal of lands	Natural water cisterns	2-1
medium	medium	Semi centralized	No	Renewal of lands	Ponders of rain filled with sand	2-2
Medium to Complex	Top	Centralized	No	Pastures	Collect rainwater	2-3
Medium to Complex	Low to high	Centralized	Much	Renewal of lands	Management and equipment for drinking water centers	2-4
Medium to Complex	Much	Semi centralized	Light	watery Agriculture	Reducing Damage Caused by Water Infiltration in Crop Areas	3

Irrigation Methods

Degree of Technology	**Cost**	**Performance-Based System**	**Desertification Potential**	**Land Survey System**	**Method**	**Row**
					Surface irrigation	1
Simple	Low	Semi centralized	Light	Water Farming	Intense flooding	1-1
Simple	Low	Semi centralized	Light	Water Farming	Gully landslides	2-1
Simple	Low	Semi centralized	Light	Water Farming	Strip method	3-1
Simple	Low	Semi centralized	Light	Water Farming	Pond method	4-1
Simple	mediu m	Semi centralized	Light	Water Farming	Primary irrigation	2
Simple	Low	Semi centralized	Light	Water Farming	Irrigation gutter	3
Simple	Low	Semi centralized	Light	Water Farming	Swirling method	4
Medium to Complex	Low	Centralized	Light	Water Farming	Sprinkler irrigation	5
Complicated	Top	Centralized	medium	Water Farming	Drip irrigation	6
Complicated	Much	Semi centralized	Much	Water Farming	Underground irrigation	7
Simple	Low	Centralized	No	Water Farming	Watering the jars	8

Runoff Management

Degree of Technology	Cost	Performance-Based System	Desertification Potential	Land Survey System	Method	Row
Simple to complex	Low	Semi centralized	medium	Dry farming	Farming with runoff	1
Simple to complex	Medium to high	Semi centralized	Light	Dry farming	Watershed management by building stacks, grooves and storage tanks	2
Simple to complex	Medium to high	Semi centralized	Light	Drought farming - Ranges - Forests	Water distribution	3

Flood Control

Degree of technology	Cost	Performance-based system	Desertification potential	Land survey system	Method	Row
Simple to complex	medium	Centralized	Light	Land restoration - Forestry - Rangeland - Aquaculture - Dam	Flood Control and Sediment	1

However, In Case Any of the Methods Mentioned Presented a Brief Description

Vertical Wells: The word "well" is often used for building that is excavated by hand to extract underground water. Drilling wells in the soil or in the sand, the bottom of the dry basin, rivers, can be seen in all countries that provide sustainable water for dwellers in dry villages.

Horizontal Wells: Horizontal wells are the status of a spring that ends with a horizontal hole in the mountain range, then the brokerage of a steel pipe and the installation of a valve or valve to control water work. Locations suitable for horizontal wells include dike structures, clay impassable slopes, or stone walls that form a dam.

Qanats: Qanat System has Three Parts: The mother's well is drilled under the pressure of the water. Horizontal waterways for conducting water, aqueducts for ventilation and transfer of soil fractures due to drilling, the basis of the work of the aqueducts, is the reception of specific rainfall in mountainous areas. So groundwater is well fed.

Fountains: In small cavities in the wet places at the foot of the hills or along riverside along the coastline they are revealed. Two general conditions for the use of spring water in household use are: a) the selection of springs with sufficient capacity and quality throughout the year. B) Protection of the health of springs.

Wind Power for Water Pumping: Wind power is widely used for water pumping. It's worth noting that the winding blades must be so rotated that they can rotate at low speeds and do not decompose at high speeds.

Desalination - Water Desalting Plans are Divided into Several Methods: Thermal, mechanical, chemical, mechanical and thermal methods require more energy and are less costly for desalinating seawater.

Reuse of Water: The use of urban wastewater for irrigation, especially in the area where agricultural land is located around the city, is significant. Industrial sewage water may also be used for irrigation, but because of harmful chemical substances, some steps have to be taken thereafter.

Solar Distillation: In solar distillation, the sun's rays pass through a transparent coating and water vapor is dusted on the surface of the coating, and water is generated constantly accumulated and stored.

