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WATERSHED MANAGEMENT IN THE NORTHERN AREAS

by

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The whole of Northern Areas which is 27,000 Sqr. miles is watershed of River Indus. The total length of Indus River in Northern Area is about 300 miles. The aggregate length of main streams which run into river Indus in Northern Area is about 3000 miles. Here the winter is quite long, growing season is quite short. The temperature ranges from 10° to 112° F. The total annual precipitation in most of the valleys is 5-6 inches in a year. In some parts where coniferous forests exist, the rain fall may be upto 30". The temperature and precipitation varies very much due to precipitous nature of high mountains and deep valleys. Thousands of miles of mountainous area is completely denuded of all vegetation with very few pockets of coniferous forests here and there. There is great dearth of rich pastures, one inch of rain may cause more erosion than 10" in the plains due to steep nature of the mountains. Numerous small flooded streams full of silt and mud join the river Indus, making the river Indus to transport huge amounts to the plains thus reducing life of Tarbela Dam and causing rise in the river bed. It has been estimated that 80% of water of river Indus comes in the form of flash floods, thus serves no useful purpose but damage.

In 1968-69 a team of 14 watershed officers including seven foreign experts visited Northern Area Watershed. I asked a foreign expert to express his opinion about Watershed Management in Northern Areas, he looked at the bleak mountains and remarked: "Nothing can be done, let the nature take its Course".

During the current year, the present Government which is giving top priority to the development of Northern Areas, sent a team of 180 scientists under an N.D.V. Programme to survey, identify and to suggest practical solutions to various problems. The people of Northern Areas are anxiously waiting for the report of the team which may bring revolutionary changes in Northern Areas.

The above picture of Northern Area may give an impression that watershed management in Northern Area is not possible. This is not true. Watershed Management

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although difficult is possible in Northern Areas. As already stated in Para 2 above, the objectives of Watershed Management in Northern Area differ depending on the needs of the region. The following suggestions are offered for watershed management in Northern Areas.

Soil conservation

Soil conservation is the main item in watershed management. River bank erosion is very common in Northern Areas. All the rivers and streams need to be channelised by constructing of very large number of check dams and spurs. During rains, heavy damage is done by floods. To reduce the intensity of floods, the absorptive capacity of the soil needs to be improved by constructing diversion ditches, earthen structures, check dams, spurs and all sorts of structures to hold water longer on the surface. This scheme will have large financial implications without any direct income.

Forest management

Proper forest management is very important in any watershed management programme. There are 1100 sqr. miles of coniferous forests in Northern Areas. Out of which 474 sqr. miles is good commercial deodar forest in Chilas, Darel and Tangir. According to the existing working scheme 18,00,000 cft. standing volume is the average annual cut, which is exported to Pakistan. Out of this about 900 sqr. miles is private forest. According to existing legislation, Forest Department cannot do much in these forests. The owners are at liberty to sell their forests to contractors of their choice. Unlimited grazing rights exist in all the forests. Due to continuous grazing and trampling regeneration is almost absent. Preparation of working plans and large scale regeneration operations are desirable. For their implementation, trained staff and an effective legislation are essential.

Range management

Range management is the care and use of range lands to get the highest, continuous yields of animal products without endangering the range soil, water resources and other important uses of land. Thus range management includes water conservation and hence watershed management. A Range Management Wing headed by a Range Management expert is required to be created in Northern Area, Forest Department.

Outdoor recreation

The general impression is that only the farm land is the useful land and the rest of the land consisting of snow peaks, glaciers, naked mountains is waste land. This is not true. Each piece of land in the watershed is very useful land, provided it is put to proper use. Each farmer can harvest peak production, permanently when his work on his own farm is integrated in a programme of watershed management which fits into the resources and economy of his country and region and which is designed to harvest from each unit of land and water its fullest potential in different crops of the farm, forest, and wild-lands. None of these crops can be isolated and dealt with separately. All are

inter-related and indivisible items of watershed management which is the sustained use of all our resources of land and water for the greatest good of the greatest number of our people.

Northern Area being very thinly populated provides ideal ground for wildlife crops. The highest peaks, biggest glaciers, deepest gorges, roaring spectacular streams provide considerable scope for tourism. A Wildlife Wing in Forest Department to develop wildlife areas in the watersheds and a Tourist organization to provide living and transport facilities are needed urgently. This will bring good income to the people living in the watersheds resulting in a visible change in the economy of the area.

Faulty agriculture

Cultivation on slopes and shifting cultivation in the forests is causing soil erosion and denudation of forests. There are large areas of plain land along River Indus and its tributaries. These may be brought under agriculture by providing irrigation facilities. The existing system of constructing long channels along hill slopes of shallow, dry, loose soils has proved a failure, because most of the water is lost in transit due to leakage and seepage and when ever there is a little rain heavy damage is done to the channels. Therefore various methods of lift irrigation may be tried instead of long channels.

Tree planting

The climate of Northern Area is very suitable for growing fruit trees such as almonds, apricots, walnut, apples, grapes, mulberry, pears, peaches etc. The climate is also suitable for growing timber and firewood species such as poplars, Robinia, Ailanthus etc. The benefits of these trees are well known to everyone. The requirement is to establish large number of nurseries throughout Northern Areas by Forest and Agriculture Departments for supply saplings to the farmers liberally in addition to departmental planting.

Watershed research work and collection of data

Research work for watershed management is also essential. Collection of data on rain and snow fall to find out maximum discharge of each small watershed within the main watershed, land capability classification survey etc. are desirable.

Aerial photography

In Northern Area, Aerial photographs will be very helpful in planning. In a rugged hilly area if aerial photos are used to examine the gullies ravines and other features, it will save a lot of walking.

Indirect methods of watershed management

The people living in a watershed are directly concerned with watershed management. All destructive or constructive activities in a watershed are due to the people

living in a watershed. In Northern Areas cutting of wood for cooking and heating purposes is very common. According to a rough estimate 90,00,000 mds. of firewood is burnt annually. Hence by cutting trees and bushes on steep slopes great damage is done to the vegetation of watersheds. The wood cutting will not be necessary if electricity, gas or kerosine oil is made available to all farmers for cooking and heating. Hence there are indirect methods for watershed improvement. Construction of roads, development of transportation and living facilities will make any programme of watershed management easy. Provision of better employment opportunities by establishing industries, poultry farms, sheep farms etc. will bring goat graziers, down from the hills in search of better living. They will do away with goats and goat economy. As soon as goats start disappearing, vegetation will start appearing on the mountains. Hence such indirect methods of watershed management are also required to be developed in Northern Areas.