

Mr. Tawdig

14.4

The Agricultural Credit Corporation's role in tackling the environmental problems in Jordan

Jordan has an area of about 89,000 sq. kilo meters, and a population of million 5.6. The 2006 per capita income of the GDP, at market price, comes to JD 1805 (US\$ 2545). Based on its economic, social, and environmental dimensions, the agricultural sector in Jordan is considered one of the basic production sectors in the national economy. It is further seen as a generator of activities in other economic sectors, and as the capital that serves as the prime promoter of development. Agricultural credit plays a distinct role in agricultural development. Hence, making the necessary finance available for the agricultural sector was given special significance. So, the Agricultural Credit Corporation (ACC) was founded in 1959 with the goal of participating in the support and development of agriculture, raising the farmers' standards of living through granting various kinds of loans with different terms and for different agricultural purposes. During the period from 1960 to 2006 the Corporation issued a total of JD million 374 to 189,000 farmer borrowers. These loans were granted for use for the reclamation of irrigated and un-irrigated land, development and promotion of animal and poultry resources, financing the mechanization of agriculture and food processing, and financing the purchase of plant and animal production inputs.

20K
2-0K

Since agriculture has the utmost connection to natural resources, the environmental aspect has a special significant, for it serves to maintain the diversity of vital factors and the environmental balance which ensures sustainability of resources and brings about sustained development.

1-0K
living things
plant
put plants
or seeds in
the ground

The environment in Jordan is attended by challenges and general problems that perhaps are not generally different from those existing in other countries, especially in reference to the agricultural field. The Government is expending efforts in this area, so is the ACC, which has participated, through its role in financing the agricultural sector in Jordan, and continues to participate, in remedying the most prominent environmental issues and problems that affect the sustainability of agricultural production.

General Environmental problems in Jordan

1) **Drought:** Drought relates principally to ground resources. Jordan is divided into four agricultural-environmental areas, based on a number of factors the most important being the weather, topography, the plant blanket, soil, and rain. Statistics show that the rainfall level is low, and that years of drought come in without interruption. 91% of Jordan's area is dry desert that has a yearly rainfall rate of less than 200 mm, that 63% of the area has a yearly rainfall rate of no more than 50 mm, and that, according to the environmental zoning, the remaining area is marginal, semi-dry, semi-humid areas that

- * 1 a successful way of dealing with a problem (n)
- * 2 (v) to deal successfully with a problem or improve a bad situation

constitute no more than 9% of Jordan's total area. Accordingly, the predominance of dry weather constitutes an impediment to horizontal expansion of agricultural production, exposing ground resources to different exhaustion agents, especially drought.

2) **Smallness of the agricultural areas in Jordan:** Jordan's area is 89 million donums (a donum is 1,000 m²), 8.7 million of which is cultivable, constituting 10% of Jordan's area. The actually cultivated area is only 2.5 million donum, which makes 29% of the total cultivable area and only 3% of the total area of Jordan, versus 4, 3.6, and 3 million donums which were cultivated during 1975, 1983, and 1997 respectively. These figures confirm that the areas exploited agriculturally are indeed shrinking which reflects negatively on environmental matters in Jordan.

3) **Soil erosion:** As is known, soil forms extremely slowly. Soil erosion bereaves successive generations of their agricultural sources. There are numerous factors that affect the intensity of soil erosion, some of which are:

- a) High-velocity winds, especially in desert areas.
- b) Ground sloping, for soil erosion increases with the increase in ground sloping.
- c) Bareness of ground, and the increase in erosion due to the absence of plant covering.
- d) Faulty agricultural operations, most importantly plowing sloping ground.

4) **Exhaustion of natural pastures:** There are several causes of the exhaustion of the pastures in Jordan:

- a) Overgrazing, that is, grazing large numbers of cattle on small areas of pastures.
- b) Premature grazing, i.e., grazing cattle on pastures before the grass is fully grown.
- c) Misuse of land by frequent plowing for the purpose of expropriation, leading to extinction of grass in such land.
- d) Removal of shrubs, on which cattle graze, for use as firewood, which then becomes difficult to grow anew because of insufficient and irregular rainfall.
- e) Wide use of machines, leading to exhaustion of soil and destruction of plant covering.

5) **Low productivity of most pasture areas in Jordan:** The area of the desert pastures, where the yearly rainfall rate is no more than 100 mm, is 60 million donum, which constitutes 67% of Jordan's total area. The productivity of these pastures is very low, due to low rate of rainfall. The area of the marginal plain pastures, where yearly rainfall rate ranges between 100 and 200 mm, is about 20 million donums, which makes up 22% of Jordan's total area. These plain pastures are overgrazed, plowed too frequently, misused in many ways, and have a mediocre productivity. Mountainous pastures, widely dispersed, receive a yearly rainfall average of 250 to 600 mm, and have high productivity, but their total area is small, not exceeding 45,000 donums.

