

ANALYSIS OF AGRICULTURE MONITORING RESULTS IN IRAQ

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Iraq lies between 29°15'N, and 38°15'N, 38°45 and 48°45'E, and is located entirely within the north temperate zone where it enjoys stimulus seasonality of climate. Iraq, with a total area of 438,320 km² including 924 km² of inland waters, is surrounded by Iran to the east, Turkey to the north, Syria and Jordan to the west, Saudi Arabia and Kuwait to the south, and the Arabic Gulf to the southeast. Topographically, Iraq is shaped like a basin, consisting of the Great Mesopotamian alluvial plain of the Tigris and Euphrates. This plain is surrounded by mountains in the north and the east, which can reach altitudes of 3,550 m above sea level, and by desert areas in the south and west, which account for over 40 % of the land area [6].

The climate of Iraq is mainly of the continental, subtropical semi-arid type, with the north and northeastern mountainous regions having a Mediterranean climate. Rainfall occurs during the winter months, from December to February in most parts of the country and November to April in the mountains, with average day temperature of 16°C dropping at night to 2°C with a possibility of frost. Summers are dry and hot to extremely hot, with a shade temperature of over 43°C during July and August, yet dropping at night to 26°C. Rainfall is highly erratic in time, quantity and locations, and ranges from less than 100 mm in the south and southwest to about 1,000 mm/year in the north and northeast. The substantial variation in amount and distribution of rainfall increases the risk to rainfed crop production [6].

Iraq has a total surface area of about 44 million hectares about one-fifth of Iraq's territory consists of farmland. About half of this total cultivated area is in the northeastern plains and mountain valleys, where sufficient rain falls to sustain agriculture. The remainder of the cultivated land is in the valleys of the Euphrates and Tigris rivers, which receive scant rainfall and rely instead on water from the rivers. Both rivers are fed by snowpack and rainfall in eastern Turkey and in northwest Iran [3].

Agricultural production in Iraq is divided into rain fed agriculture, mainly in the North of the country, and irrigated agriculture, mainly in the Mesopotamian plain centered around the Tigris and Euphrates rivers. The most important rain fed crops in the North are wheat and barley, both grown during the winter months, accounting for 1/3rd of the nation's cereal production (FAS website, 2003). The same winter crops are grown in the irrigated Mesopotamian plain. Main irrigated summer crops are rice, corn, dates, cotton, vegetables and fruits (FAS website, 2003). Forage crops like alfalfa and other legumes are grown for livestock in addition to barley [6].

Iraqi agricultural production has been affected by several socio-economic and political events in the last century. At the same time, variations in water availability, installation of drainage systems and reclamation of saline lands, as well as the introduction of new crop varieties, advances in agronomic practices and other agricultural technologies affect the ability to produce. Data sources used are the USDA-PSD database, the FAO FAOSTAT database, and data provided from the ministry of Agriculture, Iraq. USDA – Production, Supply and Distribution Database The agricultural production data for Iraq can be extracted from an on-line database maintained by the United States Department of Agriculture. A summary of results for Iraq agricultural production is reported here. Ministry of Agriculture, Government of Iraq the Ministry of Agriculture in Iraq collects data on cropping systems in Iraq. These data have been obtained through the interaction within the current Iraq salinity management project. This report reviews the historical trends in Iraqi agriculture, with special emphasis on the irrigated agriculture in the Mesopotamian plain [6].

Based on the available reports from the databases described above, three major classes can be distinguished: total area of cultivated winter cereals, total area of irrigated winter cereals (an extraction of the previous data set, indicating the area of winter cereals that is relying on irrigation water) and summer crops, indicating the irrigated summer area.

Figure 1 shows the percentages of harvested crop area in summer 1990, 2000, 2010 as obtained from the FAOSTAT data set. Harvested crop area is an indication of the type of crops that can be identified using remote sensing (more so than crop production).

