

SYRIA

Cheap solution to water problems

Syria is taking what appears to be a very effective, and cheap, approach in solving its irrigation and water problems. The Directorate of Irrigation and Water Resources, which is a part of the Ministry of Public Works and Water Resources, is putting into effect a policy that aims at setting up an extensive network of small to medium sized, low cost surface dams throughout the country. These dams collect rainwater during the winter, forming small lakes from which water needs are drawn during the dry summer months.

The surface dams vary in storage capacity from 700,000 cubic metres of water to more than 25 million cubic meters. They are used mainly to supply water for agricultural purposes, such as irrigating crops and watering livestock, and, to a lesser extent, they also serve to supply water for human use in some of the more isolated rural villages.

Surface dams are more suited to Syria's water needs and capabilities than are large capacity dams. Syria is an arid country that has no large rivers besides the Euphrates, and it is on this river that the country's only really large dam, with a capacity of 11.6 billion cubic meters of water, is built. It would not be feasible to build any other comparably large dams on any of the smaller rivers in Syria; hence the authorities responsible for the development of water resources in the country are concentrating on building the smaller surface dams.

Up until now, seventy one surface dams have been constructed with a total storage capacity of about 200 million cubic meters of water. Besides irrigating farmland and supplying water for both human and animal consumption, the lakes formed by the dams are also used to support small scale fisheries. Water from the lakes has also made possible the implementation of modest forestation programs which improves the climate and the quality of the soil.

Surface dams are also desirable because they are relatively simple to build and do not require large injections of capital and labour as do

large capacity dams. In addition, maintenance of surface dams is minimal, unlike the large dams which require highly skilled personnel to maintain and operate. Furthermore, because surface dams only supply water to a small localized area, there is no need for an extensive canal system to route the water from the dam area to the actual farmlands.

Under the third, fourth and the current fifth five year development programs, surface dams have been built all over the country and no governorate in Syria is without such dams. The Suweida governorate has ten surface dams that have a total storage capacity of 29 million cubic meters of water. The largest of these dams is the Jabal al Arab dam that has a capacity of 19.5 million cubic meters

and which irrigates the Jabal al Arab area as well as supplying water for the inhabitants of the region. Another large surface dam in the area is the Rom Jweilan dam, which stores more than four and a half million cubic meters of water. It serves primarily to supply water to the city of Suweida and its suburbs. There are two other significant dams in the governorate, one being the two million cubic meters capacity Habran dam which also serves the Jabal al Arab region, and the other is the Mushannaf dam with a capacity of 1.2 million cubic meters.

The Dara'a governorate has six surface dams with a total storage capacity of 19.6 million cubic meters.

The Dara'a eastern dam has a capacity of 15 million cubic meters and currently irrigates 250 dunums of land. The area of irrigated land will be later increased to 7,500 dunums and it is planned to put a forestation program into effect. Other dams

LABOUR SUPPLY SHOULD COMPLEMENT IRRIGATION PROJECTS

The availability of labour is as vital to a nation's agricultural sector as is the availability of water and even though Syria has made good progress in alleviating its water problems, it still has to contend with the problem of a maldistributed agricultural labour force.

In some areas in Syria, such as in the Lattakia governorate, there is a surplus of agricultural labourers in comparison with the small area of cultivable land available. In the Lattakia governorate the ratio of the rural population to the area of cultivable land is greater than 150 persons to every 100 hectares of land. At the other extreme, in the governorates of Homs, Hama and Jezireh, there are no more than twenty persons per 100 hectares of cultivable land.

To a certain extent, the differing densities in rural populations can be explained by the different labour needs for different types of crops. Some crops are more labour intensive than others while other types of crops require less labour

per hectare. However, even though this is true, it does not warrant a labour density eight times greater in Lattakia than in Homs, Hama and Jezireh.

The irrigation programs that have been completed recently and the greater availability of water for agricultural purposes in nearly all governorates in Syria, means that there is now a larger area of land that is suitable for cultivation in areas other than regions such as in the Lattakia governorate. This of course means that the newly cultivable areas need greater inputs of labour.

It is clear that the irrigation programs aimed at increasing production from the agricultural sector in Syria should be complemented with an adequate supply of labour. The present situation, which shows a definite bias in the workforce, will have to be remedied if there is to be a profitable return on the investment of time and money in the irrigation projects.

include the great and small dams at Ibtā. Together, these dams irrigate a total of 4,000 dunums and have a storage capacity of over 4 million cubic meters.