6) **The dwindling of the forest areas:** The total area of forests in Jordan has shrunk to no more than 1% of Jordan's total area, which is attributed to many factors, most importantly:

- a) Forest fires, considered the main danger, which destroy about 20,000 trees a year.
- b) Human excessive exploitation through tree cutting.
- c) Conversion of forests to residential and public facilities areas.

- d) Fluctuation of weather conditions, such as winds, atmospheric temperature, etc.
- e) Contamination of forests caused by dust, factories, and vehicles.

7) **Fragmentation of ownership of agricultural land:** Land in Jordan faces problems of fragmentation of ownership and great distances separating land owners' abodes from the land itself. This situation renders the land economically unbeneficial. Statistics indicate that the number of land owners increased from 51,000 in 1975 to 93,000 in 1997. This confirms the existence of a problem that impacts the environment in Jordan, directly or indirectly.

8) **Excessive drawing of underground water:** There are more than 12 replenish-able aquifers in Jordan. Statistics show that excessive amounts of water are drawn from these aquifers. Drawing increased from 79 million cubic meters in 1995 to 200 million cubic meters in 2004. This excessive use lowered the water levels in the aquifers, decreased the productivity of wells, and deteriorated the quality of water, badly affecting the soil and the agricultural production as well as negatively impacting the environment in Jordan.

9) **Misuse of agricultural inputs:**

a) **Use of fertilizer:** Large quantities of chemical fertilizer are used every year for watered crops. The improper use of this fertilizer contaminates the soil with salt. Additionally, about one million tons of manure is used every year, the major part of which is unprocessed, causing fly breeding, especially in al-Aghwar (low) area.

b) **Insecticides:** Improper use of insecticides is detrimental to human health, as it can cause direct poisoning and poisoning from after-use residues, and can also contaminate the soil.

c) **Plastic debris:** With the introduction of greenhouses, use of plastic for agricultural purposes increased, leaving plastic debris which contaminate soil and hurt and eventually kill ruminating animals.

d) **Agricultural remnants:** The problem stems from the non-use of remnants left by the agricultural and other sectors and failure to recycle them, except on a very small scale. Reuse of remnants is limited to the different kinds of hay as animal feed, and animal product debris which is used as organic fertilizer. The rest of it is dumped in the trash dump area, adversely affecting agricultural and water resources and causing contamination.

10) **Weather conditions:** weather conditions (fluctuation of rainfall, frost, etc.) are natural elements that are beyond human control. However, they cause problems that greatly affect the agricultural sector and aggravate the problem of exhaustion of the plant covering and the intensity of the affect of drought which result from: Failure to systematize the pastures, slowness of pasture development projects, increase of soil erosion, failure to use plants suitable for planting in areas that withstand dryness, winds and frost, and failure to use proper harvesting methods and the means of soil stabilization in sloping areas.

11) **Scarcity of water resources:** Water resources in Jordan are meager. Jordan depends mainly on rain water. Rainfall rates are low and fluctuating, and 85% of rain water is subject to evaporation. Rates of population growth and the increased demand for water complicated the situation, resulting in continuous draining of the water resources. The yearly per capita water share in Jordan is 170 cubic meter, compared to the "water-poverty" line of 500 cubic meter a year. Accordingly, there is a compelling need for programs and plans for rationalization of water consumption for all purposes, including use for the

agricultural sector which has a 70% share of the water consumption in Jordan.

Measures used by the ACC for tackling the environmental problems in Jordan

Disturbing the natural constituents of the environment, and inattention to nature, has brought upon us what we are suffering now. We will suffer more, if we do not properly manage the agricultural, environmental, and natural resources based on sound, sustainable methods. Agriculture can be preserved and improved through studied work programs. Hence, the ACC, through its financial role, participated in solving the environmental problems in Jordan, giving the environmental dimension, among other important matters, consideration when making a decision. Following are the most important methods the Corporation uses in this field:

