6.5.3 Does your university as a body support water conservation off campus?

Water conservation in the kingdom of Saudi Arabia for better environment: Implications for extension and education

https://www.researchgate.net/publication/290287540_Water_conservation_in_the_kingdom_of_Saudi_Arabia_for_better_environment_Implications_for_extension_and_education [1]

The kingdom of Saudi Arabia faces an acute water shortage due to arid climate and absence of permanent lakes and rivers. The demand for water is growing substantially and that is being met through the available scarce and dwindling water resources. Ever-increasing imbalances are usually met by increasing water supplies, whereas the concepts of water-demand management have not been given due importance and weightage. Meeting the rapidly rising demand with scarce and depleting resources remains the critical issue. This paper places emphasizes on the urgency of adopting conservation and water-demand management initiatives to maintain demand supply relationship and achieve an acceptable balance between water needs and availability. The kingdom places emphasis on the shift from supply development to demand management to use of critical and non-renewable water resources efficiently. The article suggests that the water-use-efficiency (WUE) in various sectors can be enhanced and improved in the kingdom. The paper presents an overview of the country's water resources and issues related to water. Some possible conservation and remedial measures particularly in the agricultural sector - the largest and most inefficient user of water have been suggested. The objective of this article is to safeguard and conserve this precious natural resource through environmental friendly technologies for the future generations to come. It is presumed that water resources can be managed on sustainable basis by devising and employing environmental friendly technologies including water conservation measures. The usefulness of these measures can be supplemented through the vibrant and viable extension and education initiatives and capacity building programs.

Department of Information Technology

https://services.qu.edu.sa/laravel-filemanager/files/shares/%D8%A7%D9%84%D8%A7%D8%AF%D8%A7%D8%B1%D8%A9%20%D8%A7%D9%84%D8%B9%D8%A7%D9%85%D8%A9%20%D9%84%D9%84%D8%B5%D9%8A%D8%A7%D9%86%D8%A9%20%D9%88%D8%A7%D9%84%D8%AE%D8%AF%D9%85%D8%A7%D8%AA2021.pdf [2]

Main Tasks:

- Audit and review of data related to water and electricity bills
- Review the correctness of information related to water and electricity bills from their original sites
- Monitor electricity and water consumption rates and report on consumption rate.



Educating students inside and outside the university about the principle of rationalization, reducing consumption and waste in natural resource

Qassim Water Director thanks the university's efforts in making the "Network Water Quality" conference a success

https://www.qu.edu.sa/content/news/1010 [3]



Eng. Abdulmohsen Al-Fraihi, Director General of Water Services in Al-Qassim Region, sent a letter of thanks to His Excellency Dr. Abdulrahman bin Hamad Al-Daoud, Rector of the University for the university's cooperation through its cadres and specialized experts, which contributed to the support and success of the activities of the "Network Water Quality" conference, which was held under the patronage of His Royal Highness Prince Dr. Faisal bin Mishaal bin Saud bin Abdulaziz, Governor of the Qassim region.

It is noteworthy that the conference shed light on community awareness and knowledge enrichment of the role played by the rational government represented by the Ministry of Environment, Water and Agriculture, and the water distribution sector in the Kingdom in providing drinking water services according to the highest approved standards and criteria.

The sustainable Development Corner of the Fourth Campaign

https://twitter.com/QassimUniv1/status/1659190282066497536 [4]





In order to raise the level of environmental awareness.

The sustainable development corner of the fourth # جامعة_القصيمcampaign “Awareness, Health and Education” provided the visitors of the campaign with educational materials in preserving the environment and encouraging practices in protecting and cultivating wild plants, in addition to **rationalizing energy and water consumption,** at the Celebrations Center in Qubbah in Al Asyah Governorate.

A green university city that supports environmental sustainability.

https://twitter.com/QassimUniv1/status/1639338095089680399 [5]

More than 72,000 trees and palm trees, and 138,000 square meters of green areas and spaces are adorned # جامعة_القصيمthrough treated water that is used in irrigation operations at the university.