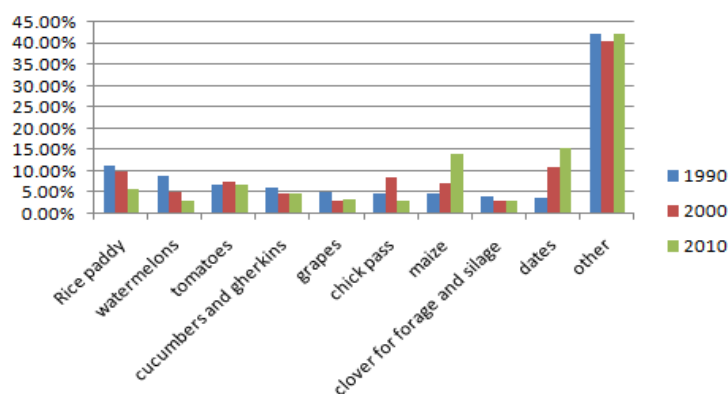


Figure 1– Summer crops covering more than 4 % of the area harvested in 1990, 2000, 2010

The group labeled "Other" in Figure 1 contains all crops covering less than 3 % of the total cultivated area in the summer. This group includes, seed cotton, okra, clover for forage, fresh vegetables, leguminous vegetables and eggplant. In the list of crops with less than of the total harvested area in the summer are apples, potatoes, string beans, dry onions, grapes, chick peas, pumpkins and sesame seed. Other crops cover less than 1 % each of the total harvested area [4].

Changes in patterns of agricultural land are crucial for assessing the sustainability of production [5, 1]. Figure 2 shows the cultivated land for different years [6]. Note that area of the cultivated land increase in the mid-1990s. In the mid-1990s, following the invasion of Kuwait, an economic blockade was imposed on Iraq, preventing the import of vital goods.

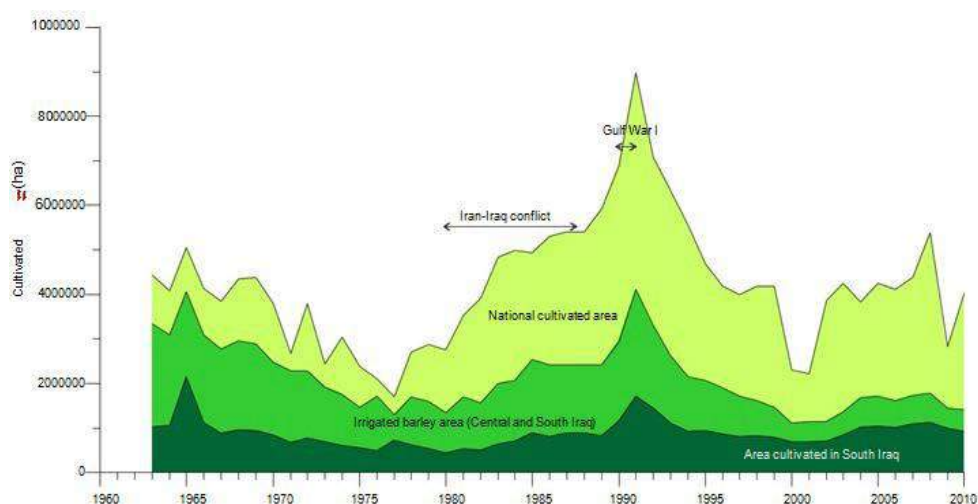


Figure 2 Cultivated land for different years

Vast tracts of Iraqi land were used at the time to meet 50 % of the domestic wheat demands. According to experts, agriculture represented 7 % of Gross National Product (GNP) in the 1990s that's why Iraq makes a concerted effort to restore its irrigation and drainage network and to control seasonal flooding. Various regimes constructed several large dams and river control projects, rehabilitated old canals, and built new irrigation systems. Barrages were constructed on both the Tigris and the Euphrates to channel water into natural depressions so that floods could be controlled.

In the aftermath of the 2003 Iraq war, agricultural productivity decreased by 90 %. The workforce shifting toward state employment, a lack of government subsidization and the lingering effects of long years of severe drought all took their toll on agriculture. From 2004 until 2010, Iraq witnessed its driest winters on record [2].

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