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REFORMING THE INTERNATIONAL ORDER: TOWARDS A NEW HUMANITARIAN PARADIGM*

HIS ROYAL HIGHNESS PRINCE EL HASSAN BIN TALAL
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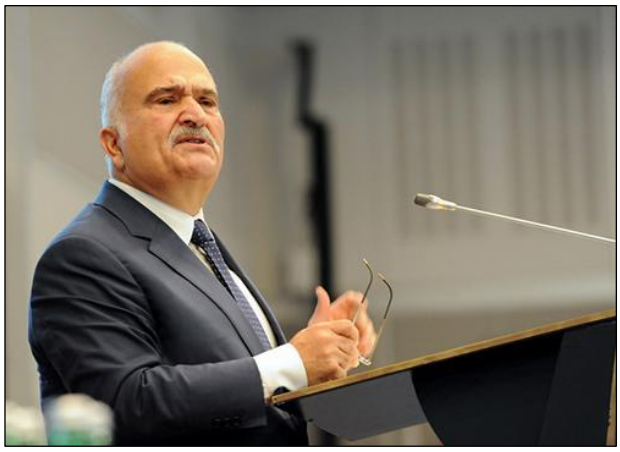

As the 79th session of the United Nations General Assembly was held this week, the current global landscape is marked by profound uncertainty and instability, with the international order facing significant challenges such as man against man, modern war and its dire consequences; man against nature, including disease and climate change; and man-made disasters – all of which transcend national boundaries.

Although the world has been spared from armed conflict involving the major nuclear power, there has been 150 "small" wars since 1945, mostly in the Third World. According to the Global Peace Index, the world is at a crossroads, with 56 ongoing conflicts – the most since the Second World War. The world does not need another war to forge a new world order. Instead, we must seek to build a system based on cooperation, mutual understanding, and respect for shared human dignity. Peaceful dialogue and collaboration should guide the creation of a more just and sustainable global future.

The United Nations was established in 1945, following the Second World War, with the primary aim of maintaining international peace and security. As Sundeep Waslekar explains in his book, A World without War: The History, Politics, and Resolution of Conflict, the UN has ignored its peace and security objectives – the primary reason for which it was set up.

No region has borne the brunt of the flaws and inequities of the UN's failure in achieving peace and disarmament more than the West Asia and North Africa (WANA) region. The consistent failure to address the root causes of the ongoing Israeli-Palestinian conflict and the overall fragmentation of societies has profoundly destabilized the region's social fabric; fostering division and hatred rather than pluralism and respect for human dignity. Although it is called the United Nations Organization, it functions as a 'United Governments Organization'. Therefore, it is time for a transformative shift towards a 'United Peoples Organizations' driven by civil society, which would empower individuals and communities to become stakeholders in their own futures.

* *Article published in Modern Diplomacy on September 26, 2024*
https://moderndiplomacy.eu/2024/09/26/reforming-the-international-order-towards-a-new-humanitarian-paradigm/

New International Humanitarian Order

In the 1980s, Jordan led the call for the implementation of a New International Humanitarian Order. 28 members, including the six Security Council members joined the call, where we prioritised the safeguarding the dignity and right to life of every person and of the future generations. The UN General Assembly Resolution 120 in the 42nd Session in 1987 recognised the importance of further improving a comprehensive international framework which takes fully into account existing instruments relating to humanitarian questions as well as the need for addressing those aspects which are not yet adequately covered. This is especially pertinent during war and conflict.

The implementation of a New International Humanitarian Order seeks to transcend the limitations of the current international framework by emphasizing intra-independence, cultural affinity, and a renewed focus on human dignity and the right to life for future generations. By prioritising these principles, the New Order could pave the way for a more just, stable, and sustainable global order.

At the core of this Order should be the Responsibility to Protect – known as R2P. An international norm that seeks to ensure that the international community never again fails to halt the mass atrocity of crimes against humanity. Yet, we have failed to acknowledge the Responsibility to both Protect and Respect.

A new Principle of Humanity should indeed become a cornerstone of national and international policymaking. This principle would emphasise the inherent dignity and rights of all individuals, ensuring that policies promote not only immediate relief but long-term stability as well.

The United Nations in 2005 adopted the Responsibility to Protect (R2P) at the World Summit. By augmenting the Responsibility to Protect with a Responsibility to Respect, governments would be obligated to address systemic inequalities, pursue inclusive social justice, fostering conditions that prioritize human dignity and thus help prevent conflict. Such a commitment could guide policy frameworks, creating conditions for peace that are rooted in respect, fairness, and shared responsibility.

Breaking the Cycle of Violence: Inclusive Dialogue and Sustainable Solutions

Breaking the cycle of violence in the WANA region requires a comprehensive and multifaceted approach, one that addresses both immediate conflicts and underlying structural issues as well. The lack of regional institutions that can foster dialogue and cooperation is indeed a key challenge, and the establishment of such bodies could provide the foundation for lasting peace.

The decentralization of an Economic and Social Council (ECOSOC) in of itself is a step forward. To compliment the idea of a United Peoples Organization, the creation of a Levant Citizens' Assembly – similar to the Helsinki Citizens' Assembly – would help address the root causes of violence and foster regional dialogue. By creating regional platforms for economic, social, and political discourse, this structure would empower local voices and allow each region to articulate its authentic perspectives, challenges, and aspirations. These institutions could serve as platforms for collective problem solving on issues like security, economic integration, and social development. They would encourage multi-stakeholder dialogue, bringing together governments and civil society to discuss policy solutions and strategies for peace.

In essence, the creation of robust regional institutions would be vital for addressing the gridlock that hinders progress towards lasting peace. These institutions would provide platforms for dialogue, foster cooperation, and help address the region's many challenges through a collective approach grounded in mutual respect and human dignity.

COMMENTS ON HRH PRINCE EL HASSAN ON HIS ARTICLE IN THE MODERN DIPLOMACY ENTITLED: REFORMING THE INTERNATIONAL ORDER: TOWARDS A NEW HUMANITARIAN PARADIGM

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and President, Arab Academy of Sciences

I have read the paper on **Reforming International Order Towards a New Humanitarian Paradigm** and found it very interesting and visionary on how the world is changing from humanistic value system to material self-interest greedy value system creating conflicts.

Unfortunately, the UN which was born after World War II was created to build peace among nations, but unfortunately has failed in achieving its mission, and this was due to the five big powers who have the authority of veto against any resolution not in their favour. So, the UN council is governed totally by the chosen five, chosen because they're armed with nuclear weapons. Absolutely they were chosen because of owning mass destruction arms.

Yes, there is no more major world war, because the five ruling the UN council who cannot afford raising a World War III among themselves due to consequences of no-win situation but, mass destruction of planet civilization and population.