Under the patronage of the Prince of Qassim, the university participates in the Forum of Agricultural Investment Opportunities in Buraidah

https://www.qu.edu.sa/content/news/874 [6]



The university, represented by the Center for Sustainable Development, participated in the Investment Opportunities Forum, which was launched on Wednesday at the King Khalid Cultural Center in Buraidah, under the patronage of His Royal Highness Prince Dr. Faisal bin Mishaal bin Saud bin Abdulaziz, Governor of the region, and in the presence of His Excellency the Minister of Environment, Water and Agriculture, Eng. Abdulrahman Al-Fadhli.

The Director of the Center for Sustainable Development, Mr. Ibrahim Al-Rabdi, stated that the university participated in an introductory exhibition about the center that contains introductory panels about its fields, objectives, research, awareness and guidance projects in the field of sustainability.

At the opening ceremony, Al-Rabdi received a commemorative shield from the hand of His Highness the Prince of Qassim, Chairman of the Advisory Council of the Center, who praised the objectives of the Center and the university's efforts to serve the community.

The forum was attended by the relevant authorities in the field of environment, water and agriculture with **the aim of achieving the Kingdom's Vision 2030 and activating the initiatives of the National Transformation Program 2020 to achieve the goals of food and water security in the Kingdom**, in addition to creating partnerships between the public and private sectors, which will result in raising various services and upgrading the local product while preserving the environment and natural resources, in the presence of businessmen and those interested in the agricultural sector.

The University Offers 10 Research Grants worth More than One and a Half Million Riyals to Serve Development in the Qassim Region

https://www.qu.edu.sa/content/news/1923 [7]

Dr. Mansour Al-Sherida, Dean of the Deanship of Scientific Research at the University, explained that these research grants are provided to serve the development in the region, where they have been directed to much scientific research in the relevant departments, where research in the field of transport discusses the causes of the phenomenon of grooving and its treatment in the roads of the Qassim region, and the effectiveness of asphalt recycling in paving roads, while research in the field of water and the environment discusses ways to detect leaks in water supply networks and strategies to reduce them, as well as leakage in strategic water tanks, As well as the management of reverse washing protectors through the development of new sorbents for water treatment, in addition to a search for green technology to exploit the return of water purification plants in the Qassim region and reduce environmental pollution caused by poultry wards using modern technologies.

Students from the kindergarten department launch the "A drop that divide" campaign

https://coe.qu.edu.sa/content/news/271 [8]

To preserve the water wealth and its investment in plant watering, female students from the kindergarten department of the Faculty of Education - Montazah launched in cooperation with the Nama Student Club Campaign" titled A Drop Divides"Through which they distributed a group of seedlings and explained through folds the importance of water and the exploitation of water residues after a sufficiency of a drink The campaign was held on Tuesday 12/7/1440 AH



The Department of Kindergarten at the Faculty of Education holds an event on the occasion of (World Water Day)

https://coe.qu.edu.sa/content/news/673 [9]

The Faculty of Education Montazah Department of Kindergarten held an event on the occasion of

(World Water Day)

On Monday, 9/8/1442H
, where Her Excellency Dr. Ghada Al-Tamimi delivered a speech on this occasion
and Dr. Amal Mustafa Abu Al-Alaa delivered a speech in which she explained that the allocation of this day aims to focus on

The importance of water and the call for the good management of its sources as she pointed out that all this is clear in the Kingdom's efforts to educate its citizens.
The event was then concluded with the participation of students Muzna Al-Saeed and Shaden Al-Saqabi.



His Excellency the Rector inaugurates the First International Conference on the Sustainability of Natural Resources

https://qu.edu.sa/content/news/1531 [10]

H.E. Prof. Dr. Abdulrahman bin Hamad Al-Daoud, Rector of the University, stressed that achieving environmental sustainability is one of the most important pillars of the Kingdom's Vision 2030, in order to raise the efficiency of waste management and reduce pollution, as the Kingdom as an active member of the international system, especially in the Group of Twenty, which seeks to achieve the United Nations goals of sustainable development, pointing out that the issue of waste management is linked to a number of UN goals, including industry, innovation, infrastructure, sustainable cities, sustainable production and consumption, as well as reducing climate change.

