

## Original Article

## Spatial Variation Of Fruit Trees And Citrus In Wasit Province, And The Importance Of Fertilizer

Amar Salman Obed , M.V.Suryawanshi and U. B. Pathre



## ABSTRACT

County is located " Wasit " in the central part of Iraq , and about 172 km from the capital, " Baghdad " and bordered by the provinces " of Baghdad and Diyala " from the north, to the south by the province, " Maysan " , which lies 206 km and the province, " Dhi Qar " 204 km , and to the west of the province " Babylon , "which is separated by 274 km and the south -west province " Diwaniya " , which lies 192 km , and lies to the east of the international borders of Iraq with " Iran. " Thus, the province of " Wasit " enjoys a strategic geographical location of its proximity to most of the central and southern provinces and the capital, " Baghdad " , where the average distance between the center of the province and the provinces 276 km , as well as the proximity of the best outlets exchange ( border crossing ) with Iran, 70 km , from the center of the province.

The area of □□the province, " Wasit " 17153 km and thus representing a percentage of 3.9% of the total area of □□Iraq , mostly arable , and are available in the province, sources of irrigation where the river flows through " Tigris " out of the north to the south and in the city of " Kut " located Kut Barrage famous which was built in 1937 , which branched ones River " Garraf " The River " Dujailah " , and there are a wide range of channels and other rivers , which is located by a number of small dams and barrages .

In maintaining agricultural projects and land reclaimed wide where the province is famous for its agriculture, the most important crops of wheat , barley , maize , rice or rice , cotton and sunflower , as well as other crops , vegetables and fruit sizes and wide .

Most of the cultivated land based irrigation whether Alchrista or by proxy and average annual rainfall by 385 mm , an area plain is climate transitional climate between the Mediterranean and the desert climate of hot, dry and rates of temperature in the month of July, the current 42 degrees Celsius , while up rates during the month of January is about 10 degrees Celsius .

In addition, to maintain the reservoirs contain significant oil and various metals .The population of the province, " Wasit " for the year 2006, according to the results of population projections 1,032,838 people, make up a ratio of 50.2% of the total population in the province, and a sex ratio of 101 males for every 100 girls reached the urban population 539 692 people, of 52.4 % of the total population .

Characterized by the presence of the Tigris River and dams on the river and artificial lakes . The ground in the city of Wasit is fertile flat land suitable for agricultural production .

The space reclaimed land was large , especially after the issuance of Agrarian Reform Law year in Iraq in 1952 , Wasit city famous for its flattened flat , that the presence of the Tigris River , which runs through the city enabled them to possess certain types of fish the river , which is famous for this region and are characterized by all other cities , the site of this city is a point Ssal between the southern regions and central Iraq for this possessed of great significance from the ancient times , where he said the pilgrim old Ibn Battuta ( Wasit by the media guides goodness saw them and gift to consider watching , and her family of choice folks Iraq).

**Keywords:**

Fruit Trees And Citrus , strategic geographical .

Amar Salman Obed , M.V.Suryawanshi and U. B. Pathre

From  
Research student, Dept. of Geography,  
Dr. B.A.M. University, A,bad.  
Assist professor Dept. of Geography,  
Dr. B.A.M. University, A,bad  
principal , A. B. College Devgao, Tq.  
Kannad Dist. A,bad.