Therefore, they've created wars by proxy. They're fighting among themselves indirectly by proxy's using ordinary means of arms and the nuclear weapons are kept as deterrent by the five big powers.

As we see in Ukraine, Palestine, Iran, Yemen, etc. Conflicts will never stop until those five set an ethical, humanitarian order where human beings count and humanity-social order prevails over all nations with a value system based on human dignity, equality, self-determination and intra-interdependence cultural affinity of nations sharing common values and caring for others.

The five permanent members should finally turn to the interest of all humanity to create a culture of peace and respect of human dignity marginalizing hatred, discrimination, religiophobia, ethnophobia, colorphobia etc. and others leading to conflicts.

In reference to 2005 UN resolution of (R2P), Responsibility to Protect and respect, it is time to emphasize ECOSOC to compliment the idea of United Peoples Organization creating Levant citizenship assembly to address the routs of conflicts and to have a strong ECOSOC system to prevail, neutralizing wars and conflicts among people of the region.

Leading to security, economic integration, human dignity and social economic development. Minimizing poverty and opening opportunities for all human beings with lasting peace in the region.

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PHENOMENON OF FRICTION

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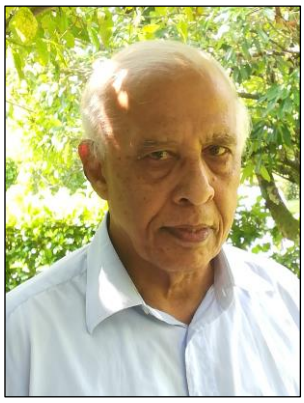

Abstract: this text presents the physics of the different types of friction, and its practical advantages and disadvantages.

1. Introduction:

Friction is the force resisting the relative motion of solid surfaces, fluid layers and material elements moving smoothly or sliding against each other. Types of friction include dry, fluid, lubricated, skin and internal **(1).**

Role of friction is expressed through the friction formula:

$$f = \mu N \quad (1),$$

where f is the friction force; μ, the coefficient of friction and N, the normal force.

2.Types of friction:

a. Static friction,

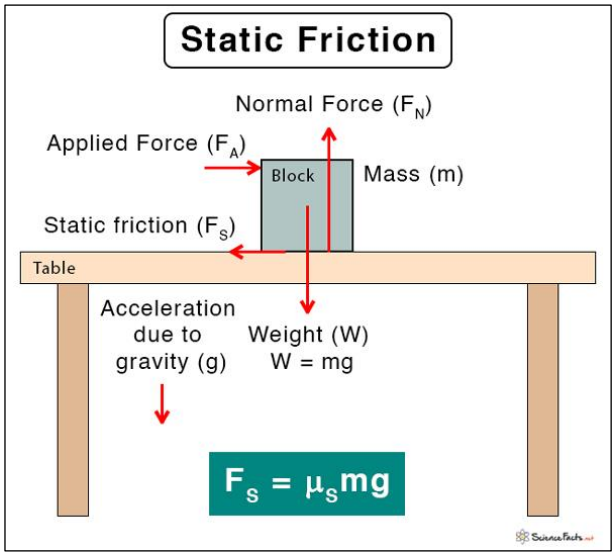

Figure 1. horizontal table with a block of mass m and weight W = mg as the normal force N = F_N = mg, the static friction force f = F_S = μ_S mg, the known horizontal applied force F_A acting against the opposing horizontal static friction force (2).

In the case of the static friction, the amount of horizontal applied force F_A to the block must balance out the opposing horizontal static friction force while the block remains stationary leading to:

$F_A = \mu_S$ mg

and the value of coefficient of static friction:

$$\mu_S = F_A / mg \quad (2)$$

In fact, the coefficient of friction couples the mutually perpendicular applied and friction forces, and without friction there is no coupling, and the sliding of the block on the horizontal surface is frictionless. Moreover, the value of friction coefficient depends on the quality of flatness of surfaces involved.

b. Kinetic or sliding friction.

The kinetic friction is the friction present between two surfaces of two objects that are in relative motion, and it is represented by the relation (Figure 2):

$f_k = \mu_\varkappa F_N$,

where f_k is the kinetic friction force; μ_k, the coefficient of kinetic friction; and F_N = mg, the normal force as shown in Fig. 1. Again, with the known applied force F_A, one gets the value of the coefficient of kinetic friction as:

$$\mu_\varkappa = F_A / F_N = F_A / mg \quad (3)$$

The magnitude of the kinetic friction is comparatively lesser than static friction due to the low value of its coefficient of friction.

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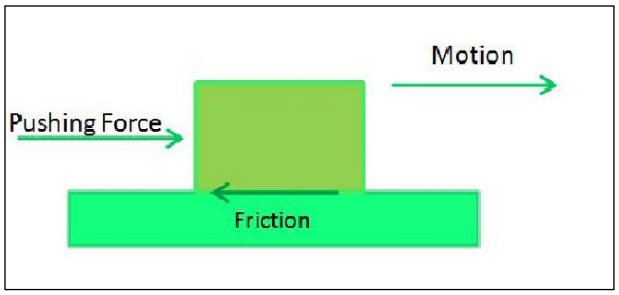

Figure 2. presents schematically the case of kinetic friction between two surfaces of two objects in relative motion (2).

c. Rolling friction.

The rolling friction is the force f_r resisting the motion when a rolling body is on a surface (Fig.3). It is represented by the product of its coefficient of resistance μ_r and the normal force F_N and it is balanced out by the applied force F_A:

$$f_r = \mu_r F_N = F_A.$$

This relation leads to its coefficient of rolling resistance:

$$\mu_\varrho = F_A / F_N \qquad (4)$$

The rolling friction force is generally weaker than the static and kinetic friction forces due to lower values of coefficients of resistance:

Figure 3. Rolling friction due to the forwards rolling of the wheel (2).

d. Fluid friction

The fluid friction force $f_f = F_f$ called viscosity is defined as the force that exists between the layers of the fluid when they are moving relative to each other and is expressed as:

$F_f = \mu_f A\, u / y.$

This relation leads to:

$$\mu_f = F_f / (A\, u / y), \qquad (5)$$

where μ_f is the fluid viscosity coefficient; A, the area of the top plate (layer); u, the velocity of the upper plate (layer) and y, the separation of the plates (layers) (d).