This came during the patronage of His Excellency the Rector of the University, for the First International Conference on the Sustainability of Natural Resources: Sustainable Management of Solid Waste, which began on Tuesday morning, 8/3/1441 AH, and which is organized by the Faculty of Engineering at the University and the Center for Sustainable Development, at the headquarters of the main lobby in the University City for men, and for women in the theater of the Faculty of Economics and Management, over two days with the participation of 36 speakers to cover all the axes and objectives of this scientific meeting, which aims to discuss the necessary measures to transform into sustainable food systems.

Al-Daoud added that the university seeks to achieve sustainability through its centers, research and scientists, through a system of integration and cooperation between its units, educational and research programs, thanking the sponsors of the conference, the Qassim Municipality, and all contributing sectors inside and outside the university.

His Excellency the Rector also inaugurated the exhibition accompanying the conference, in which 6 government and private entities participate, including a corner for the Qassim Municipality, a corner for the College of Engineering, a corner for the Center for Sustainable Development, a corner for the City Cement Company, the Cleaning Machinery Factory Company Ltd., and the Fahad Company, and witnessed the signing ceremony of a memorandum of cooperation between the Faculty of Engineering at the University and the City Cement Company.

For his part, the Chairman of the Organizing Committee of the Conference, Prof. Dr. Khalid Bani Al-Harbi, Vice President for Planning, Development and Quality, spoke about the importance of this conference, which comes in harmony with the University's sense of its strategic role in the Kingdom in general and in the region in particular, and as an embodiment of the aspirations of the Kingdom emanating from its Vision 2030, which gave great importance to the economic fields and the areas of quality of life, pointing out that the University has adopted a number of academic activities to embody this role, the most important of which is this type of scientific meetings, in addition to supporting research in This field and the inclusion of sustainability concepts in the courses of academic programs, and recently the launch of the sustainable university project supervised by His Excellency the Rector of the University and under the patronage of His Royal Highness Prince Dr. Faisal bin Meshaal bin Saud bin Abdulaziz, Amir of the region.

Al-Harbi added that the Organizing Committee has held more than 12 lengthy meetings to prepare for the conference, while the meetings of the other executive committees exceeded more than 30 working meetings, 19 of which were for the Scientific Committee, and the working hours of the preparatory team amounted to more than 150 working hours, and the working group included more than 36 members, and this work resulted in the participation of more than 15 countries with 168 participants, and more than 120 scientific papers were arbitrated.

Al-Harbi explained that the organizing committee and those in charge of this conference, which is dedicated to sustainability concept and research through participants and interested parties, decided that the conference should go beyond this to be sustainable even with an organizational printer, offering thanks and appreciation to partners for success represented by the strategic partner City Cement Company, the silver sponsor Al-Fahad Company, the supporting sponsor of the Qassim Municipality, and the parties cooperating with the conference, which comes at the forefront of which is the Ministry of Environment, Water and Agriculture represented by the Environment Agency and the Ministry's branch in the region represented by His Excellency Eng. Salman Al-Suwaina, as well as The General Directorate of Education in the region is represented by His Excellency Mr. Saleh Al-Jasser for their constructive cooperation to make this conference a success.

After that, the Dean of the Faculty of Engineering, Dr. Meshal bin Ibrahim Al-Mushaiqah, said that the Faculty of Engineering at the University attaches great importance to the topics of sustainability of natural resources for their specialized nature, to be one of the most important arms of the University to achieve this lofty purpose next to the relevant specialized authorities from colleges and other units, the most important of which is the Center for Sustainable Development at the University, as a partner in the organization and incubator of the conference with the College in the establishment of this qualitative international forum.