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## INTRODUCTION

The fruit trees and citrus sources of food for humans and corner of the pillars of the national income job, whether in Iraq, or in the other, and based on this benediction studied attention of researchers in the field of geographic, or in other areas have taken our study of the geographical distribution of fruit trees and citrus in Wasit province, a scientific problem trying to detect the nature of the distribution and statement of geographical factors both natural and human resources that affect the variability of spatial points of the study area at the level of administrative units respects the study by followers steps of the scientific method geographic whether descriptive approach or quantitative to a number of conclusions attempt to validate the hypothesis of the research was able to study the interpretation of spatial variation in the light of its relationship to natural factors and human life, and the study revealed a discrepancy spatial clearly in the properties of the geographical distribution of fruit trees and citrus as concentrated mostly in those North Western, Central and take their numbers Decline gradually as, we turn toward those eastern and north-eastern and south-western submitted is fruit trees and citrus The basic elements for agricultural production in the Provides food needs as a result of population growth and the increasing demand for its products as well as providing plenty of raw materials for the food industry, medical and cosmetics, the piece became the cultivation of fruit trees of all kinds of great economic importance divided fruit trees two types, one fruit trees evergreen the kind other fruit trees deciduous dripping leaves during the fall and winter, as is the case for the tree apples, peaches, apricots, figs, as well as many fruit trees deciduous with hard core research aims to know the spatial variation of fruit trees and citrus fruits in the study area and try to interpret it in the light of its relationship to natural factors and human the life and contribute as much as possible the development of scientific methods to ensure the development of agriculture production, in line with the needs of the population food the problem of the research are based on a set of questions that the study attempts to answer which is there in the distribution of variation spatial of fruit trees and citrus in the points of the study area, and what is the role of geographical factors influencing the distribution spatially adopted researcher in the study of spatial variation on survey data and information on the search of the field work, which included a number of personal interviews and data with fruit trees and citrus to departments of Agriculture and field visits to some of the orchards in the study area As for the limits of research, they are studying the Wasit province, which consists of 17 administrative units, including 6 districts and 11 hand affiliated with spaces varying as illustrated in the table have been adopted terms as the smallest administrative unit can get their data to address the problem of the research in order to highlight the clear picture of the spatial variation of fruit trees, citrus and by types in the views of the study area the research method used is the method of fundamentalist and focus their study to determine the ingredients geographical affecting agricultural production, however, this approach does not give the study objectivity and integrity and clarity so completed the curriculum of crop research involved as well as the introduction and conclusions of the most important natural and human factors, and life affecting the spatial variation of fruit trees and citrus in Wasit province, and then study the geographical distribution of fruit and citrus trees in the study area and the most important findings and recommendations.

### Second:

Trees, apples, considered the fruit trees of the most important agricultural crops yielding high economic as well as its nutritional value is high, where there are grown in temperate and subtropical, and believed that the areas where the emergence of the fruit growing Southeast Asia and the Arabs have brought this kind of fruit to the country Sham, Iraq and Egypt about the tenth century AD, including trees, apples range of fruits such as apples and plum, as well as the fruits of the hard core, such as apricots, peaches, pears and aloe, comes this kind of fruit came in second after citrus trees in terms of numbers, attributed the cause of low space numbers fruit trees and citrus in these entities to compete with other agricultural crops as well as a small area of agricultural land devoted to the cultivation of fruit trees, because the majority of the territory leased, it is also known that the fruit trees take a long time to bear fruit so it depends farmers to grow other crops give economic rewards highly through period short time

**Third:**

Pomegranate trees enjoys planting pomegranate trees in subtropical areas where available heat, and drought and grows well in sandy soils and light mixed soil and sedimentary rocks and heavy clay in addition to endure soil salinity, pomegranate is the country's Persians and then moved the original home of the tree to the Arab countries , North Africa and northwest India and to the rest of the world other

Case for aspects of Sheikh Saad , Wasit, Bashaer southwest of the study area , as well as those in the north-eastern district center Badra and Jassan my part and Zurbatiyah. The study showed spatial variation clear to for pomegranate trees in the study area , where the study shows to the concentration in those North-West in the district center of Essaouira and Azizia and hand excavation and Zubaydiah and Aldboni , then take the numbers decreasing clear in central and south-west of the study area as well as those East , concentrated fig trees and grape bodies in the northwestern districts and areas of Essaouira and Azizia The aspects of the fossil and Zubaydiah and Aldboni , and take their numbers gradually decreasing destinations in Central and South Bank Centre in Kut district , Alhai and Numaniay and hand -Ahrar , and lacking in the areas of Sheikh Saad The Albashaer and Jassan and Zurbatiyah , as well as those in the hand Aahimih North West of the study area.