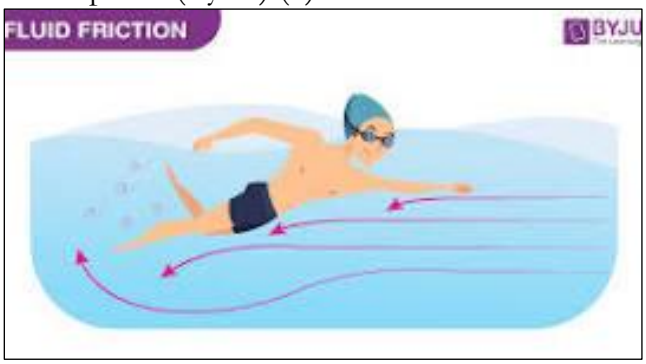

Figure 4. fluid viscosity resistance against the swimmer swimming in the fluid.

3. Some advantages of friction:

- It helps us to walk freely.
- It helps to support ladders against walls.
- It helps to transfer one form of energy into another.
- Objects can be piled up without slipping.
- Brakes of vehicles work due to friction.

4. Some disadvantages of friction:

- It produces heat that damages the moving parts of a machine.
- It produces wear and tear on the contacting surfaces which reduces the life of machine parts, tires, and shoes soles.
- A lot of energy is wasted due to friction to overcome before moving.

References:

1. Courtesy Wikipedia.
2. Courtesy Google.

POTENTIAL ANTI-TUMORIGENIC PROPERTIES OF DIVERSE MEDICINAL PLANTS AGAINST THE MAJORITY OF COMMON TYPES OF CANCER*

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Abstract

Globally, cancer is one of the primary causes of both morbidity and mortality. To prevent cancer from getting worse, more targeted and efficient treatment plans must be developed immediately. Recent research has demonstrated the benefits of natural products for several illnesses, and these products have played a significant role in the development of novel treatments whose bioactive components serve as both chemotherapeutic and chemo-preventive agents. Phytochemicals are naturally occurring molecules obtained from plants that have potential applications in both cancer therapy and the development of new medications. These phytochemicals function by regulating the molecular pathways connected to the onset and progression of cancer. Among the specific methods are immune system control, inducing cell cycle arrest and apoptosis, preventing proliferation, raising antioxidant status, and inactivating carcinogens. A thorough literature review was conducted using Google Scholar, PubMed, Scopus, Google Patent, Patent Scope, and US Patent to obtain the data. To provide an overview of the anticancer effects of several medicinal plants, including *Annona muricata, Arctium lappa, Arum palaestinum, Cannabis sativa, Catharanthus roseus, Curcuma longa, Glycyrrhiza glabra, Hibiscus, Kalanchoe blossfeldiana, Moringa oleifera, Nerium oleander, Silybum marianum, Taraxacum officinale, Urtica dioica, Withania somnifera L.*, their availability, classification, active components, pharmacological activities, signaling mechanisms, and potential side effects against the most common cancer types were explored.

Keywords: medicinal plants; availability; bioactive compounds; plant extraction; pharmacological activities; cancer treatment.

Citation: Albahri, G.; Badran, A ;.Abdel Baki, Z.; Alame, M.; Hijazi, A ;.Daou, A.; Baydoun, E. Potential Anti-Tumorigenic Properties of Diverse Medicinal Plants against the Majority of Common Types of Cancer .*Pharmaceuticals* **2024**, *17*, 574. https //:doi.org/10.3390/ph17050574

* *Link to the whole publication: https://www.mdpi.com/1424-8247/17/5/574*

ANTIBACTERIAL AND ANTIFUNGAL ACTIVITIES OF *CIMBOPOGON WINTERIANUS* AND *ORIGANUM SYRIACUM* EXTRACTS AND ESSENTIAL OILS AGAINST UROPATHOGENIC BACTERIA AND FOODBORNE FUNGAL ISOLATES*

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Abstract

This study focused on testing the antibacterial and antifungal activity of *Origanum syriacum* (*O. syriacum*) and *Cimbopogon winterianus* (*C. winterianus*) extracts and their essential oils (EOs). The bacteria were isolated from urine samples and identified by a VITEK assay, and the fungi were isolated from spoiled food samples and further identified by MALDI-TOF. The susceptibility of the microbial isolates was assessed by determining the bacteriostatic and bactericidal/fungicidal effects by the minimum inhibitory concentration (MIC) and minimum bactericidal/fungicidal concentration (MBC/MFC) broth microdilution assay and time-kill test. The antibiofilm activities were assessed by the antibiofilm screening assays. The bacterial isolates included three Gram-negative isolates (*Escherichia coli, Klebsiella pneumonia, and Citrobacter freundii*) and two Gram-positive isolates (*Staphylococcus aureus and Streptococcus intermedius*). The fungal isolates included *Candida albicans* and *Aspergillus niger*. The *O. syriacum* and *C. winterianus* extracts exhibited bacteriostatic and fungistatic activities (MIC 1.25–2.5 mg/mL for the bacterial isolates and 2.5–5 mg/mL for the fungal isolates). However, their EOs exhibited bactericidal (MBC 5–20%) and fungicidal (MFC 1.25–10%) activities, meaning that the EOs had a better antimicrobial potential than the extracts. The antibiofilm activities of the mentioned extracts and their EOs were relatively weak. The *O. syriacum* extract inhibited *S. aureus, S. intermedius,* and *K. pneumonia* biofilms at a concentration of 0.3125 mg/mL and *C. albicans* and *A. niger* biofilms at 0.625 mg/mL. No antibiofilm activity was recorded for *C. winterianus* extract. In addition, the packaging of grapes with *C. winterianus* extract preserved them for about 40 days. The results reflect the significant antimicrobial activity of *O. syriacum* and *C. winterianus* extracts and their EOs, thus suggesting their potential in food packaging and preservation.

Keywords: *O. syriacum; C. winterianus*; extracts; essential oils; antibacterial activity; antifungal activity; preservation; food packaging.

Citation: Rammal, M.; Khreiss, S,.Badran, A.; Mezher, M.; Bechelany, M.; Haidar, C.; Khalil, M.I.; aydoun, E.; El-Dakdouki, M.H. Antibacterial and Antifungal Activities of Cimbopogon winterianus and Origanum syriacum Extracts and Essential Oils against Uropathogenic Bacteria and Foodborne Fungal Isolates. *Foods* **2024** *.1684 ,13* ,https://doi.org/10.3390/foods13111684

* *Link to the whole publication: https://www.mdpi.com/2304-8158/13/11/1684*

ROLE OF FUTURE TECHNOLOGIES INTEGRATED CONTROL OF TOMATO SEED ROT FUNGI AND SEEDLING DEATH IN DESERT AREAS

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Abstract:

This research was included isolation and identification causal agents of tomato seeds rot and damping - off, determine the inoculum density of field soils and infection through field survey for some Karbala desert fields of tomato from 22 /7/ - 6/8/2006.

Also pathogenicity test for pathogens and the ability of *Trichoderma harzianum* , *Bacillus cereus* ,pomegranates husks powder and senomil chemical fungicide were evaluated for their suppressive ability against *Pythium aphanidermatum* and *Fusarium solani* in labrotary and protect tomato seeds protection and seedling under lathaus condition.