He pointed out that the conference aims to show the size of natural and economic resources wasted and estimate the environmental cost of waste, as well as discuss the necessary measures to transform into sustainable food systems where waste is reduced and food waste is reduced, in addition to stimulating integration between partners from different disciplines to manage waste in a sustainable manner, studying opportunities to stimulate investment in the development of waste recycling technologies in the Kingdom, and studying the obstacles to investment in the field of waste manufacturing industries, through several axes discussed by the conference, namely: Effective management, valued food and responsible citizen, attractive and ambitious investment, and a cohesive team to protect and sustain the environment.

The organizers of the conference seek to contribute to the preparation of a vision on sustainable solid waste management at the national and global level, through the participation of a number of experts,

academics and specialists from 15 countries in this field and discuss the results of the latest studies, research and scientific papers related to sustainable solid waste management through 6 sessions throughout the two days of the conference, in order to reduce the per capita consumption rates in the Kingdom of Saudi Arabia of some goods and services, which come within the highest rates globally, which increased the volume of solid waste generated, Reducing the depletion and degradation of natural resources due to high consumption rates, and transferring and localizing modern international technologies in the field of waste management in accordance with the conditions of the Kingdom.

The Dean of the College of Engineering added that the conference also seeks to address the challenges arising from waste, which is the responsibility of each member of society, raise community awareness of the risks posed by waste generation, encourage initiatives aimed at improving sustainable waste management, and provide an opportunity to exchange experiences and knowledge among specialists in waste management and sustainable development.

Hence, the speech of the sponsors was delivered by the Executive Director of City Cement, Mr. Majid bin Abdulrahman Al-Assilan, in which he stressed the existence of millions of tons of municipal waste estimated at billions of riyals, which contain organic and inorganic materials of foods and yes God love this blessed country and other materials that could have been recycled and converted into energy to achieve added value to the homeland, but unfortunately they end up in landfills, which is a kind of waste and contradicts our Islamic values and teachings. to the negative environmental impacts resulting from the backfilling of waste in the ground, some of which take more than 100 years to decompose in nature.

Al-Osailan pointed to the risks of leakage of some harmful substances from those residues to the soil and groundwater or the risk of fires, pointing out that most of the developed European countries such as Germany, the Netherlands and Belgium have a total amount of waste destined for landfills is almost zero, where no waste is backfilled and if necessary a very high fee is paid on the landfill to reduce these practices and protect the environment, by replacing the use of petroleum fuels with renewable energy and primitive fuels, offering sincere thanks and appreciation To all colleagues at the university and those in charge of this conference, for their blessed efforts and for what will contribute to achieving the directions of our wise government of raising awareness regarding the environment and sustainability, supporting coordination between the public and private sectors, and contributing to the achievement of the Kingdom's Vision 2030 to place the Kingdom in the ranks of developed countries.

For his part, the Director of the Center for Sustainable Development, Mr. Ibrahim bin Saleh Al-Rabadi, spoke about the vision of the Center for Sustainable Development at the University for sustainability through the adoption of a balanced integrated approach to achieve equitable development between regions and generations, each takes his right and each carries out his duty towards his environment, society and economy to complete the three clusters of sustainability, and sustainability addresses the issue of waste in its physical, technical, social, technical, informatics, financial and economic dimensions.

Al-Rabadi explained that waste management is linked to a number of UN goals, especially the ninth goal, which is industry, innovation and infrastructure, the eleventh goal related to sustainable cities, the twelfth goal on sustainable production and consumption, and the thirteenth goal, which is concerned with reducing climate change, and it is hoped from this conference to seek to diagnose problems accurately and develop appropriate solutions by scientists and experts gathered, and we hope that the objectives of this conference will be achieved and its recommendations translated into useful practical projects.