The Quneitra governorate has one surface dam at the present time which is the Ghadir al Bustan dam. Two other dams, the Haijah and the Rweihinah dams are currently under construction and will be completed soon. Altogether, the three dams will have a capacity of 11 million cubic meters and the water will be used chiefly for agricultural purposes.

Eight surface dams have been built in the Damascus governorate. In total they have a storage capacity of ten million cubic meters. The Wadi al-Qarn dam is the most important one and it can hold up to 1.8 million cubic meters of water. Besides the surface dams; two permeation dams are to be built in the Qalamoun area. These dams will enrich the ground water in the area.

A large number of dams have been built in the Homs area. In total,

nineteen dams serve this area. The dams have a combined capacity of 22 million cubic meters and the water is used for irrigation and fish breeding.

There are seven dams in the Hama governorate which have a storage capacity of 6.8 million cubic meters of water, while the Idleb governorate has two dams with a storage capacity of 0.7 million cubic meters of water.

Two dams with a combined storage capacity of 15.5 million cubic meters have been built on the Qweiq river in the governorate of Aleppo. The water from the dams irrigates farmland in the area and the dams also serve to protect the immediate surroundings from floods.

The Lattakia governorate has seven dams which in total store almost 21 million cubic meters of water. The largest is the Ballouran dam which has a storage capacity of 15.5 million cubic meters and irrigates about ten thousand dunums of land. A second important dam in the Lattakia governorate is the Haffah dam which is

capable of storing 1.5 million cubic meters of water. These two dams also supply water to 75 villages with a total population of about 100,000 persons.

The Deir ez-Zour governorate has two dams which can store up to five million cubic meters of water. These two dams serve both to supply water to livestock and to protect the region from flooding.

The Hassakah governorate, one of Syria's richest agricultural provinces, has six surface dams that have a total storage capacity of 56.5 million cubic meters of water. The water from these dams helps irrigate 56,000 dunums of land. The most important dams in the governorate are the Bab al Hadid dam, the Jawadeyyeh dam and the Jarrah dam and together these three dams account for more than 90 percent of the storage capacity of all the dams in the governorate.

The surface dams that have already been built have cost a total of LS 200 million. The dams are built by public sector companies such as the General Company for Irrigation Constructions which is implementing ninety percent of the surface dam projects.

The Directorate of Irrigation and Water Works is having another thirteen dams built. The new dams are being built in the governorates of Dar'a, Quneitra, Hama, Aleppo, Lattakia and Hassakah and they will have a total storage capacity of 130 million cubic meters and will irrigate a total of 91,000 dunums of land. As for future dam projects, the Ministry of Public Works and Water Resources is studying the possibility of building another thirty surface dams with a total storage capacity of 200 million cubic meters of water.

Syria has experienced a large measure of success with its surface dams projects, mainly because the medium and small sized dams present a practical and cost effective solution to the country's pressing water problems. The Syrian government is obviously pleased with the projects and the setting up of a special bureau for the maintenance and construction of surface dams by the Ministry of Public Works and Water Resources, indicates that the government intends to press ahead with more such projects in the future.

LAND USE (In thousands of hectares)						
	1974	1975	1976	1977	1978	1979
Total area	18518	18518	18518	18518	18518	18518
Land area	18428	18420	18418	18412	18411	18409
Arable land and permanent crops	8052	5955	5882	5864	5941	6058
Arable land	2025	479	338	355	353	372
Under permanent crops	6027	5476	5544	5509	5588	5686
Permanent pasture	6393	8631	8549	8531	8421	8274
Forest and woodland	446	445	457	452	455	459
Irrigated area	578	516	547	531	519	539
Area harvested	3534	3700	4249	3867	3734	3839
Cereals	2277	2745	2808	2602	2635	2581
Pulses	255	223	312	318	218	171
Vegetables	201	200	229	249	255	234
Fruit trees	345	351	411	427	439	456
Industrial crops	282	294	278	276	257	235
PRODUCTION OF PRINCIPAL CROPS (In millions of tons)						
Crop	1974	1975	1976	1977	1978	1979
Cereals	2323	2197	2919	1639	2455	1763
Pulses	210	147	276	227	200	108
Vegetables	1971	2245	2313	2592	2700	2521
Fruit trees	683	702	841	830	978	845
Industrial crops	575	658	714	729	671	690