**Fruit trees and climate variability :**

The fruit trees in the province of Wasit exposed to fluctuation in output , depending on the vagaries of climate, including the hot dry climate of Iraq in the summer rainy cold in the winter , and depending on the soil and climate can determine the following points :

- 1 - The vagaries of climate directly influenced the quality and quantity of production .
- 2 - The high level of salts as a result of flooding in the Tigris River and the high water table has led to fluctuating production volumes .
- 3 - The removal of sediment in Saddam River ( downstream of the year ) helped cut the proportion of salt , which helped to improve the production and quality of fruit trees .
- 4 - in the city of Diyala was to climate variability in terms of temperatures and low rainfall led to the destruction of many of the fruit trees , especially oranges.
- 5 - High temperatures recently in Iraq with the lack of rainfall made □□the production of fruit trees up to its lowest level .
- 6 - started recently orientations farm in the province of Wasit to the use of modern agricultural techniques such as the use of drip irrigation, and optimal use of fertilizers and pesticides on the production to the increasing and continuous, and here we will talk about the role of fertilizers and their types and effects of pesticides and fertilizers on soil and water, as detailed later.

**The impact of pesticides and fertilizers on soil and water:****1 - the effect of pesticides on the soil :**

Up pesticides to the soil , either directly through the soil treatment or treatment plants and are therefore moving to other objects and then move to the air, water or shatter and fade in the soil for a long time is estimated in years . It also should not neglect accumulation of pesticides in the soil as a result of repeat usage , as well as residues of these chemicals in biosphere where in the end up part of it also to the soil by falling dust or rain are incurred . this is in addition to the falling leaves of plants sprayed or when you mix the remains of plants , as well as organisms from the soil , and the stability of the pesticide in the soil depends on the characteristics of the pesticide especially volatile solubility and concentration The image used it as well as the type and specifications of the soil and the exchange of actions and weather conditions and soil micro-organisms , and pesticides such as this may affect the growth and productivity of plants cultivated like ( lack of seed germination - poor growth ) . Change the taste change the content of the Interior, may also affect the microorganisms important , such as bacteria, nitrogen fixation air and others which could affect the course of organic matter in soil , this consequently affects soil fertility and physical properties , chemical and biological , that such residues with low concentrations of pesticides may lead to formation

of resistant strains of pests such as predators and Mites and bats are constantly exposed to such residues and therefore difficult to control, and up pesticides, fungicides and nematodes, either by spraying or fogging or smoking or publish grained If reached the pesticide into the soil, indirectly, it is an accidental pollution by either loss of the pesticide on the plants during treatment or by flipping through the remnants of plants contaminated with pesticides in the soil for the purpose of fertilizing or planting seed treated with pesticides against soil pests and seedling.

And pesticides are exposed to chemical and microbial crashing and absorption on the fractions as well as the volatile and move through the soil with irrigation water to groundwater, such as chemical fertilizers, causing pollution to the environment and all of these processes are related to the type of soil and environmental conditions.

## **2 - side effects on microorganisms :**

Danger lies also in the arrival of pesticides into the soil due to the imbalance that exists between the components of nature, as studies have found that pesticides generally lead to lower census microbial collections key in the soil (fungi and bacteria), and lead also to the low activity of microbes, producing carbon dioxide and oxygen consumption. known that microorganisms in the soil are present in large numbers, and these objects are working on the demolition of many of the chemicals, such as proteins and sugars, and other remnants of the plants, so we use a source of organic matter.

## **3 - The impact of the pesticide on the groundwater :**

The excessive use of pesticides in ways that random has an impact on the groundwater surface and this is a relatively infrequent phenomenon, where it controls the following: (1) leakage of pesticides to be underground by gravity through cracks in the earth's surface. (2) Add a material that melts the chemicals in large quantities as a solid work of these factors on the mixing of pesticides, water and becomes one of the components used by man after digging wells in drinking and watering animals and farm irrigation can not be detected only by laboratory.

## **Significance of fertilizer:**

The productivity of a crop depends on several factors, some of which can not be controlled, such as lighting and temperature, some of which can be controlled to a limited extent, such as the amount of irrigation water as well as the nature of the soil factors that can be controlled entirely. They crop selection and strain appropriate, as well as soil fertility and exemplary service and reflect soil fertility on the ability to supply the plant with its needs developing not only the quantities of food, but it is important to optimum of balance with each other, in different stages in its life cycle so that it can give the bulk of the crop in terms of quantity and quality together.