The conference witnessed the presence of the Vice President of the University, Dr. Mohammed Al-Saawi, the Vice President for Educational Affairs, Dr. Mohammed Al-Odaib, the Vice President for Graduate Studies and Scientific Research, Prof. Dr. Ahmed Al-Turki, Eng. Salman Al-Suwaina, Director of the Branch of the Ministry of Environment, Water and Agriculture in Qassim, Mr. Saleh Al-Jasser, Director of the Department of Education in the Qassim Region, Eng. Abdulmohsen Al-Faraihi, Director of the Directorate of Water in Qassim, Eng. Abdulaziz Al-Saleem, Deputy Secretary of the Qassim Region, and the deans of the faculties, faculty members and students at the University.

"Sustainable Agriculture" Seminar Discusses Sustainability Issues in the Agricultural Sector

https://qu.edu.sa/content/news/1171 [11]

The scientific symposium organized by the university represented by the Faculty of Agriculture and Veterinary Medicine kicked off on Wednesday. In cooperation with the Center for Sustainable Development, at the university headquarters in Melida, entitled «Sustainable Agriculture.. Safe product and clean environment», which was held under the patronage of His Excellency Prof. Dr. Abdulrahman bin Hamad Aldaoud, Rector of the University, with the participation of 13 panelists and experts to discuss issues of concern to sustainability in Agricultural sector.The first session was held under the title "The Concept of Integrated Agricultural Pest Management " under the chairmanship of Dr. Ahmed Al-Ruqaiba, Dr. Najdi Farouk Abdul Baqi, Professor at the Department of Plant Production and Prevention at the Faculty of Agriculture, participated in it . and veterinary medicine at the university, with a research paper entitled "Integrated Pest Management Policies", in which he stressed However, integrated pest management is strategies developed as future plans that contribute to conservation. On economic crops from loss by agricultural pests without compromising the environment.

During the study, he addressed integrated control methods that work together within an integrated framework of the best means of control . Ancient and novel that can be applied when a pest of pests, or what is known as management, is active. Integrated pest management through the practical treatment of pest populations based on environmental foundations To reduce their population to below the level of economic damage.

He explained that the integrated control strategy depends on the practical aspect and environmental foundations and this is what distinguishes it from Other means of control that rely only on the practical aspect, without relying on the aspect Ecology, as it puts all the means of control together using the best combination of control methods to allow We live with the scourge while there is no economic loss, as it is a changing system This allows it to be developed as we delve deeper into understanding the factors affecting the ecosystem . Agricultural, such as climate, alternative plant factors, beneficial insects, and human activities.

Dr. Mohammed bin Abdulaziz Al-Dughairi , Professor at the Department of Plant Production and Prevention, also spoke during the session. Faculty of Agriculture and Veterinary Medicine, Qassim University, Deputy Director of the Center for Promising Research in Biocontrol And agricultural information at the university, about "biological control as one of the elements of integrated pest management", explaining that Sustainable development gives the utmost importance to increasing food production by increasing the productivity of the land, and aims at the time The same to find and transfer cleaner technology «less polluted» and more efficient and to regulate Use fertilizers and pesticides to reduce pollution of land, water, plants and the environment as a whole.

He warned that the availability of pesticides in local markets leads to farmers using intensively. And random for those pesticides that are widespread and non-selective, resulting in the elimination of a lot of beneficial insects, caused an increase in the activity of some other pests, and then began The resistance of these pests to the pesticides used with the desire of farmers to increase doses and the number of times of treatment With those pesticides trying to reduce the damage of those pests and most importantly those problems It is the arrival of those pesticides and their concentration in the bodies of consumers and animals.

Al-Dughairi pointed out that researchers in the field of agricultural pest control have tried to find alternatives to these pesticides. To minimize their use and mitigate their negative effects on humans, their animals and the environment in general, Stressing that «vital control» is one of the important means, which has proven successful in many countries, To reduce the use of pesticides in the agricultural sector, which is the use of a human being by an organism Alive with the aim of eliminating a particular pest, that organism that is chosen to combat the pest, Known as a vital enemy, it can be a predator, a parasite or a pathogenic organism. Which in turn attacks and then eliminates the harmful pest.