The result of the survey have indicated spread of disease in all fields. The infection percentage was rated from 18 – 30%. The identification and pathogenicity test revealed that *P.aphanidermatum* and *F.solani* were the two main pathogens . The seeds germination percentage 42.5 , 55.0% , seeds rot percentage 35.8 , 34.3% , seedling damping – off percentage 100 , 86.3% for *P.aphanidermatum* and *F.solani* consequently.

Inoculum density in the field soils rated from 0.02 - 1.82 × 10^4 for *P.aphanidermatum* and 0.03 – 0.84 × 10^4 for *F.solani.*

The study showed that the bioagent *T.harzianum* had high antagonism against *P.aphanidermatum* and *F.solani* reached 1.3 , 1.7 consequently through parasitism on mycellium of these fungi or through secreation metabolite componed that inhibition growth pathogens by unsterilize filtering effect and decreased inhibition, percentage at sterilize filtering.

The result indicated that *B.cereus* inhibited growth of *P.aphanidermatum* and *F.solani* by percentage 100 % , on PSA.

The pomegranates husks powder and alcohol extract, showed significant effect in increase inhibition percentage with concentration increasing. Minimum Concentration Induce Complet Inhibition And Visible Growth (MIC) was 0.7 , 5.0 % and Effected Dosge (ED_{50}) was 0.3, 1.0 % for powder. MIC was. 0.04, 0.10 % ED_{50} was 0.10, 0.15 % For alcohol extraction to *P.aphanidermatum* and *F.solani* consequently. High activity of sinomil chemicide for inhibition pathogens growth.

Under lathous condition, the result showed that all treatments caused significant decrease in disease incidence of seeds rot and damping - off of tomato, and significant increase the plant high everage and dry weight.

T. harzianum and *B. cereus* were superior between all treatment , germination percentage was 98.2 , 97.6 % with out seeds rot and infection symptoms . Plant length averge 17.4 , 14.1 cm. dry weight of shoot were 0.456 , 0.388 gr. and for root 0.050 , 0.031 gr. for *P.aphanidermatum* and *F.solani* consequently.

Pomegranates husks powder treatment showed clear effecte significant results. Germenation percentage were 90.1 , 83.3 % , seeds rot percentage were 2.1 , 2.4 % , seedling damping – off percentage was 0 , 5 % . Plant length averge were 13.3 , 11.4 cm. , dry weight of shoot were 0.193 , 0.130 gr. and for root 0.009 , 0.005 gr. for *P.aphanidermatum* and *F.solani* consequently.

Keywords: fungi, mold, tomato, integrated control, integrated management, pathogen isolation, desert areas.

Introduction:

The tomato Lycopersicon esculentum (mill) belongs to the Solanaceae family, and is thought to be native to the west coast strip of South America.

[1], It is one of the most important and widespread vegetable crops in the world and in Iraq, as the area cultivated with this crop in Iraq is estimated at approximately 366,400 dunums, with an estimated

productivity of approximately 1,400,300 tons and a yield of 3,822.1 kg/dunum for the year 2003, according to [2], and the lands cultivated with this crop amounted to In Karbala Governorate, 7,340 dunums for the year 2003 [3]. In recent years, the cultivation of this crop has witnessed a significant expansion, accompanied by the emergence of many problems, the most important of which is the spread of wilt diseases, seedling death, early blight, viral diseases, and others, which have led to significant losses [4]. Many fungi have been identified as pathogens of seed rot and seedling death, some of which are found endemic in the soil (soil-born) or native to seeds (seed-born), [5]. Since most fungal chemical pesticides pollute the environment and are toxic to humans and animals and have a negative effect, In other soil organisms, and due to the increase in the number of fungal strains resistant to the action of chemical pesticides, in addition to the deterioration in the efficiency of some of them, this has prompted some agricultural and research institutions to find alternative solutions, and among these solutions is the use of a biological control strategy by antibiotics of some microorganisms against the pathogens.

Picture Integrated Control Of Tomato Seed Rot Fungi And Seedling Death In Desert Areas

The success of some biological resistance agents has played a major role in pushing some researchers to find other organisms or organisms, such as bacteria, that can be characterized as successful biological resistance agents in showing the best performance in combating pathogens and promoting plant growth [8]. The antagonistic ability of many biological factors has been used to combat and inhibit the growth of these pathogens through parasitism and antagonism, which has reduced the presence of these pathogens and their damage [9].

The fungus Trichoderma harzianum is one of the most important and widely used fungi at the global and local levels as an agent of biological resistance, due to the ease and speed of its isolation and propagation, the availability of its growth requirements at low prices, in addition to the multiplicity of its mechanisms of action, including parasitism, antagonism, and metabolic secretions of pathogens, and its encouragement of plant growth and increased production [10, 11, 12].

Bacillus cereus is a biological resistance factor in the rhizosphere and is efficient against the growth of many other pathogenic microorganisms. It produces compounds that are anti-growth of these organisms, including fungi that are highly sensitive to these bacteria [13].

The use of plant extracts has been of great interest to researchers in combating many pathogens of fungal plant diseases, because these extracts contain effective metabolites with environmentally desirable characteristics, such as their rapid decomposition, low toxicity to bacteria, and high specificity [14]. The pomegranate plant, Punica granatum, which belongs to the Punica family Punicaceae is one of the plants that were used in ancient times for medicinal, tanning and other purposes [15].

Objectives Of The Study:
This Study Seeks To Achieve The Following Objectives:
Due to the importance of seed rot and seedling death disease and its spread over large areas, and to choose several means of control and to find efficient control methods, the study aimed to:

- Isolating and diagnosing the causes of tomato seed rot and seedling death.
- Estimating the numerical density of inoculum units of pathogens in the soil that led to infection.
- Evaluation of the inhibitory efficiency of T.harzianum against pathogens in the laboratory and under woody canopy conditions.
- Evaluation of the inhibitory efficiency of Bacillus cereus against pathogens in the laboratory and under woody canopy conditions.
- Evaluation of the inhibitory efficiency of the fungus T.harzianum and the bacteria B.cereus against pathogens in the laboratory and under woody canopy conditions.
- Evaluation of the efficiency of pomegranate peel powder in inhibiting the growth of

pathogens in the laboratory and under woody canopy conditions.

- Evaluation of the efficiency of the chemical pesticide Sinomil in inhibiting the growth of pathogens in the laboratory and under woody canopy conditions.

The Importance Of Studying:

The importance of this study lies in the integrated control of tomato seed rot fungi and the death of their seedlings in desert areas.

