UNITED NATIONS

Convention to Combat Desertification

Distr.
GENERAL

ICCD/COP(2)/CST/5
6 October 1998

ENGLISH
Original: FRENCH

CONFERENCE OF THE PARTIES
Committee on Science and Technology
Second session
Dakar, 1-3 December 1998
Item 7 of the provisional agenda

SYNOPSIS OF REPORTS ON TRADITIONAL KNOWLEDGE

Note by the secretariat

CONTENTS

GE.98-63980 (E)

I. INTRODUCTION

1. In its decision 20/COP.1, adopted at its first session, the Conference of Parties, noting the report of the Permanent Secretariat of the Convention contained in ICCD/COP(1)/CST/5 on modalities and timing of the work of the Committee on Science and Technology on inventories of research and traditional knowledge, and research priorities:

(a) Encouraged Parties and observers to collate information they had in respect of the use of traditional and local technology, knowledge, know-how and practices and to provide reports not exceeding five pages in length on that topic to the Permanent Secretariat no later than 31 December 1997, and

(b) Requested the Permanent Secretariat to prepare a synopsis of such reports for consideration by the Committee on Science and Technology at its second session.

2. That synopsis appears below.

II. CONTRIBUTIONS FROM PARTIES AND OBSERVERS CONCERNING TRADITIONAL KNOWLEDGE

3. The Permanent Secretariat received reports from 12 Parties and 5 observers. These concern a very wide range of traditional and local knowledge, know-how and practices stemming in many instances from experience handed down from generation to generation and responsive to social and cultural change and the local environment.

4. The reports revealed the use of a variety of techniques and can be classified by topic as follows: control of wind or water erosion; water conservation; improvement of soil fertility; plant protection; forestry; social structures; housing architecture. They are summarized below.

4.1 Control of wind or water erosion

(a) Windbreaks: creation around plots of barriers comprising trees or, in some instances, non-living material;

(b) Erection at right angles to the prevailing wind of obstacles (walls, banks, fences) made of stone, earth or vegetable matter (tree branches or palm fronds). These structures, the height of which is periodically increased, cause sand to accumulate; the sand can then be stabilized by covering it with branches or earth. The operation can be continued by planting species with an extensive root system or by biological fixing of the dunes;

(c) Erection of obstacles at an angle to the wind so as to force it to change direction: this leads to deviation of the sand, which therefore ceases to accumulate;

(d) Placing of large stones on the tops of dunes: this accelerates the wind around the stones, so increasing the lifting force on the sand, which is then carried further away;

(e) Spreading of water on land after ploughing: this stabilizes the fertile components of the soil by increasing soil cohesion;

(f) Building cultivated terraces separated from each other by low stone walls running along the contour lines. The distance between the walls depends on local conditions (rainfall amount, distribution and rate, geology, soil, crop types, etc.). Associated with the terraces are ditches to channel the excess water to gullies serving as natural outlets for it;

(g) In gullies: fixing in place of flat dry stones together with logs and large branches. A simple planting scheme will help to reduce the water velocity;

(h) Use of vegetation to control erosion: the species used are chosen for their rapid growth, high density and well-developed root system.

4.2 Water conservation projects

(a) Construction of ponds, pools and lagoons to collect water during the rainy season for irrigating crops and watering livestock. The structures are made using local materials;

(b) Construction of impoundments on small water courses;

(c) Controlled flooding: a very old technique for conserving water and the soil which is well-suited to desert environments. During the heavy rains, part of the precipitation is absorbed by the ground and some (the proportion varies with the intensity of the precipitation and the characteristics of the soil) runs over the ground surface towards lower-lying areas. This runoff can be directed onto walled plots where its impoundment between the walls promotes infiltration. The land can then be cropped, with good yields. The critical question with this technique is whether the degree of infiltration is adequate for the intended crops;

(d) Cultivation of large areas in order to reduce soil evaporation;

(e) Greenhouse farming with water management;

(f) Construction of watertight clay or tile drains and irrigation channels in order to reduce evaporation;

(g) Construction of “qanats”, underground dykes and tunnels for the transfer of subsurface water to the surface by gravity (for agriculture or consumption);

(h) Construction of multi-level “qanats”: channels at various depths;

(i) Construction of impoundments for artificial recharge of “qanats”;

(j) Use of clay jars for irrigation;

(k) Use of textiles to keep garden soil moist;

(l) Irrigation of hillside terraces by means of channels built by the farmers along the inner edge of each terrace. The water runs along these contour-line channels from the highest to the lowest terrace;

(m) Collection of water on house tops, etc. (installation of tanks) for consumption in the desert or other areas with an inadequate water supply;

(n) Rice-growing based on the use of surface water in the rainy season: berms some 1.5 m high are built to prevent flooding and retain the water.

