

Legislation on Use of Water in Agriculture: Study of Different Countries

1. **Abdul Ghaffar Korai.** Assistant Professor Law at Shaheed Zulfiqar Ali Bhutto University of Law Karachi.
2. **Abdul Samad.** Hungarian University of Agriculture and Life Sciences.
3. **Ahad Ghaffar.** Law student at Government ABD Law College Sukkur.
4. **Javed Ahmed.** Advocate High Court of Sindh.
5. **Imtiaz Ahmed Memon.** Deputy Director (Monitoring) Criminal Prosecution Service, Law Department Government of Sindh.

Abstract

The legislation governing agricultural water use in Latin America, the Middle East, and Central Asia is summarized in this article. Individual country surveys provide a brief overview of the laws governing agricultural water use, the government agencies in charge of water administration for agriculture, the conditions for permits to use water for this purpose, and related conservation and quality guidelines. In addition, some of the surveys provide information on cross-national water conflicts.

Keywords: Legislation, water, Agriculture

Introduction

For the production of fresh fruits and vegetables, clean water is important. Harmful microorganisms extracted from animal or human faeces may be transferred to large areas or large quantities of products via water. The source of water, as well as how and when it is used, have a significant impact on the risk of crop pollution.

Agriculture is the primary consumer of surface and groundwater in any region, accounting for about 80% of total water consumption in many states and more than 90% in others. In an era where water sources are becoming increasingly scarce and costly, effective irrigation systems and water management practices will help farms stay productive. Improved agricultural water management, in combination with structural initiatives to enhance water management within the basin, such as the use of water

conservation rights, reservoirs in dry years, selected water markets and water withdrawals, and regulated irrigation, will minimize irrigation's effect on off-site water quality development. Simultaneously, conserve water to meet the growing non-agricultural demand.

Agricultural conservation plans' effectiveness in promoting water conservation and environmental policy objectives can vary depending on local hydrological conditions, irrigation farm type, scale, and location, and legal and institutional water management measures. Water resource allocation, protection, and management issues related to the water scarcity challenges faced by irrigated agriculture in the ever-changing water environment are studied by ERS' analysis, data, and information program.

When considering water for agriculture and food security, it's useful to think about how water is used in the cultivation, harvesting, and processing of fresh produce in multiple ways. Water is used for crop irrigation, cooling, antifreeze, fertilizer and pesticide transport, as well as washing equipment and harvesting containers, washing hands, and drinking before harvest. The harvested water is used for a variety of purposes, including agricultural product washing and transportation, cooling, waxing and coating, hand washing, and drinking.

Literature Review

Legal Framework

Islamic Law Related to Water Rights

Water in Lebanon, Iraq, Saudi Arabia, and Yemen was ruled by Islamic law prior to WWI. During the Ottoman Empire, Majallat al-Ahkam al-Adliya (Majallat) was the codification of Islamic civil law, explicitly discussing water rights, including the use of water in agriculture. Each of these countries has adopted numerous water-related laws and regulations since the end of World War I.

In several cases, Magalat's fundamental values continue to extend to all four jurisdictions. Majallat's tenth book is about shared ownership, and it has some clauses about water rights and use. Article 1234 establishes the fundamental principle that water is both free and publicly owned. This general concept has several exceptions, which are mentioned below. Water flowing into the ground is not the "absolute" property of any one person, according to Article 1235, which means that certain privileges can be obtained for this form of water source. Oil wells not completed by someone's work are freely owned by the public, according to Article 1236, which ensures that oil wells drilled by individuals would be their property. Article 1239 distinguishes between continuous rivers and rivers that flow through a small area of land and are drained. Private ownership of the first type

of river is prohibited, while private ownership of the second type of river is permitted. The right to irrigation water is more limited. Article 1265 states that anyone can irrigate land with rivers that are not owned by others, as well as dig channels and construct factories for this purpose; however, if the used water overflows and damages others, or is entirely cut off and cannot be navigated, the use of this water is forbidden.

Powers of Government Authorities in Charge of the Management of Water Resources

Water use is controlled by separate government bodies in each of the four jurisdictions, including agriculture. Lebanon's Law No. 221 of 2000, for example, established a water management system that included the Ministry of Energy and Water as well as four different public places.

Article 3 of the Iraqi Irrigation Act of 1962 and Article 4 of Saudi Arabia's Royal Decree No. M/34, for example, can be interpreted as empowering the government or any subsidiary authority in these jurisdictions to grant water rights. It only applies to new water supplies and must be used in a way that is consistent with the rights listed above.