Materials And Work Methods:

1- Field survey:

A field survey was conducted on farms in the desert city of Karbala for growing Supermermond tomatoes, located on the Karbala-Al-Razzaza road, in two stages, the first on 7/22/2006 and the second on 8/6/2006, from which ten farms were randomly selected for the purpose of conducting the field survey and knowing the rates of disease infection. Death of seedlings of this crop. The cultivated area of each farm was about 5 dunams, which were divided into five approximately equal square sections. The area of each of these squares was estimated in dunams, and this section, in turn, was divided into sections, each section being approximately 45-50 meters long, with a ratio of 30-40 sections per dunum.

From every five plots, one plot was chosen, in which the total number of planted seedlings and the number of seedlings whose plants showed symptoms of infection with the disease were calculated. The total numbers of planted seedlings and infected seedlings were collected for each farm, and the disease infection rate was calculated according to the following equation:

Picture: Integrated Control Of Tomato Seed Rot Fungi & Seedling Death In Desert Areas.

2- Isolation Of Pathogens:

Infected plants were taken from each hole and placed in nylon (polyethylene) bags, each separately, with 5 samples for each farm. Then the soil of each hole was taken from these holes to a depth of 15 cm [42]. This soil was also placed in polyethylene bags, separately as well. All samples and soil were placed in a small plastic container, and this container, in turn, was placed inside a large cork filled with ice to preserve the fungal mycelium, spores, and plant parts from overheating during their transport from the farm to the laboratory the next day. The samples were transferred the next day to the laboratory and two methods were used to isolate pathogens:

3- Isolation From Plant Parts:

After removing the soil from the plants brought to the laboratory and cleaning them manually in a simple way, they were placed in small beakers covered with pieces of clean gauze and washed under running water for a period of time.

Two hours, then washed with distilled water. I divided each plant that showed symptoms of infection into two main parts, a stem and a root, that is, the shoot was separated from the root system, and the stems were isolated from the roots. Then I divided each of them (stems and roots) into small pieces about 0.5-1 cm long. Then I divided each of the stem pieces into two groups. The root pieces were also divided into two groups. The first group was sterilized with 0.2% sodium hypochlorate solution for one minute, then it was washed with sterile distilled water for two minutes and dried with blotting paper. Then it was transferred using tweezers to Petri dishes containing the culture medium.

Potato sucrose agar (PSA), prepared as in Appendix No. (1), to which the antibiotic ampicillin was added at a rate of 400 mg/L after sterilization, was planted in three dishes (replicates), in each dish four plant parts were planted.

As for the second group (a group of stems and roots), it was washed with sterile distilled water only for ten minutes, dried with blotting paper, and transferred using tweezers to Petri dishes containing the P.S.A. culture medium. Added to the antibiotic ampicillin at a rate of 400 mg/L, four plant parts were planted in each dish in three replicates. All plates were incubated at 25°C and fungal growth was observed after two to four days. The fungi growing in the dishes were purified and grown on P.S.A. medium. It was incubated at the same temperature to obtain pure mushroom colonies [1].

4-Isolation Of Pathogens From Soil:

I took 10 grams from each of the soil samples brought from the farms (which weigh about half a kilogram for each sample), put them in clean beakers and added 90 ml of sterile distilled water. Shake well, then take 1 ml from each of these beakers and add 9 ml to it. Sterile distilled water and so on until dilution No. 4. Take 1 ml of dilution No. 3 and dilution No. 4 and place them in Petri dishes, then add the P.S.A culture medium to it. Gently shaking to ensure mixing and with three replicates for each dilution of each sample, all plates were incubated at 25°2 and fungal growth was observed after 3-4 days [9].

5- Preparation Of The F. Solani And P. Aphanidermatum Vaccine:

I used the seeds of local millet Panicum miliaceum L. for the purpose of preparing the fungal inoculum. The seeds were washed well, soaked for 6 hours, dried with blotting paper, then placed at a rate of 100 grams per 250 ml glass beaker, then the mouth of the beaker was tightly closed with cotton and sterilized with an autoclave. For an hour, the flasks were left to cool, then each flask was inoculated with four 1 cm diameter disks taken from the edge of the fungal colony at 4 and 6 days of age, respectively. These flasks were then incubated at a temperature of 25 ± 2°C for 15 days, taking into account shaking the flasks every day to ensure uniform distribution. Fungal inoculum on all seeds.

1- Diagnosis Of Pathological Causes:

A- Diagnosis of the fungus Pythium aphanidermatum

He identified the fungus P.aphanidermatum based on the characteristics that distinguished the Oomycetes group, the characteristics of the Perenosporales order, and the characteristics of the Pythiaceae family that he mentioned [100], in addition to the taxonomic keys that he mentioned [4] with which he distinguished the species of the fungus genus Pythium.

B- Diagnosis Of The Fungus Fusarium Solani

The fungus F. solani was identified by Dr. Kamel Salman Jabr, College of Agriculture - University of Baghdad, according to the characteristics mentioned by [101, 102 and 103].

2- Estimating the density of inoculum units of the fungi P.aphanidermatum and F.solani in the soil:

The Dulution Method was adopted to estimate the density of fungal inoculum units by taking 10 grams of each soil sample brought from the tomato farms on which the field survey was conducted (weighing half a kilogram for each farm and mixed well for the purpose of homogeneity) and placing them in a clean beaker with a capacity of 250 liters. ml and add 90 ml of sterile distilled water to it. Then I prepared 5 laboratory tubes and put 9 ml of sterile distilled water in each tube. Then 1 ml of soil suspension was taken and added to the first tube, so that the first dilution was 10-1. Then from this dilution also 1 ml was taken and added to the tube. The second, and so on, made a series of dilutions up to the fifth dilution, 10-5. Then, I prepared Petri dishes and put in each dish 1 ml of dilution No. 3, 4, and 5, with three replicates for each dilution, then poured the P.S.A. culture medium into these dishes. Cooled and pre-sterilized and shake gently to ensure mixing with the culture medium. All dishes were incubated at a temperature of 25 C, and the results were recorded by counting the number of developing colonies, and the number of inoculum units per gram of soil was calculated after 2-7 days, as follows:

Numerical density of inoculum units = average number of colonies x reciprocal of dilution.

Results And Recommendations:

First/Results:

Through field visits to tomato farms in the Karbala desert, it was found that the disease is widespread. Infection rates ranged between 18-30%, especially in young plants from one to three weeks old and in farms where the crop was grown repeatedly for several years, while the infection was limited and became rare in Flowering plants and during the fruiting period. Therefore, the disease is considered one of the most important and dangerous diseases that affect tomatoes because it destroys the plants in the seedling stage, thus reducing the green areas with the death of a large number of plants. This helps in increasing the proportion of suitable environmental conditions in that region in terms of temperature and humidity.