Collecting Water from the Back of the Floor: In arid and semi-arid areas there are places that lack a seasonal and permanent river or underground water. One way to get drinking water is to get rain from the roofs or from gentle slopes and accumulate in a galvanized or PVC tank. Alternatively, make an effort to estimate the wellhead protected zones around each of the drinking wells needs statistics, human resources, and time that increase the capabilities of the groundwater management intervention.

Fogging: In areas where fogging is long, the dense foggy water on the leaves of trees or other coatings is significant.

Feeding Groundwater: In arid and semi-arid areas, current water should be protected by deviating into ponds, cavities, grooves and wells, and more rainfall becomes runoff. Usually lost. If this flow is infiltrated into the soil, groundwater resources will be added.

Water Warehouses: Take rainwater storage and store it for various purposes. One of these water caches is rain water and another type of flood water. Natural water storage water is an advantage over open water storage because it prevents evaporation and water spills and keeps water from any clean contamination.

Ponders of Rain Filled With Sand: These water cisterns are filled with sand and pebbles. Sand reduces evaporation as a filter and produces water for drinking.

Rainwater Collection: The storage box of butyl rubber or nylon butyl butter is made in two layers and is limited to a drilled pile for storing rainwater. Boxes are designed for the entrance and exit, and the outbreak of water. Soil condition is very important for collecting rain water. The chemical status, such as the presence of sodium salt in the soil, impenetrable chemical barriers, etc., is the same.

Reducing Damages Caused by Water Penetration in Sandy Soils: The inability of sandy soils to prevent penetration of the soil will disrupt plant growth, resulting in reduced crop yields and yields. The advanced technical principles have led humans to produce synthetic materials and installing them under the surface of the earth would block the flow of water and food in motion below the root area. This barrier is made up of waterproof materials in thin, interconnected curtains.

Extreme Waterlogging: The land is split into strips and irrigated by irrigation ditches of 20 to 25 meters in length.

Waterlogging in Gullies: This method is taken directly from the ditches of the earth and transferred to various parts of the earth. Without obstacles or barriers.

Lane Irrigation: In this method, parallel landings are used. The ground between the two embankments borders the boundary. The ground in the strips is divided between parallel stacks and causes the water to slide slowly down the slope.

Irrigation: Irrigation of the Kabba pond This method involves irrigation of water inside a pond or ditches surrounded by it. This method is suitable for different permeability soils.

Primary Irrigation: In primary systems, water is generally taken from surface sources and is continuously transferred to irrigation canals. If the water is from underground resources. It requires the transfer of water to the surface of the earth and spending on it.

Irrigation: This method is a stream of water in the creek or groove with the help of a smooth and gentle apples, the length of the groove depends on the type of soil and flow size.

Welding Method: This method includes small wires that have wavelength and china. In this method, the water layer is minimized on the surface of the soil.

Sprinkler Irrigation: In this method, pipes are used to transfer water to different parts for irrigation. Then the water is sprayed in the air and uniformly on the surface of the ground. Rainfall methods are suitable for high permeability soils.

Irrigation of Jars: In this method, non-glued and necessarily clay jars are used. In this method, pour the jug into the neck in the soil and fill it with water, and then the seeds are grown around it. Water from the walls of the jars leaks into the root area.

Runoff Agriculture: In many mountainous areas, runoff and diversion systems use rainwater collected in wells as well as leveling the soil. This method has the potential and good ability to match the semi-arid areas.

Watershed Management by Building Stacks, Grooves and Storage Tanks: For semi-arid areas with irregular rainfall distribution and areas with a low storage capacity. Water collection involves increasing the storage of soil for storing rainwater as much as it can.

Water Dispensing Methods: Water dispensing techniques are for irrigation simple methods. In this method, flood deviates from their normal flows and focuses on flood plains or in the valleys.