Water well drilling licenses are required in each of these four jurisdictions. Articles 24 to 46 of Yemen Law No. 33 of 2002, as well as Articles 6 to 8 of Saudi Royal Decree M/34 of 1400 hijri, stipulate this. Samples of standards and permits are available on the Ministry of Energy and Water's website in Lebanon. According to information on the Ministry of Water Resources' website, the Ministry is in charge of overseeing the drilling process in Iraq.

Water Source Increases or Decreases Risk

Water sources on the farm can be classified into three categories based on the risk of contamination.

(1) Surface water: Ponds, open springs, lakes, rivers, and streams are examples of surface water. Since we can't always regulate

how much water flows through upstream sources at any given time, it poses the greatest risk of contamination. The movement of wild and domestic animals, drainage from upstream livestock farms, runoff from waste dumps, and sewage discharge are all potential sources of surface water contamination.

(2) Well water: The water drawn from the farm's wells is generally considered to be of medium risk. The well water is more likely to be polluted by harmful microorganisms if it is too close to floodplains, septic tanks, sewage tanks, animal farms, manure storage areas, or drainage areas. The risk would be significantly increased if the well is poorly built or if the well casing ruptures over time. Wells, on the other hand, can become a reliable source of pollution-free water if they are correctly positioned, built, and maintained.

(3) Municipal water: The lowest risk to food safety is municipal water collected from the local water authority. We want this to be the safest water since the legislation needs it to follow the strictest chemical and microbiological drinking water requirements, and it must be checked on a regular basis to ensure it is still safe to drink.

Agricultural Water for Pre- and Postharvest

This source is closely linked to the contamination potential from agricultural water. The highest danger to surface water is that it is a shared asset that can be the target of animal invasions, manure rushes resulting from nearby cattle operations and sudden and unforeseen septic tank release pollution. Groundwater is deemed safer even if, due to runoff or flood events, shallow, poorly structured or situated deeper wells may be polluted. Municipal water is the most secure since it is checked routinely and treated for the destruction of

harmful bacteria. The lowest risk of product continuance is regarded by indirect irrigation methods (e.g., drip irrigation systems) because water is not likely to come into contact with harvestable sections of the crop. Aerial spray systems, on the other hand, are more dangerous because the water would probably come into contact with the harvesting components.

"Only water that is intended to, or likely to, contact the harvestable part of the crop is regulated."

Microbiological Testing Requirements

Frequency of testing. Before and after harvest, the FDA needs farmers to use microbiological testing methods to track agricultural water quality. The frequency in which agricultural water is tested is determined by the source. For surface water, the FDA allows farms to perform preliminary studies over a two to four year period using at least 20 samples obtained as near as possible. The FDA allows farms to perform preliminary investigations of at least four samples during the growth cycle or within one year for untreated groundwater. Agricultural water collected from the public water supply system does not need to be tested.

Water Quality and Water Conservation Requirements Associated with the Use of Water in Agriculture

The National Integrated Water Management Fund is a decentralized, autonomous government body in charge of water and financial management throughout the country. The "Water Law" specifies the requirements that must be followed to ensure that water is protected, used, and protected, including the extraction of a certain amount of water to adapt to the availability and demand of different water sources, efficient water usage, wastewater reuse, and hydrology. The basin's security and overall control of surface and groundwater resources.

As a result, administrative regulations provided by various government agencies in compliance with the above-mentioned guidelines regulate the quality and conservation criteria for water used for agricultural purposes.

Monitoring Water Quality

Testing water on a regular basis will provide you with valuable information about water quality and how it varies depending on the season or year. Since *E. coli* may be used as a useful predictor of these and other pathogens, the water testing laboratory replaces *Salmonella*, *Listeria monocytogenes*, Hepatitis A virus, parasites, and other human disease sources with *E. coli*. Producers who sell their goods to wholesale markets may need to conduct a water test as a condition of sale. Please confirm that you understand your buyer's testing criteria by contacting them. Water quality monitoring would be needed for agricultural product producers under the "Food Safety Modernization Rule."

Private and Public Investment in Irrigation Improvements

Irrigators are continuing to invest heavily in agricultural irrigation equipment and facilities. A total of \$2.64 billion was spent on irrigation infrastructure and equipment on American farms in 2013. Approximately 72 percent of these investments (US\$1.91 billion) were made on western property, which has the highest concentration of land. The majority of irrigation investment in the United States is funded privately. In 2013, approximately 90% of farms that announced improved irrigation did not receive government funding. Although these farms accounted for less than 5% of all irrigation farms, the Environmental Quality Incentive Program (EQIP) of the US Department of Agriculture was used by about 30% of the farms that earned public assistance for agricultural investment in 2013. It has had a substantial cumulative effect on irrigation

investment, boosting agricultural profitability by growing yields, conserving water and energy, and potentially improving water quality and local/regional environmental resources.