2- Isolation Of Pathogens:

A- Isolation Of Pathogens From Plant Parts:

Isolates of the fungus P.aphanidermatum were obtained from the vegetative parts (stems and roots) of the tomato crop that showed infection symptoms, as this fungus recorded the highest frequency compared to other fungi that were isolated from these parts, as its frequency reached 42%.

In the same way, isolates of the fungus F. solani were obtained, which came in second place in frequency of 33%.

The frequency of pathogens and some fungi during the initial isolation process. The reason for the appearance of these fungi may be attributed to them being fungi that live saprophytically on plant remains and organic materials in the soil.

[114], growth of the two fungi on culture medium (PSA). Fungi that appeared in the comparison dishes during the isolation process were also excluded.

B- Isolation Of Pathogens From The Soil:
Isolates of the fungi P.aphanidermatum and F.solani were obtained from the soil of farms whose plants showed symptoms of infection, where the fungus was recorded.

Picture Integrated Control Of Tomato Seed Rot Fungi And Seedling Death In Desert Areas.

P.aphanidermatum had the highest frequency, reaching 31%, while the fungus F.solani ranked second in frequency, reaching 24%. Many other fungi appeared during the process of isolation from soil, but their frequency was low, and the original description of pathogens did not apply to them, and they did not appear during The process of isolation from infected plant parts was neglected, and Table No. (3) shows the fungi that appeared during the isolation process.

Some fungi were also excluded from the table because they appeared in the comparison dishes during the isolation process, including Asperigillus niger, Punicillium spp, and Rhizopus spp.

4- Estimating The Numerical Density Of The Inoculum Units Of The Two Fungi: P.Aphanidermatum And F.Solani

The results of estimating the numerical density of the fungi that cause the death of tomato seedlings in the farms on which the field survey was conducted showed a difference in the density of the two fungi depending on the farms and the number of years the crop was grown in those farms. It is clear that the highest numerical density of inoculum units for the fungus P.aphanidermatum is 1.82 x 410 inoculum units/g of soil. On Jawad Zengi's farm. The highest numerical density of inoculum units for the fungus F.solani is 0.84 x 410 inoculum units/g of soil in Al-Sharia farm. It is noted from the table that the inoculum density of pathogens increases with the number of years of cultivation of the crop, and these numerical densities are sufficient to cause a significant injury to tomato yield, as they exceeded what was indicated by [41] that soil containing 15-43 oocysts per gram of soil is sufficient to infect Tomato crop was affected by seedling death caused by the fungus P.aphanidermatum, at a rate of 50%.

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PRINCE EL HASSAN BIN TALAL INAUGURATES THE 36TH INWRDAM GENERAL ASSEMBLY

HRH Prince El-Hassan bin Talal, inaugurates the 36th Forum of the Islamic Network for Water Resources, Development and Management (Petra photo).

HRH Prince Hassan, chairman of the Higher Council for Science and Technology (HCST) and Founding Patron of the Islamic World Academy of Sciences (IAS), on Tuesday inaugurated the 36th Forum of the Islamic Network for Water Resources Development and Management .The event, titled "Balance for Humanity and Earth: Harmony with the Water-Energy-FoodEcosystem Nexus", focused on promoting sustainable development and regional cooperation, according to the Jordan News Agency, Petra .Prince Hassan stressed the critical role of water, energy, and food initiatives in driving sustainable progress across the region, emphasising the importance of leveraging modern technology to enhance water investment and calling for proactive, cooperative water policies among regional nations 2/2 .Prince Hassan highlighted the significance of regional cooperation in bridging Asia and Africa, suggesting that forward-looking water projects could serve as key connections between the two continents .The prince also called for the establishment of a regional socio-economic council to better articulate the region's needs to the international community amidst development challenges .He stressed the importance of creating a comprehensive information system for accurate water data in the Mashreq, supported by a network of research centres, calling for an integrated approach rooted in respect, solidarity, and recognition of diverse regional identities .The prince also noted that cross-border challenges such as environmental degradation require coordinated efforts to restore ecosystems and ensure water security . Prince Hassan also highlighted the principle of stewardship, urging for active citizenship , responsible engagement, and the empowerment of individuals to play meaningful roles in regional development .Egypt's Minister of Water Resources and Irrigation Hani Sewilam gave a presentation entitled "Using Non-Conventional Water Sources in Food Production with Renewable Energy ."The minister discussed the transition from planning to implementation of the water-energyfood ecosystem nexus, focusing on balancing limited water supplies with increasing demand due to population growth . The opening ceremony of the three-day forum featured the attendance of Minister of Water and Irrigation Raed Abul Saud and 120 participants, including ambassadors, policymakers and water experts from Asia and Africa.

News source:
https://jordantimes.com/news/local/prince-hassan-inaugurates-36th-forum-water-resources-development-management

THE EUROPEAN COMMISSION, UNION FOR THE MEDITERRANEAN (UFM) AND ARAB LEAGUE (LAS) TEAM UP FOR THE FIRST TIME TO DISCUSS SCIENCE DIPLOMACY IN THE MEDITERRANEAN

Participants of the High-level Meeting on Science Diplomacy in the headquarters of the League of Arab States in Cairo.

The European Commission, the UfM and the LAS teamed up for the very first time to organise a high-level meeting on science diplomacy. The event took place in the headquarters of the Arab League in Cairo on 02/10/2024, bringing together government officials, diplomats and scientists from across the Mediterranean to discuss how science, technology and innovation can be transformative engines for dialogue and sectorial cooperation in the Mediterranean region. The event featured interventions by former Commission President Romano Prodi, DG R&I Deputy Director-General Signe Ratso, and the Secretary-Generals of both, UfM and LAS.

Throughout history, the Mediterranean has served as a crossroads for the exchange of knowledge, ideas and innovation. Science diplomacy has been practised here for millennia, long before the term was conceptualised as a tool in foreign policy. Today, cross-border cooperation in science, technology and innovation plays a key role in providing solutions for the region's most pressing issues, such as climate change, water scarcity, food security, and migration on the one hand, and in fostering dialogue between the countries in the region on the other, even under difficult conditions.

The meeting discussed the nexus between science diplomacy and cultural diplomacy, highlighting the critical role the universal languages of science and culture play in building bridges between nations, supporting dialogue and mutual understanding, based on values and the respect for cultural diversity.

The meeting highlighted the importance of the Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) in Jordan as a global lighthouse of science diplomacy. Despite its excellence and unique membership, SESAME faces serious funding problems, demanding a long-term vision for its operations. To this end, the benefits of SESAME for the region need to be promoted, also by diplomats.