Take the plant all its food mainly from the soil and the atmosphere, and major elements such as nitrogen, phosphorus, potassium, calcium, magnesium and sulfur, as well as trace elements which iron, manganese, zinc, copper, boron and Almoulidnim, chlorine, there are these elements in the soil in the form of chemical different may be dissolved in the soil solution or built-in image interchangeable with mineral and organic colloids or be installed in the form of the plant can not take advantage of them immediately. But there is a state of dynamic equilibrium between these elements are to make up the plant from the solution takes the ground from the other elements of others soft. And different territories while content of total quantities of each item, as well as the distribution of each element in the different images and the degree of its launch, and this difference between the land expressed condition of fertility. And item level nutrient in the soil determines the level enough to give the crop greatest in the case of the lack of the element for a certain level may show symptoms the lack of the element on the plant has no symptoms and so-called hidden hunger has been up the shortage in the crop of 50-100% of the crop greatest. This means that the soil has limited the ability of logistical and need add that element to complement the needs of the plant. And at the optimal level gives the greatest crop plants and the soil is characterized in this case enough logistical capacity additions do not need to have the element of an element is found in the soil to a high standard for the optimal level exceeded the absorption component without an increase in the



crop. The concentration of the element up in the soil to the level of very high lead to a shortage of the crop has been showing symptoms of toxicity.

This should be noted interest element nutritious least a presence both in the soil or plant as the add a particular item to the soil in sufficient quantities does not work as long as there is an element feeder last less presence than , for example, can not be taken advantage of nitrogen additive in organic matter , but in the presence of a certain degree of All other nutrients , according to the needs of the crop. And adopt the ideal productivity of crops on an adequate supply of nutrients . And when the soil is unable to provide the quantities of these elements and the equipment required was needed to compensate the shortfall. In spite of recommendations by using the rates of the three fertilizer elements nitrogen , phosphorus and potassium fertilization with organic fertilizer Municipal . However, the farms ladle strongly in the use of nitrogen fertilizers , which led to contamination of the product with nitrates which causes the first to spread of cancerous tumors in the digestive system . This is in addition to agricultural drainage water pollution by nitrates , which led to the spread of water hyacinth and algae and the accompanying severe contamination of watercourses , in addition to severe water pollution to water pumps element nitrates. As a result of extravagant extreme in the use of nitrogen fertilizers led to the vegetative growth is high but weak resistance , which facilitated the spread of bacterial diseases and fungal and viral infections and subsequent decline in the crop or to resort to the use of pesticides , but for superphosphate has bucket-type farms in the use of quantities of high so as to permit its price , which led to soil contamination with heavy metals and not take advantage of it by plants due to the lack of organic matter and the elimination of micro-organisms as a result of excessive use of chemical fertilizers and pesticides. As for potassium, although it is an essential element for crops , but the high price led to a severe shortage in the quantities used him which led to a lack of poise plant nutrition . Below we will address methods of raising soil fertility to rationalize the use of chemical fertilizers and make the most of them and to obtain the food product free of chemical fertilizer pollution .

### **Bio- fertilizers :**

Are additions origin bio- pollinate their land or plant seeds in order to improve the properties of vital soil and encourage the growth and fruition of the plants where facilitates plant developing its needs food or resistance to certain environmental conditions and called these additions a supplement bacterial fertilizers or bio is specialized depending on the type of plants and the quality of the food item to be facilitated plant fertilization.

### **Fertilization plays a vital role in many important biological processes useful , including:**

- 1 - analysis of organic residues .
- 2 - converting organic nitrogen to nitrogen metal can be absorbed to the roots of plants .
- 3 - help to facilitate some elements ( such as phosphorus installed in the soil ) .
- 4 - Production of doping substances for plant growth and help Anbath growth of roots and increase nitrogen atmosphere inside or around the roots of the plant .
- 5 - increase plant uptake of water and nutrients .
- 6 - to contribute to the improvement of soil properties of natural and chemical .