He added that all countries are currently interested in activating the role of vital control in combat programs . Pests have them, due to the possibility of being used as an important part of an integrated management program to combat a particular pest, This is because of their importance in reducing the damage caused by chemical pesticides to the environment and to the quality of Water and for non-target organisms. Biocontrol is also a low-cost option compared to pesticides. Some elements of biocontrol can protect the agricultural crop produced from the damage of a pest Certain with the same efficiency that can be obtained when using pesticides.

The second session was held under the title "Organic and clean agriculture as one of the pillars of sustainable agriculture " under the chairmanship of Dr. Abdullah Dr. Ibrahim bin Mohammed Al-Shahwan , Professor at the Department of Plant Protection at the Faculty of Science, spoke in it . Food and Agriculture at King Saud University, Vice President of the Saudi Society for Organic Agriculture and Supervisor of a Farm Dr. Ibrahim Al-Shahwan Organic Agriculture, on "Organic Agriculture for Safe Products and a Clean Environment", Stressing that organic agriculture is one of the various sustainable agriculture systems that have found acceptance. It is appreciated for its advantages over the rest of the systems.

He touched on the definition of organic agriculture as an environmentally friendly agricultural system and its comparison with other agricultural systems and what It is characterized by characteristics that qualify it to preserve the environment and not to pollute it with manufactured chemicals that are many What their residues affect humans, animals and other organisms, and have a great impact on the preservation of The ecological balance of soil and other organisms, he also touched on what Characterized by organic agricultural products plant and animal compared to other agricultural products Produced under the conditions of other agricultural systems.

For his part, Dr. Saleh Sulaiman Al-Huwairini , Professor at the Department of Plant Production and Prevention at the Faculty of Agriculture and Medicine, presented Veterinary at Qassim University, for the concept of clean agriculture, which is one of the most important modern trends in the sector Agricultural to maintain human and animal health and the ecological balance between pests and natural enemies and to reduce Environmental pollution, so clean agriculture is an integrated agro-social ecosystem that takes into account the governorate On resources and the reduction of pollutants which are one of the most important future aspirations in The agricultural sector in recent years in Saudi Arabia .

Al-Huairini explained that the concept of clean agriculture is one of the most important future strategic directions for agricultural development in The Kingdom to reduce the use of fertilizers and chemical pesticides, by activating biological pest control programs using Predators present in the local environment and pathogenic organisms of pests such as fungi, bacteria and the use of traps.

He added that other agricultural inputs such as organic fertilizers, biovaccinations and biofertilizers are cheap, and are working to Rebalancing microbes in the soil, activating vital processes, improving soil properties and rationalizing fertilizer use Mineral which reduces production costs on the one hand and improves the quality of various crops and access On a safe and clean agricultural product on the other hand, which is what makes for clean farming products High value at the local, regional and international level within the framework of international policy and conventions Partnership between different countries.

Al-Huairini believes that the importance of clean agriculture begins with educating those in charge of agriculture about the most important modern technologies in This field, which aims to transfer technologies to individuals to exploit their abilities and self-efforts, Through the comprehensive extension program and work to raise farmers' awareness to raise the level of their knowledge and develop their skills and their future directions within the framework of sustainable development, as well as raising awareness among farmers of the danger of use Unregulated for chemical compounds such as pesticides that have an impact not only on quality Economic value is even a long-term health and environmental impact .

The third session of the symposium dealt with the theme "Good Agricultural Practices" under the chairmanship of Dr. Mahmoud Al-Azazi, and spoke in which he spoke Dr. Sulaiman bin Ali Al-Khatib , Director General of the General Directorate of Plant Wealth, Ministry of Environment and Water Agriculture is about the "concept of good agricultural practices", explaining that the project of dissemination and adoption of agricultural practices Good in Saudi Arabia (Saudi Qab) is considered a new vision for agricultural work in a way Serves the protection and sustainability of natural resources and the preservation of the environment, including biodiversity, Activate the role of human resources to achieve the optimal use of these resources.