In 2013, nearly half of irrigation investment in the western region (45 percent) was spent on replacing and maintaining regular irrigation equipment or facilities. Just 27% of the overall expenditure went toward expanding the new irrigation system, and only 24% went toward improving water conservation on the property. The remaining investment will be used to save electricity and reduce irrigation costs. In 2013, nearly 85 percent of the acres affected by irrigation investment were private. Just about 16% of the irrigated region impacted by irrigation investment earned government funding through USDA EQIP, other USDA conservation programs, or non-USDA assistance programs.

Where Can we Test Water?

The Agricultural Food Safety Irrigation Water Testing Program was founded by the Pennsylvania State University College of Agricultural Sciences to promote and enable fresh growers in Pennsylvania to conduct testing. The Pennsylvania State Extension Office offers guidance on how to send water samples to the laboratory in the test kit. *E. coli* was also tested in agricultural water by several private laboratories in the state. On the Penn State Extension website, you can find a list of laboratories. Drinking water is being tested by a number of laboratories, including the Pennsylvania State College of Agricultural Sciences. Be sure to follow the guidelines provided in the water quality test kit.

What Standard Does Water Need to Meet?

Harvested water must meet drinking water requirements when used for washing and

transporting farm goods, cooling, applying wax and paint, washing hands, and drinking. The most widely used microbiological criteria for agricultural water before harvest (crop irrigation, frost control, fertilizer and pesticide carrier, washing equipment and harvest containers) are based on US Environmental Protection Agency standards (EPA). Waters for recreation. The amount of E. coli in a single 100 ml sample must not exceed 235 E. coli, and the average of the last five samples must not exceed 126 E. coli per 100 ml, according to the norm. While high levels of E. coli do not always indicate the existence of human pathogens, they are the only true indicator of fecal contamination and thus mean conditions where pathogens may be present. It's important to request that the testing laboratory provide you with the exact number of E. coli in the sample, rather than just a confirmation of their existence.

Licensing and Permits

Types of Licenses

Water usage is issued by the water system administrator in certain countries/regions surveyed. The type of license given generally depends on the intended water usage. For example, Afghanistan issues commercial and industrial licenses. Afghanistan issues licenses. Some irrigation schemes in Brazil require environmental permits. Libya's legislation limits the use of water to drinking, agriculture and industry. The Water Authority of Nicaragua awards, extends, suspends and cancels concessions and permits for water use. The government of Venezuela grants concessions to water and distribution rights for various purposes, including the production of hydropower and for industrial, commercial and agricultural activities.

Licenses for Drilling

According to investigations in some countries, government permission is needed to dig water wells. "Permits for drilling and constructing shallow and deep wells for commercial,

agricultural, manufacturing, and city water supply purposes" are issued by Afghanistan. Drilling is prohibited in Libya unless the Public Administration for Agricultural Development gives permission. Drilling permits are required in Lebanon, Yemen, Saudi Arabia, and Iraq.

Special Requirements for Licenses

Applicants for water permits in some of the countries surveyed must meet specific criteria. Argentina's water law, for example, allows water permit applicants to include details such as "irrigated land, how much property is involved or impacted, the amount of water to be used, and how it will be used," among other things. And required water extraction projects." In Chile, the applicant must show that there are no legal impediments to the concession being granted, provide technical proof that there are adequate natural water supplies, and show that the concession does not conflict with those of other concessionaires. In Israel, permits are required for water usage and production in order to meet efficiency requirements and maintain water supply equipment.

Intercountry Disputes Concerning the Use of Water

Disputes over Dams Due to Risk of Reduced Water Supply

Dam plans have started some discussion, as they may put a few nations in danger of running out of water. Water clashes exist between Afghanistan, Pakistan, and Iran, for instance, with the last accepting that Afghanistan's dam projects on transboundary streams would fundamentally affect its water supply. Numerous Iranians accept that Afghanistan's Khamal Khan dam project on the Helmand River would fundamentally lessen the measure of water streaming into Iran's Sistan-Baluchistan Province, as indicated by sources. Egypt and Ethiopia are at chances over the structure of the Renaissance Dam, which is in progress. As per Egypt, the dam would endanger water supply by

decreasing the measure of water streaming into Lake Nasr. As per sources, Mali's lead representative blamed Libyan experts for developing a venture on Mali's territory to empty huge amounts of water out of the Niger River to extend rural land. Turkey has been building dams and hydroelectric force plants since 1975, and different nations sharing the Tigris-Upalite Basin (counting western Iran) have blamed Turkey for water unloading.