### **The agricultural cycle:**

Permits the cultivation of a particular crop a year when the division of the area into different pieces that follow the cycle of certain agricultural success can not be applied in another area of the same farm. So there needs to be some kind of flexibility in the application of agricultural cycles depending on the desired main crop cultivation to maintain soil fertility and reduce diseases.

The mixed farming leads to the optimal exploitation of the sources as light , water and food , and increase production efficiency and reduce the spread of pests , diseases and weed control also allows natural predators actively green manure intended fertilization Green is the heart of the crop in the soil and is still green . For example, the hearts of the forestation in clover green fertilize the soil. The most important crops, leguminous green manures and clover and lupine shamrock sweet and bitter and leguminous crops summer alfalfa , cowpeas , beans and peanuts . The most important non-leguminous crops winter barley crops and non-

leguminous summer Sudan grass and millet . Featuring arable plants in green fertilization depth roots and lack of fibers and speed their growth and should not disturb the plants growing green manures system of the agricultural cycle and not costing cultivated many expenses. And fertilization Green improves physical properties and chemical and biological soil as the dry matter represents about 15 % of the fresh weight of the plant and that the fresh weight , on average, between 5-10 tons per acre , and dry matter about 1-2 tons per acre decomposed in the soil by microorganisms and released nutrients In addition to the formation of humus , which improves the physical properties of the soil. It should be the heart of the plant which is green and before flowering so quickly decompose in the soil as it should fluctuate plants in the soil not less than 1.5 months of planting the next crop because it does not sprout seeds for the next harvest if you put after the heart of the plant duration simple to increase the proportion of carbon dioxide air soil so it restrict germination of seeds may also occur damage to the roots of the seedling. Fertilizer plants plowed deep green light to land on the territory of the heavy slow decomposition of organic matter and heavy land quality sandy soil aeration. Preferably tossing of 2.3 tons per acre of compost good for the land so as to increase activity of microbes must provide proper humidity to ensure the rapid dissolution of the organic matter and the importance of crop by saying the session lies in the residual impact of the crop next for nutrients , especially nitrogen in addition to increasing crop plant proteins important in human and animal nutrition , and leguminous crops such as alfalfa paper and peanuts add large amounts of nitrogen compared leguminous crops that are grown for grains such as beans , peas and soybeans. It was found that the content of the soil nitrogen after crop green manure vary depending on the crop developing If legumes or not by saying it was found that the change in the content of the soil nitrogen ranging from 15 kg / acre for soybean Municipal to 100 kg / acre crop lentils, lupine and cowpea , beans and for non- leguminous crop was change the content of nitrogen is 7 lbs / acre nitrogen barley.

#### **The importance of Green fertilization can be summarized as follows:**

- 1 - increase the content of soil organic matter and improve soil structure.
- 2 - Helps to get rid of weeds and inhibits the growth of seeds.
- 3 - protect the soil from erosion and washing nutrients.
- 4 - provide the next crop nitrogen and other nutrients.
- 5 - bring nutrients from deeper layers.

#### **Recommendations through the study of spatial variation:**

For fruit trees and citrus has been reached to put some solutions for the development of cultivation, production and citrus fruit trees through follow methods and the following procedures :

- 1 - Conducting studies and laboratory experiments to find new varieties of fruit trees and citrus .
- 2- Work to increase the area planted with farmland fruit and citrus due to its importance Large economic.
- 3 - Cultural awareness among farmers and attention to their education and the need to encourage them to the importance of trees, orchards for being an important food resource .
- 4 - The need to activate the role of agro-industrial integration in the areas of agricultural production for fruit trees and citrus through the establishment of factories for canning products special agricultural fruit trees .
- 5 - Activating the role of the agricultural policies of agrarian reform , agricultural extension and the role of farm associations the agricultural credit to suit the size of agricultural production .
- 6 - The development of the rural road network, transport, agriculture, linked to districts and the aspects of the study area and paved ways to facilitate the transportation of agricultural products to markets .

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