First: Combating drought

- a) Encouraging farmers to drill artesian (tube) wells in the desert border areas (northern, eastern, and southern areas). The Corporation financed the drilling, equipping and exploitation of wells for agricultural purposes. The Corporation financed about 700 artesian wells through medium-range loans of up to 10 years terms, totaling JD 12 million. The Corporation also helped in the reclamation of 200,000 donums and growing fruit trees and vegetables in them.
- b) Participation in horizontal expansion through reclamation of agricultural land, developing high areas by grading and building supporting walls, preparation of land and growing fruit trees that favorably affect the surrounding environment, and protection of agricultural resources by preventing soil erosion and maintaining the topography. The Corporation's accumulative loans for un-irrigated areas totaled more than JD 75 million given to 10,000 farmers who reclaimed more than 50,000 donums of these areas.
- c) Introduction of a program for covering land possessions in the Corporation's finance services, participating in tackling the fragmentation of land ownership, correcting the defects in the structure of land ownership in order to optimize agricultural productivity, exploit fallow agricultural land and render it productive, applying the economically proper sizes of agricultural land. During the current year, the Corporation increased the loan size from JD 5,000 to JD 15,000 for un-irrigated land and to JD 30,000 for irrigated areas.
- d) Enhancing the return on every cubic meter of water consumed by encouraging the financing of projects that produce crops that are in demand at local and foreign markets, while using minimum amounts of water and giving due consideration to the suitability of each area of land.
- e) Finance drip irrigation systems, to replace surface irrigation, for artesian well owners in order to increase the efficiency of water use, preserve water, decrease evaporation rate, and preserve soil characteristics.
- f) Rationalize use of underground water by policing, in coordination with the Ministry of Water and Irrigation, water pumping to prevent excessive, unallowable pumping from water wells.
- g) Finance sprinkler and central irrigation systems for grain-growing projects.

- h) Finance animal raising projects. The Corporation encourages the financing of animal-raising, provided that pens and enclosures are erected outside the municipal boundaries, given the fact that unrestricted animal-raising has disadvantages, specially in drought conditions, that affect natural pastures which are abused by most cattle owners in Jordan. Accumulative loans given by the Corporation for sheep-raising and pen-building projects totaled JD 55 million received by 11,000 borrowers. The Corporation supervises the pen building operations financed by the Corporation, to ensure compliance with technical specifications and with the Ministry of Environment's rules.

Second: Water gathering:

Water supply is meager, and water waste through evaporation and flow into wadis is at high level. Therefore, the Corporation, in line with Jordan's water strategy, carries out water-gathering projects which encourage farmers in the rural and desert areas to build 50-cubic-meter storages and cisterns for gathering rain water to use for complementary irrigation and for watering cattle. This also helps preserve soil and increase agricultural production.

Water storage capacity financed by the Corporation is estimated at one million cubic meters per year, for which the Corporation issued loans totaling JD 15 million received by more than 10,000 borrowers.

Third: Financing greenhouses:

The greenhouse (glass and plastic houses) system was introduced into Jordan and vegetable production started subsequently, increasing appreciably at the beginning of the eighties. The Corporation's role in financing these projects was evident. These projects spread in the Jordan valley area, and extended to all areas of Jordan. There is a total of 35,000 plastic greenhouses in Jordan, 70% of them in the Jordan valley area. Their vegetable and fruit production is above average. More than 60% of these projects are, in view of their advantages listed below, financed by the Corporation:

- a) The product is of good specifications, with less sand and other environmental contaminants.
- b) Decrease in losses resulting from weather condition changes. Greenhouses surely protect against environmental elements and frost damages.
- c) An increase in the return per one cubic meter of water compared to the return on non-greenhouse crops, resulting in water conservation.
- d) Allows for full combating of plant diseases.
- e) Increasing production by 200 folds, through use of modern agricultural technology, resulting in a production volume that fills the local market needs and allows for exportation, particularly of vegetables.
- f) Most vegetable producers sterilize the soil, especially in the Jordan valley area, to combat soil infestations at less cost, using an environment-friendly process.

Fourth: Use of modern irrigation systems:

The Corporation encouraged farmers to adopt modern technology, such as up-to-date irrigation systems (drip, spray, and sprinkle). For 80% of the cultivated areas in the Jordan valley there has been a switch from the traditional irrigation process to modern irrigation

methods, especially the drip system. This improved water use efficiency, and lowered the level of water loss and improper use in favor of the limited water sources in Jordan.

Fifth: Remedy of aridity:

Aridity is defined as an environmental and agricultural condition created by shortage in rainfall when water is needed. The effect of aridity can worsen and become severe if badly managed, such as by increasing grazing, ^{also on 1st} logging, or grazing near water points.

Studies indicate that during a drought year cattle graze at pastures for no more than two months, and that they are fed supplementary fodder for nine months. The Corporation grants operational loans needed by cattle raisers to buy fodder for their cattle during arid years.

Loans given for cattle-raising are rationed out, especially at the onset of aridity, as the number of cattle must be decreased, or stabilized, to avoid aggravating the problem during harsh conditions.

During 1999 and 2000, the Corporation gave loans totaling JD million 20 to more than 8,800 farmers to enable them to manage aridity risks, minimize losses, protect and manage pastures, hold down demand on pastures, and hold steady the number and productivity of sheep. Also, the Corporation reschedules loans due from cattle-raisers during aridity years.