The meeting flagged the importance of the Partnership for Research and Innovation in the Mediterranean Area (PRIMA) as a major tool for scientific cooperation in the region. PRIMA projects, e.g. related to the Water-Energy-Food-Environment nexus, show that this is possible, with women playing a key role.

The meeting discussed a blue diplomacy approach for the Mediterranean, through which countries in the region can enhance cooperation, build trust, and address common challenges through scientific collaboration, thereby contributing to the sustainable development and conservation of the Mediterranean's marine resources.

The delegates reflected on the need to establish a Euro-Mediterranean Science Diplomacy Hub as a neutral space for discussions between scientists and diplomats. It would foster training and capacity-building, cultivating leaders in science diplomacy and a new generation of science diplomats, including through dedicated PhD programmes.
Also discussed was ways to improve the situation of students and researchers suffering from armed conflicts in the region, in particular in Gaza and Lebanon.

The participants called to deploy science diplomacy more structurally and strategically as a lever for building trust across the Mediterranean region and tackling common challenges through joint actions and initiatives. By connecting science diplomacy scholars and practitioners, the Mediterranean has the potential to strengthen its historical role as a global hub for the exchange of knowledge, ideas and innovation for the benefit of all.

News source: https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/european-commission-union-mediterranean-ufm-and-arab-league-las-team-first-time-discuss-science-2024-10-04_en

REMEMBERING ABDUS SALAM NOBEL PRIZE IN PHYSICS 1979

Facts
Born: 29 January 1926, Jhang Maghiāna, India (now Pakistan)
Died: 21 November 1996, Oxford, United Kingdom

Affiliation at the time of the award: International Centre for Theoretical Physics, Trieste, Italy; Imperial College, London, United Kingdom

Prize motivation: "for their contributions to the theory of the unified weak and electromagnetic interaction between elementary particles, including, inter alia, the prediction of the weak neutral current". Prize share: 1/3.

Work
According to modern physics, four fundamental forces exist in nature. Electromagnetic interaction is one of these. The weak interaction-responsible, for example, for the beta decay of nuclei-is another. Thanks to contributions made by Abdus Salam, Sheldon Glashow,and Steven Weinberg in 1968, these two interactions were unified to one single, called electroweak. The theory predicted, for example, that weak interaction manifests itself in "neutral weak currents" when certain elementary particles interact. This was later confirmed.

Abdu Salam reading a newspaper , 1983.
(ICTP Photo Archives).

Source: Abdus Salam – Facts. NobelPrize.org. Nobel Prize Outreach AB 2024. Wed. 16 Oct 2024. https://www.nobelprize.org/prizes/physics/1979/salam/facts/

PROF. MUNIR NAYFEH FIAS PIONEERS NANOTECH

Dr. Munir Nayfeh is a Palestinian-American particle physicist and tenured professor. Nayfeh has authored and/or edited over 130 papers and books on lasers, magnetism, and electricity. He has held several US-issued patents. Nayfeh's research in nanotechnology has real world applications in diverse fields from solar power to health care. The Islamic World Academy of Sciences elected Nayfeh fellow in 2009.

Researcher and Professor Munir Nayfeh

A 1974 Stanford graduate, Nayfeh began his career with a milestone paper on the Rydberg Constant. He collaborated with 2005 Nobel Prize winner Theodor Hansch.

That same year Nayfeh joined the US Department of Energy's Oak Ridge National Laboratory for science and technology. He worked there as a research physicist for four years. In 1978 Nayfeh began as a lecturer at Yale University. Two years later, the scientist joined the University of Illinois as a Professor. He has remained there since. In 1985 he published the textbook *Electricity and Magnetism* for physics undergraduates.

In 2007 Nayfeh received attention for solar cell research he had done with the university. The scientist developed a way to improve solar cell performance by applying a coat of silicon nanoparticles.

"Integrating a high-quality film of silicon nanoparticles 1 nanometer in size directly onto silicon solar cells improves power performance by 60 percent in the ultraviolet range of the spectrum," Nayfeh explained in a press release. *Applied Physics Letters* published the corresponding research paper, of which Nayfeh is co-author.

In addition to his work with the University of Illinois, Nayfeh travels back to Palestine to teach. He taught nanotechnology to high school students in Palestine using interactive lectures. The Palestine Academy for Science and Technology invited him along with other scientists to participate in their Science Communication and Outreach Program in 2019.

The professor gave a talk on practical applications of new nanotechnology research at Palestine's Birzeit University in 2017. Nayfeh also lectures on the commercialization of innovations in nanotechnology to advance health care.

In 2005 Nayfeh founded NanoSi Advanced Technologies Inc. The company manufactured silicon particles to be used in electronics, solar energy, biomedical and other fields.

Munir Nayfeh innovates in nanotechnology

Professor Nayfeh continues to research and experiment throughout his career. The scientist began a research program at the University of Illinois following his entry into their physics department. He studied the behavior of molecules in specific environments. Nayfeh's ability to demonstrate unique processes has led to entirely new areas of research, including in molecular Coulomb explosions.

More recently, Nayfeh's research at the university has followed two avenues into the study of atoms and electric fields. The first is an observation on the effect of strong dc electrical fields on hydrogen atoms. The second is an original technique using a scanning tunneling microscope and a laser.

Nayfeh is also using the scanning tunneling microscope to analyze the effects of hysteresis on the formation of solid matter. Doing this on the nanometer scale provides insights significant to technological innovation in nanoelectronics and photonics.

In 2018 Nayfeh published *Fundamentals and Applications of Nano Silicon in Plasmonics and Fullerines: Current and Future Trends*. This book delves into the possibilities of commercializing nanosilicon products.

The scientist also heads a project to help kids understand complex scientific concepts through the medium of stories

Source: https://hayatlife.com/2023/02/07/dr-munir-nayfeh-nanotech/.

LAUREATES OF THE NOBEL PRIZES 2024[⊗]

The Nobel Prize in Physics 2024

John Hopfield

"for foundational discoveries and inventions that enable machine learning with artificial neural networks"

John Hopfield. Ill. Niklas Elmehed © Nobel Prize Outreach

Geoffrey Hinton

"for foundational discoveries and inventions that enable machine learning with artificial neural networks"

Geoffrey Hinton. Ill. Niklas Elmehed © Nobel Prize Outreach

They used physics to find patterns in information

This year's laureates used tools from physics to construct methods that helped lay the foundation for today's powerful machine learning. John Hopfield created a structure that can store and reconstruct information. Geoffrey Hinton invented a method that can independently discover properties in data and which has become important for the large artificial neural networks now in use.