Al-Khatib pointed out that Saudi Arabia is around the corner serving the optimal use of production inputs such as seeds, seeds and fertilizers . Pesticides and management of the production unit, improvement of its facilities, qualification and training of personnel, all this will lead to improvement Agricultural processes and practices, increasing agricultural production and improving its specifications, thus increasing farmers' incomes and ensuring that Safety of local agricultural products and enhances consumer confidence in local products and contributes to the opening of outlets New marketing both locally and globally, in addition to the development of economic value For agricultural products and increase their contribution to GDP.

He added that the standards of good agricultural practices will be applied in the Kingdom of Saudi Arabia according to a time plan . Three years ago, the Ministry aspired to cover the cultivated area in the Kingdom and to ensure Covering all the activities of the agricultural sector from plant, animal and fish production.

Dr. Ramzi Abu Ayana from the Agricultural Sector Department of the Saleh Awqaf Department also participated in the session. Al Rajhi, with a paper on the criteria and conditions for obtaining the Good Agricultural Practices Certificate (GAP), indicating Objectives of obtaining the Good Agricultural Practices (Global Gap), Qualified Entities and Certification Bodies Inside and outside Saudi Arabia , the cost of obtaining the certificate varies depending on those Entities and the readiness of the institution or not, and the validity period of the certificate is one year For renewal according to a series of

technical and administrative procedures, in addition to the most important standards of practice Good agricultural, the most prominent of which are tracking, documentation, internal audit, soil management and the use of Fertilizers , irrigation, crop protection, harvesting and post-<b1203 transactions> harvest and others.

He then touched on the practical applications (audit and inspection sites) of good agricultural practices in the facility (project/ Factory) and its readiness, employees and availability of health and safety means for them, documents and records, and equipment Machinery, the extent to which the product is free of contaminants and pesticide residues, as well as monitoring and identifying potential risks In the farm and the development of controls and preventive measures for it, and the types of signs and warning signs as one of the requirements Obtain quality certificates.

The fourth session, chaired by Dr. Yousef Al-Saleem, also discussed the harmful effects of unsafe use. for pesticides and chemical fertilizers on health and environmental resources ", where Dr. Mohammed Abdullah presented Parasite from King Faisal Specialist Hospital and Research Center, for the impact of agrochemicals on public health, He pointed out that these chemical pollutants have harmful and dangerous effects on the health of community members And its danger reaches them through food from meat, fish, bee products, water and fruits and vegetables as well as through the air.

He pointed out that chemical pollution exacerbates the health of community members from young and old as well as on embryos in The stomachs of their mothers causing damage and causing damage to various organs of the body and dysfunction of their functions, and causing diseases Various congenital malformations, autism of newborns , hepatic and renal failure, cancer diseases.

In turn, Dr. Mohammed Shaya Alshaya, Head of the Department of Agricultural Extension and Rural Society at the College of Food Sciences , spoke And agriculture at King Saud University, on the impact of overuse of agrochemicals on soil pollution and water, warning against excessive use of pesticides and fertilizers and their negative effects on soil and water and their reflection to become A source of soil contamination leading to pollutants entering the food chain and causing serious effects On the health and well-being of people.

To treat this phenomenon, we must raise the level of knowledge of the farmer and know all aspects of safe use. For pesticides and fertilizers, use pesticides and chemical fertilizers in a balanced way and not overdo it, and work to apply Integrated pest management, development and application of strict laws to preserve the environment and soil from pollution.

The session was attended by Radhi bin Abdullah Al-Faridi, Director of the Department of Communications, Marketing and Public Affairs of the Research Center The development of sustainable agriculture, where he talked about the research of the Estidama Center on water use efficiency in Modern greenhouses mentioned some of the results and experiments of the center in the effect of greenhouse coverings on the amount of Production and water consumption efficiency , pointing out that the center at present seeks with everyone (Researchers, academics, farmers and investors to work and participate in his main research areas), namely control By climatic factors (industrial environment), fertilization and irrigation methods, integrated pest management (IPM)), and the management of agricultural operations and crops.