4.3 Improvement of soil fertility

(a) Use of natural fertilizer: animal or human excrement and decayed plant waste;

(b) In situ manuring: livestock is brought directly onto fields to graze and deposit dung there;

(c) Production and use of compost from plant and household waste. The composting process can be speeded up by the addition of microorganisms;

(d) Production and use of a mixture of animal dung, urine, forest litter and household and agricultural waste, including ash from cooking fires;

(e) Maintenance of soil fertility by green manuring, the manure coming either from natural vegetation or from crops intended for ploughing in;

(f) Use of nitrogen-fixing plants;

(g) Mixing of forest litter directly into the soil;

(h) Mixing of animal carcasses into the soil;

(i) Spreading on the ground, in order to increase soil permeability, of sugar cane ash obtained from sugar refineries;

(j) Spreading of liquid sugar-industry waste. This is suitable for any soil capable of growing sugar cane, but it is also very effective on compacted, saline or eroded soils. It increases both the content of organic matter, especially nitrogen and carbon (a humic substance), thereby improving soil stability, and the bacterial biomass;

(k) Liming to prevent soil erosion and reduce evaporation;

(l) Application of clay (loam) as a mulch to protect the ground surface;

(m) Use of gravel to reduce the risk of soil erosion;

(n) Improvement of the texture of heavy soils by adding sand;

(o) Crop rotation to ensure better management of soil fertility and moisture;

(p) Fallowing in order to maintain soil fertility;

(q) Careful choice of soil-preparation techniques;

(r) Use of multi-bottom ploughs and animal draught power to minimize tillage (for soil preparation and to facilitate crop-growing without inverting soil profiles);

(s) Appropriate soil management: the best example is considered to be the method used by the Jyapu, a Newar community in the Kathmandu valley. Jyapu farmers rarely use livestock, preferring to till the soil with hand tools such as hoes. As manure they use black shale, compost and human nightsoil;

(t) Soil conservation: the traditional “zai” technique employed in Burkina Faso is an intensive technique involving manure management and water-saving. It consists in digging holes in the ground and filling them with manure during the dry season. This attracts termites, which digest the manure; the latter is then more easily taken up by roots and increases soil porosity. Seeds are sown in the holes. This highly efficient technique enables communities with very limited resources to regenerate even badly degraded soil. When not being used for growing, the holes can provide water storage space.

4.4 Plant protection

(a) Preservation of the natural vegetation: choosing of species to suit micro-climatic conditions; growing of drought- and heat-resistant species; growing of salt-resistant species;

(b) Prohibition of grazing: preservation and protection of areas of rangeland, especially in depressions rich in alluvial deposits and forage plants;

(c) Harvesting of spontaneous fodder and burning of land to promote re-growth;

(d) Irrigation of crops in winter to control frost;

(e) Use of birds (e.g., starlings) to control insects (e.g. crickets);

(f) Harvesting outside full-moon periods in order to minimize insect infestation;

(g) Application of ash to plants;

(h) Application of dilute urine to plants and seeds in order to clean them and give them some protection against disease and insects;

(i) Use of common, usually stronger species of plant.

4.5 Forestry

(a) Creation of forests using local species of trees and bushes and planting of fodder trees and bushes;

(b) Creation of nurseries for reforestation and desert pastureland; development of orchards and reforestation in the desert;

(c) Simultaneous planting of sorghum or millet seeds and saplings. The cereals are cut to a height of 50 cm or more so as to protect the saplings, which then benefit from the soil moisture and manure. The high cutting also promotes natural regeneration of all sorts of species, ensuring considerable genetic diversity;

(d) Growing of coffee together with forest species known for providing beneficial shade. Use of the same system to grow cocoa;

(e) Use of clearings for small-plot growing of a variety of vegetables in forests.