Dispute over Water as Part of Broader Negotiations

Not exclusively there are disagreements regarding this point, however there are likewise arguments about trans boundary water supplies. Indeed, quite possibly the most hostile issues among Israel and the Palestinians is the appropriation and guideline of water, which is presently being haggled as a feature of a nonaggression treaty. Most of the water in the area comes from a common spring underneath the West Bank and Israel. Water conveyance and guideline, satisfactory use levels, the making of new water sources, and wastewater treatment are for the most part zones where the different sides contrast.

Analysis

Study of different countries

Afghanistan

The thawed rivers of the Hindu Kush Mountains provide 80% of Afghanistan's water supply. Just 20% of the population has access to drinking water due to inadequate water management and pollution. In 2009, Afghanistan passed the "Water Law," which governs the possession, prices, privileges, permits, and usage of water. Afghanistan and its two neighbors, Iran and Pakistan, are involved in a water dispute. On both sides, neighbors are concerned that Afghanistan's dam project on the main river will drastically reduce the country's water supply.

Legal Framework

Water ownership, prices, privileges, licenses, and usage are all governed by the Afghanistan

Water Law, which went into effect on April 26, 2009. The object of the "Law Preamble" is stated in Article 1:

The legislation aims to put the principles of Article 9 of the Afghan Constitution into practice in order to conserve, equitably allocate, and efficiently and sustainably use water supplies, as well as to improve the national economy and protect water users' rights. Islamic jurisprudence, as well as the people's honorable practices and rituals.

Water is the public's property, according to Article 2, and "the government is responsible for the conservation and management of water." This legislation outlines the roles and obligations of various government agencies when it comes to water resource management and conservation. According to the article, "the main responsibilities of the cooperation between the Ministry of Agriculture, Irrigation and Livestock and the Ministry of Energy and Water, the Ministry of Transport and Aviation, Public Health and the Ministry of Agriculture, Irrigation and Livestock are determining irrigation standards for different river basins, irrigation drainage systems, and other surveys related to the use of water for agriculture and irrigation."

Argentina

The provinces have been granted special legislative powers to deal with natural resource issues in their jurisdictions, while the central government is in charge of managing internal river navigation and trade, as well as setting minimum environmental protection requirements. All water, with a few exceptions, is public property. There is no water law at the national level, but every province has passed one. Water intake in agriculture is the largest. Certain provinces' laws provide for the acquisition of water rights by licenses, concessions, and authorizations.

Legal Framework

The Argentine National Constitution (Constitution Nacional, CN) created a federal government structure that laid the groundwork for power sharing between the central government and the provinces. The provincial government has the authority to enact legislation concerning the creation of social and economic development zones. Provinces are also granted exclusive legislative powers over natural resource issues in their jurisdictions. The central government, on the other hand, has the authority to regulate internal river navigation and commercial activities, as well as establish minimum environmental protection standards. According to "China News," each province reserves the right to negotiate an agreement on its economic interests and projects of shared interest in waterways that include multiple provinces.

Brazil

Brazil recently passed Law No. 12787, which implements a new irrigation program, on January 11, 2013. The policy's goals include expanding irrigated areas, raising production on an environmentally sustainable basis, reducing the climate risks associated with agricultural activities, and fostering local and regional growth, among other items.

The services used to enforce irrigation policies are mentioned in Law No. 12787, including irrigation plans and projects aimed at directing the preparation and implementation of policies and developing the national irrigation information system for collection, processing, and storage of irrigated agriculture information. Look for something.

The secretariat, which was formed in 2011, is in charge of facilitating the formulation, implementation, monitoring, and evaluation of irrigation policies and resources, among other things. Irrigation projects must receive

environmental permits as long as existing federal, state, local, or regional laws warrant it.

Legal Framework

The National Irrigation Policy was enacted on January 11, 2013, by Law No. 12,787, which repealed the previous irrigation policy, which was enacted in 1979 by Law No. 6,662 on June 15, 1979.

Principles

The following principles guide Brazil's irrigation policy:

- i. Irrigation using and managing land and water resources in a sustainable manner.
- ii. Integration of unique policies and plans in the areas of water, climate, electricity, environmental sanitation, rural credit, and insurance, with a preference for projects that enable multiple uses of water resources.
- iii. The linking of irrigation-related activities at various levels and instances of government, as well as between them and private-sector actions.
- iv. Democratic and participatory management of public irrigation projects with common-use irrigation infrastructure, through regulatory mechanisms.
- v. Prevention of waterborne endemics in rural areas.