He also talked about the impact of different technologies in greenhouses and their impact on efficiency in water consumption, And some of the center's experiments that showed the importance of the cover (glass / polycarbonate / plastic) in the greenhouses In increasing production and water efficiency, with the importance of attention and care in the process of cleaning greenhouse coverings From dust and plankton.

The fifth session was chaired by Dr. Abdulaziz Al-Harbi, and Dr. Fahad bin Mohammed bin Rumian spoke. Al-Rumayyan Head of the Department of Plant Production and Prevention at the Faculty of Agriculture and Veterinary Medicine at Qassim University, About the Department Integrated fertilization for sustainable agriculture, stressing that the basic concept of nutrient management is the addition of The right source of nutrients for the plant at the right rate, at the right time and in the right place . These elements are essential in the sustainable and integrated management of plant nutrition.

He added that the farmer and the person responsible for the management of the land is the decision maker in choosing the appropriate practices for the soil. Local site-specific, climate, crop production conditions and local systems that have a probability of fulfillment By objectives, because these local conditions can influence the decision about the chosen practice in all Its stages.

Dr. Essam Abdel Moneim from the Department of Plant Production and Prevention presented the Faculty of Agriculture and Veterinary Medicine University Qassim, for soil improvers as auxiliary agents to rationalize the use of chemical fertilizers, the enhancers consist of organic materials and inorganic substances, as the organic matter in the soil contains a large range of Compounds ranging from fats, carbohydrates, proteins and acids, as well as inorganic substances.

Enhancers can be a source of nutrients , and soil improvers can increase soil exchange capacity, i.e. Increases the amount of soil by retaining nutrients, and also increases the water capacity of the soil, i.e. maintains The ground solution that is the source of nutrients on the dissolved image, and all these qualities help On the reduction of fertilizer use.

The sixth closing session was held under the chairmanship of Dr. Anbar Hassanein and dealt with "Applications of clean energy in agricultural production." "Sustainability", with the participation of Engineer Abdulwahab Al-Halabi from Oxel Laboratories in Al-Ahsa, who spoke about Biogas production as a clean energy source, where biogas production contributes to the recycling of Household organic waste and agriculture in the context of sustainable development, can be used as a renewable energy source and as an alternative For natural gas and liquefied petroleum gas which can be used in many Applications as fuel for homes or heating and cooling power generation.

Al-Halabi explained that the environment surrounding urban areas and industrial zones is negatively and sometimes seriously affected by Organic waste residues. Where in the absence of proper and healthy management of organic waste, the residues of organic waste may decompose. It produces pathogenic microbes or harmful air pollutants, stressing the need to take advantage of waste in our environment Agricultural, urban and industrial to produce renewable energy and high-quality organic fertilizer.

The session was attended by Dr. Ahmed Al-Zuhairi from the Department of Plant Production and Prevention at the Faculty of Agriculture and Veterinary Medicine at the University of Agriculture and Veterinary Medicine . Qassim, who talked about the use of solar energy in modern irrigation systems, where agriculture is considered The largest employment market in the world and agriculture generates large numbers of jobs whether agricultural workers or Workers in agriculture-dependent and nourishing fields , as agricultural processes affect Agriculture is responsible for 20% of greenhouse gas emissions that cause retention. Thermal and climatic changes.

Al-Zuhairi stressed that environmentally friendly agricultural systems can be planned and contribute to reducing these emissions, as Solar energy offers a safe environmental alternative that can reduce the need for various conventional energy sources Which are used in agricultural production processes, since solar energy is the main motivation For evaporation processes, therefore it is the factor that has the greatest impact on the water need in the plant As well as the use of this energy to supply irrigation

processes with energy as the need of the plant increases For water by increasing the solar energy falling on it and decreasing it decreases, he also touched on the main systems of collection This energy and its transformation into the image suitable for use in irrigation operations.