Sixth: Cleanliness of the environment:

- a) The Corporation participated in financing more the 90% of Jordan's poultry projects in accordance with technical specifications recognized by the Ministry of Municipal Affairs and the Ministry of Environment.
- b) Encouraging farmers to substitute chemicals that pose public health and environmental risks, with manure and organic fertilizers to provide biological diversity through wholesome organism and botanic covering. This would strengthen the soil structure and reduce water loss, thereby improving water management and reducing contamination risks.
- c) Advising farmers in the Jordan valley area concerning the necessity of combating flies, in cooperation with Ministry of Agriculture, especially that most farmers in that area are borrowers from the Corporation who have leading agricultural projects in the field of vegetable and fruit production.
- d) Financing modern olive presses. The Corporation contributed to the construction of more than 50% of Jordan's 110 olive presses. It also participated in increasing the number of production lines in the old presses, as well as replacing modern presses for old, low productivity ones that do not meet safety, health and environmental standards. The modern presses operate as part of a proper system that collect remnants of pressed olive for sale to industries to process and use for making soap and organic fertilizer.

Seventh: Technical advice:

- a) The Corporation does not only estimate the amounts of funds needed to implement agricultural projects, but also instructs the farmers in optimum use of the available capital, which one of the limited resources in Jordan. The Corporation employs

agriculturists specialized in plant and animal production, soil, water resources, environment, nutrition, and plant protection. These agriculturists play an effective role in advising the farmers concerning selecting the kinds and varieties suitable for each area of land, agricultural methods, problem solving, as well as providing the farmers with information, including educational publications put out by the Corporation, on any new technology the farmers contemplate using.

- b) The Corporation signed a contract with the Agricultural Syndicate for training agricultural graduates, who seek jobs, for six months. More than 100 persons in various disciplines, including water resources and environment, enrolled and are receiving on-the-job training in the agricultural finance field and acting as agricultural advisors, each in his field of study. Evaluation results indicate that these trainees, along with their Corporation's employee colleagues provided the farmers with advice on all technical and environmental aspects.

Eighth: Other measures that encourage farmers to deal with the Corporation and participate in solving the environmental Problems:

- 1) Collaterals: The Corporation persisted in accepting customary substitute collaterals, such as personal guarantees, to enable farmers who do not own fixed assets (land and real estate) to benefit from the finance services, which reflect positively on the agricultural and environmental sectors in Jordan.
- 2) Interest rates: The Corporation applies differential interest rates, based on sizes and terms of loan, to the benefit of small farmers whose loans make up about 90% of the total value of the Corporation's loans. Accordingly, the Corporation charges an interest rate not exceeding 6.5%, using the simple (tapering-off) interest computation rule, because the Corporation's objective is developmental and the terms of its loans extend up to 15 years.

It is concluded, based on the foregoing, that the mitigation of the collaterals requirements, the disparity in interest rates collected on loans, and the geographical widespread of the Corporation served to increase the number of customers, whose yearly rate exceeds 65%, and encouraged the establishment of agricultural projects that contributed, in one way or the other, to solving the environmental problems in Jordan.

References

- 1) The 2006 annual report of the Jordanian Central Bank
- 2) Issue No. 6 of the June 2006 of the Jordanian Central Bank's statistical report.
- 3) The first scientific day titled "Combating Drought and Development of the Desert", observed in 1997 by the Jordanian Society for Combating Drought and Development of the Desert.
- 4) A working paper by Bashshar al-Sharidah, titled "the Demographic Gift and its Repercussions on the Development of Natural and Environmental Resources (water and agriculture)" presented to the Third National Popular Get-together held in Amman on 26 and 27 March 2007.
- 5) The second edition of The Basics of Environmental Science by Abd al-Qader 'Abid and Others, published by Wa'il House for Publication in 2004.
- 6) "Agriculture and Environment in Jordan, Reality and Aspirations" by Abd al-Mu'ti al-Tillawi , Amman 1994,
- 7) A Master's degree treaties on the evaluation of the economical aspect of the effects of the contamination of King Talal Dam on the production of certain citric trees in the Middle Aghwar, Jordan Valley, done by Karimah Ghanim of the Jordanian University in December 1997.
- 8) Basics and rules of agricultural credit, 2006, by the Agricultural Credit Corporation.
- 9) The Agricultural Credit Corporation's reports for 1999 – 2005.
- 10) An article by Muhammad Harb titled "Feeding and Management of Sheep During aridity" published the June 2001 special issue of the Agricultural Engineer Magazine.
- 11) The Sustainable Agriculture Manual, by Muhammad 'Ayish and Majdi al-'Udwan, Amman 2006.
- 12) The annual reports for 2000 – 2005 of the Directorate of Agricultural Policies, Ministry of Agriculture.
- 13) A report by the Ministry of Agriculture on the condition of the agricultural sector in Jordan – Amman, August 2006.