4.6 Social structures

(a) There are three types of lifestyle: nomadic, semi-nomadic and sedentary. The distances covered by the population groups who practise them vary widely, entailing differences in management and type of livestock farming and, in the case of semi-nomads and nomads, the presence or otherwise of irrigated agriculture on rivers or lakes. Nomadic herders use their pastureland in a seasonal pattern (transhumance), moving their animals from one zone to another depending on the availability of water and grass. This provides protection against weather risks and prevents the degradation of vegetation;

(b) “Motselo” (in Botswana, a form of cooperative and bank involving 5-15 not-necessarily-related people (men and women)). Membership of such a group is voluntary and lasts until the end of the loan and borrowing cycle. Each person puts in an agreed sum of money or quantity of seeds or an equivalent amount of work, all of which is then used as well as possible in the light of local knowledge in order to increase the group's monetary wealth. The types of activities supported may include cooking or the brewing and sale of local beer. The cash contributions are used to purchase requisites such as sugar or cooking or brewing equipment, etc. Labour expended in production or marketing is also considered as a capital contribution. All the income is allotted in turn to the members of the “motselo”, who then use the money to develop their farms by purchasing equipment or to meet social needs (family celebrations, burial ceremonies, etc.).

The advantages are:

- the structure is simple;

- the funds are turned over rapidly;

- investment is simple and free from conditions, so everyone can afford it;

- the funds and profits go directly to the members;

- very poor people can take part by contributing labour;

(c) Water resources management by local communities or farmers' committees. Their skills and knowledge are passed on from one generation to the next, ensuring that water resources are soundly managed;

(d) Pastureland protection and access control by a community organization that defines rights and roles and enforces sanctions (in connection with pasture management). Knowledge, however, varies from group to group and region to region and depends on local conditions, the responses to particular problems and the given group's geographical or social isolation. In Nepal, pastureland is managed in accordance with religious beliefs;

(e) Management and control by the local population of access to forest resources;

(f) Development through agriculture of unused floodplains: this can, as in the case of Niger, stabilize the population by increasing food availability. It also introduces a new form of agriculture: the partial replacement of millet, the staple foodstuff, by rice can help to reduce excessive cultivation of millet and prevent desertification;

(g) Use of waste products - from coffee-farming, sugar-refining or sunflower-oil production - as animal feed;

(h) Promotion of *Vigna* (several varieties) for human and animal consumption: high protein value. The residual matter can be used as green manure;

(i) Storage of cereals and seeds in kitchens, where the carbon monoxide and carbon dioxide prevents their becoming infested with insects.

4.7 Architecture and energies

(a) Protection of structures (houses, equipment sheds, stables, etc.) by siting them outside natural-disaster (flood, storm, etc.) hazard zones;

(b) Building of chimneys in houses to improve ventilation and thereby reduce summer temperatures;

(c) Inclusion in buildings of arches, domes and high ceilings to keep down temperatures;

(d) Insulation of walls with clay or straw to keep out heat or cold;

(e) Construction of basements for their cooling and food-conservation capabilities;

(f) Construction of ice pits in mountainous areas and around towns so as to be able to build up stocks of ice for the summer;

(g) Making of hinged doors and windows and wooden venetian blinds to shield against solar radiation;

(h) Building of dovecotes with a view to using the birds' droppings as a manure supplement;

(i) Building in villages of artificial drainage systems so as to retain some moisture in dry areas;

(j) Use of windmills and water mills; use of solar energy;

(k) Use of briquetted sugar-industry waste as a household energy source (residual crop matter is dried and briquetted);

(l) Use of rice straw as fuel;

(m) Construction using maize or millet stalks, wheat straw, weeds and other waste. This contributes towards keeping villages clean and limiting numbers of rodents and insects.

III. CONCLUSION

5. The reports received by the secretariat differ in origin and content. Some are very detailed, with lengthy explanations; others are very brief and others still address only organizational issues, without commenting on farming techniques. Many reports contain no information or comments either on the overall role of traditional and local technology or on how such technology might be linked to its modern counterpart. Nor is there always information on the participation of non-governmental and community-based organizations in the gathering of information related to, or the application of traditional and local technology, knowledge, know-how and practices.

6. Bearing in mind the relevant articles of the Convention, the Conference of the Parties might wish to consider recommendations and comments by the Committee on Science and Technology concerning the collation of Parties' and observers' information on traditional and local technology, knowledge, know-how and practices, including guidelines for the Permanent Secretariat on the activity to be undertaken in that connection.