Chile

Chile's water rights regime has changed dramatically over the last 40 years. The new legal framework, from the standpoint of a state-driven system, gives the market a major role in the distribution, usage, and transition of water rights. Water used for agricultural purposes is not specifically included in the legislation. Water rights holders have complete control of how their products are used, like agriculture. Chilean law, on the other hand, encourages the use of water for agricultural purposes (mainly for irrigation of farmland). Despite recent legislative changes, Chile's agricultural water use legal structure remains open and market-driven, with the government's position limited to

promoting and tracking agricultural water use in rural areas.

Legal Framework

A particular legal framework for agricultural water use does not exist in Chilean law. In general, all regulations that refer to water apply to agriculture as well. Agricultural irrigation, on the other hand, is governed by two laws. The Irrigation Incentive Law (Act No. 1123 of 1981, the "Irrigation Promotion Law"), for example, governs irrigation and promotes investment in existing and new large-scale irrigation projects. Second, the "Small Irrigation Project Incentive Law" [Act No. 18,450 of 1985, Regulations on Promoting Small Irrigation Projects] states that the government will subsidise up to 75% of irrigation and drainage project costs to encourage investment and develop the irrigation base facility.

Egypt

Egypt's primary water supply is the Nile River. It comes from three places: (1) the Blue Nile, (2) the White Nile, and (3) Atbara. The key legislation governing water use, management, and distribution is the "12-1984 Irrigation Law." Every year, Egypt receives over 55.5 billion cubic meters of water from the Nile, the majority of which comes from the Nile. The situation among the Nile River basin countries became more complicated when Ethiopia declared that it would construct the so-called "Renaissance Dam." Ethiopia is accused by Egypt of jeopardizing its water supply.

Legal Framework

The Ministry of Water Resources and Irrigation (MWRI) is Egypt's main government department in charge of water resource management and use. The key legislation governing water use, management, and distribution is the "12-1984 Irrigation Law." The legislation is divided into eight sections with a total of 104 regulations. (1) definition of public streams, (2) requirements for the use of streams for irrigation and agriculture, (3) development

and use of reservoirs, (4) methods and requirements for water distribution, (5) prohibition of the use of sewage and groundwater, (6) methods to protect streams for irrigation and navigation, (7) sanctions for offenders, and (8) use of water.

The MWRI has the authority under this law to designate such streams as public water sources. Conditions and limitations on the use of agricultural land are levied within 30 meters (98 feet) of public water supplies. Furthermore, without the permission of MWRI, any alteration of major public water supplies and rivers is prohibited. Authorize the Ministry to revoke any prior licenses for the private use of streams that have been granted. Irrigation inspectors may also set precise schedules for allocating water to irrigate farmland under current law. It also allows the owner of agricultural land to appeal the Irrigation Inspector's decision to the Directorate General of Irrigation. The farmland is split into several parts. Each unit has its own irrigation system and stream.

Violators are subject to a series of fines under the statute. Authorize irrigation inspectors to report any irrigation violations to law enforcement officers in order to avoid this action. Fines ranged from 30 Egyptian pounds (approximately US\$4) to 10,000 Egyptian pounds (approximately US\$1,427). It also allows inspectors to issue administrative orders to stop any water resource abuses.

Discussion and conclusion

An international committee composed of stakeholders deals with cross-border water rights issues in some of the countries being investigated. For example, CILA is a multinational organization with Mexican and United States branches that is responsible for distribution between the two nations of Colorado and Rio Grande waters. Mexico in fact does not, under the terms of the U.S. component of the CILA, reserve the distribution of water that must be transported annually in accordance with the

respective treaties. Sources state that the Mexican government is working on legislation requiring water to be set aside to fulfil its commitments to the USA. There are also suggestions that the high reaches of Central Asia (such as Kyrgyzstan and Tajikistan) and downstream (such as Uzbekistan), following the disintegration of the Soviet Union, are in opposition to control and use of shared water supplies. These countries have signed several agreements to prevent possible water conflicts, one of which has led to the establishment of the Interstate Water Coordinating Committee (ICWC). The ICWC consists of water officials from all the countries of Central Asia. They also meet to discuss water limits and allocations and resolve disputes.

According to the new nationalist constitution and legal system established in Venezuela in 1999, all waters are state-owned and used. Only private citizens can be granted private water and water, which is used for any reason, including agriculture under the conditions of a government concession or permit. The only exception is water used by small households, livestock and boating. In addition, many government agencies at central, state and local level are responsible for supervising and controlling all water related activities, including users' delivery, waterway discharge and conservation.

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