DISCUSSION AND CONCLUSION

The evaluation of techniques and description of desertification and its methods for fighting desertification in different systems of land development pursue the following objectives: a) Development of efficiency by measuring obstacles. B. Stop desertification by assessing reform. (C) Restoration of the desert. The decomposition of technologies in terms of the main factors (water, soil, plant, animal and energy) in land distribution systems can be effective in choosing the most suitable technology for different ecological conditions and socioeconomic conditions.

The selection and use of technology in combating desertification in different countries depends on the culture and motivation of the people, the good organization of government policies, the size of the revitalized regions, the amount of investment, the time needed to revive the affected areas. The desertification problem requires the use of short-term emergency equipment and long-term planning, with special emphasis on increasing the production of those that are reduced due to reduced degradation. As relatively inexpensive means of production, the revitalization program should begin sooner. Due to the ecological diversity, socio-political conditions in arid and semi-arid areas, it is clear that there is no global technological strategy to combat desertification. Both developed and developing countries are examples of the success of desertification programs. Programs such as effective water management - control of salinity, construction of drainage - water and soil conservation, pasture, stabilization of sand, forestry and the construction of protected natural and protected parks to restore damaged areas Is There has also been a case that degradation of the earth is faster than the recovery, due to the lack of appropriate technology, lack of technical and economic resources, and the lack of organizational coherence.

Combating desertification requires the use of coordinated technologies that are appropriate and available. Research centers require the production and dissemination of information in specific economic, social and ecological conditions. Agricultural development programs include economic and social aspects that should be strengthened to promote appropriate technologies. Planning the development unit-we should base our work on practical plans and with the help of the locals by relying on certain methods and decisions. Underdeveloped countries have characteristics such as hard work, lack of capital, etc. In these communities, the use of intermediate technologies should be considered. It is worth noting that technologies are not enough to stop the process of desertification and increase land productivity, but they require a basic planning and, most importantly, a sophisticated public support that results from a genuine understanding of new techniques and objectives. Hosts. More comprehensive water strategies talking the comprehensive range of human perceptions, meanings and principles related to water are required, particularly in arid zones.

CONCLUSIONS

Anthropological observations and standards about water in arid sites are multi-faceted. Water is valued for natural life satisfying and applied characteristics for example drinking, bathing, and cooking. Water is essential and most attractive visual basics of the site. Water has vital properties on landforms through sedimentation and erosion, and on the types, measures and supplies of vegetation, aquatic creatures, and wildlife. In arid sites particularly, there are a widespread series of national, spiritual, and religious standards related to water. Variations in water regimes and the associated deviations in landforms, vegetation and wildlife can have important properties on many diverse types of human observations and standards. Current procedures for water management underline methodical values and legal principles that report only a few of the appropriate human standards, principally those relating consumptive uses.

Desertification has resulted in the decrease of land efficiency and serious ecological/environmental significances. In characteristic of monitoring desertification, satellite remote sensing can distinguish and characterize large-scale desertification, and in-situ field work can quantity changes of soil physical & chemical assets induced by desertification. In feature of desertification control and mitigation, the application of sustainable cultivation/grazing applies and wind-shelter forests are essential. However, water use allocations and maintainable water management are the main measures in the world. In conclusion, we propose big-data-based water resource management, regional-climate-model-based agricultural planning, and CO_2 storage with deep saline water recovery and desert geo engineering as possible solutions to future, large-scale reversal of deserts and desertification zones in all countries.

Desertification is a important natural, ecological, and socio-economic threat to the world, and there is a demanding need to mature a realistic and reproducible technique to evaluate it at diverse scales. The spectacle of desertification includes the loss of biological or economic productivity and biodiversity in arid and semiarid croplands, pastures, rangelands, and sub humid woodlands principally as a result of non sustainable human activities, likewise over cultivation, fuel gathering, overgrazing by domestic animals, deforestation, and poor irrigation practices and often generated or intensified by climate unpredictability, principally drought.

With GIS and remote sensing tools, the present dissertation displays the effect of agricultural mutation in drylands and highpoints the result of date palm (Phoenix dactylifera) plantations (DPP) on desertification phenomenon. Desertification reactions may contain land degradation procedures, changes in rainfall regime consequential land-atmosphere relations, or deviations in plant communal conformation.

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