The Nobel Prize in Chemistry 2024

David Baker

"for computational protein design"

David Baker. Ill. Niklas Elmehed © Nobel Prize Outreach

Demis Hassabis

"for protein structure prediction"

Demis Hassabis. Ill. Niklas Elmehed © Nobel Prize Outreach

John Jumper

"for protein structure prediction"

John Jumper. Ill. Niklas Elmehed © Nobel Prize Outreach

They cracked the code for proteins' amazing structures

The Nobel Prize in Chemistry 2024 is about proteins, life's ingenious chemical tools. David Baker has succeeded with the almost impossible feat of building entirely new kinds of proteins. Demis Hassabis and John Jumper have developed an AI model to solve a 50-year-old problem: predicting proteins' complex structures. These discoveries hold enormous potential.

[⊗] *News source: https://www.nobelprize.org/all-nobel-prizes-2024/*

The Nobel Prize in Physiology or Medicine 2024

Victor Ambros

"for the discovery of microRNA and its role in post-transcriptional gene regulation"

Victor Ambros. Ill. Niklas Elmehed © Nobel Prize Outreach

Gary Ruvkun

"for the discovery of microRNA and its role in post-transcriptional gene regulation"

Gary Ruvkun. Ill. Niklas Elmehed © Nobel Prize Outreach

Tiny RNAs with profound physiological importance

Victor Ambros and Gary Ruvkun discovered microRNA, a new class of tiny RNA molecules that play a crucial role in gene regulation. Their groundbreaking discovery in the small worm *C. elegan* revealed a completely new principle of gene regulation. This turned out to be essential for multicellular organisms, including humans. MicroRNAs are proving to be fundamentally important for how organisms develop and function.

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2024

Daron Acemoglu

"for studies of how institutions are formed and affect prosperity"

Daron Acemoglu. Ill. Niklas Elmehed © Nobel Prize Outreach

Simon Johnson

"for studies of how institutions are formed and affect prosperity"

Simon Johnson. Ill. Niklas Elmehed © Nobel Prize Outreach

James Robinson

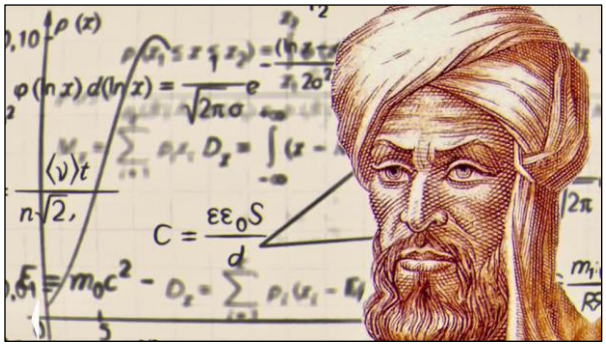
"for studies of how institutions are formed and affect prosperity"

James Robinson. Ill. Niklas Elmehed © Nobel Prize Outreach

They provided an explanation for why some countries are rich and others poor

This year's laureates have provided new insights into why there are such vast differences in prosperity between nations. One important explanation is persistent differences in societal institutions. By examining the various political and economic systems introduced by European colonisers, Daron Acemoglu, Simon Johnson and James Robinson have been able to demonstrate a relationship between institutions and prosperity. They have also developed theoretical tools that can explain why differences in institutions persist and how institutions can change.

MOHAMMAD BIN MUSA AL-KHAWARIZMI*
(770? – 840 AD)



Abu Abdullah Mohammad Ibn Musa al-Khawarizmi was born at Khawarizm (Khewa) (Uzbekistan), south of the Aral Sea. Very little is known about his early life, except for the fact that his parents had migrated to a place south of Baghdad. The exact dates of his birth and death are also not known for sure, but it is established that he flourished under Al-Mamun at Baghdad through 813-833 and probably died around 840 AD.

Khawarizmi was a mathematician, astronomer and geographer. He was perhaps one of the greatest mathematicians who ever lived, as, in fact, he was the founder of several branches and basic concepts of mathematics. In the words of Phillip Hitti, he influenced mathematical thought to a greater extent than any other mediaeval writer. His work on algebra was outstanding, as he not only initiated the subject in a systematic form but he also developed it to the extent of giving analytical solutions of linear and quadratic equations. That established him as the founder of Algebra. The very name Algebra has been derived from his famous book *Hisab Al-Jabr wa-al-Muqabilah.* His arithmetic synthesised Greek and Hindu knowledge and also contained his own contribution of fundamental importance to mathematics and science. Thus, he explained the use of zero, a numeral of fundamental importance developed by the Arabs. Similarly, he developed the decimal system so that the overall system of numerals, 'algorithm' or 'algorizm' is named after him. In addition to introducing the Indian system of numerals (now generally known as Arabic numerals), he developed at length several arithmetical procedures, including operations on fractions. It was through his work that the system of numerals was first introduced to the Arabs and later to Europe through its translations in European languages. He developed in detail trigonometric tables containing the sine functions, which were probably extrapolated to tangent functions by Maslama. He also perfected the geometric representation of conic sections and developed the calculus of two errors, which practically led him to the concept of differentiation. He is also reported to have collaborated in the degree measurements ordered by Al-Mamun that aimed at measuring of volume and circumference of the earth.

The development of astronomical tables by him was a significant contribution to the science of astronomy, on which he also wrote a book. The contribution of Khawarizmi to geography is also outstanding, in that not only did he revised Ptolemy's views on geography, but also corrected them in detail as well as correcting his map of the world. His other contributions include original work related to clocks, sun-dials and astrolabes.

Several of his books were translated into Latin in the early twelfth century. In fact, his book on arithmetic, *Kitab al-Jam'a a wal-Tafreeq bill Hisab al-Hindi,* was lost in Arabic but survived in the Latin translation. His book on algebra, *Al-Maqala fi Hisab-al Jabr wa-al Muqabilah,* was also translated into Latin in the twelfth century, and it was this translation which introduced this new science to the West "completely unknown till then." He astronomical tables were also translated into European languages and, later, into Chinese. His geography book captioned *Kitab Surat-al-Ard,* together with its maps, was also translated. In addition, he wrote a book on the Jewish calendar *Istikhraj Tarikh al-Yahud,* and two books on the astrolabe. He also wrote *Kitab al-Tarikh* and his book on sun-dials was captioned *Kitab al-Rukhmat,* but both of them have been lost.

The influence of Khawarizmi on the growth of science, in general, and mathematics, astronomy and geography in particular, is well established in history. Several of his books were readily translated into a number of other languages, and, in fact constituted the university text books till the sixteenth century. His approach was systematic and logical, and not only did he bring together the then prevailing knowledge on various branches of science, particularly mathematics, but also enriched it through his original contribution. Not surprising then that he has been held in high repute through the centuries since his death.

* *Source: Personalities Noble, 2nd Edition, 2000, Edited by Hakim Mohammed Said, published by IAS with permission of Hamdard Foundation Pakistan.*

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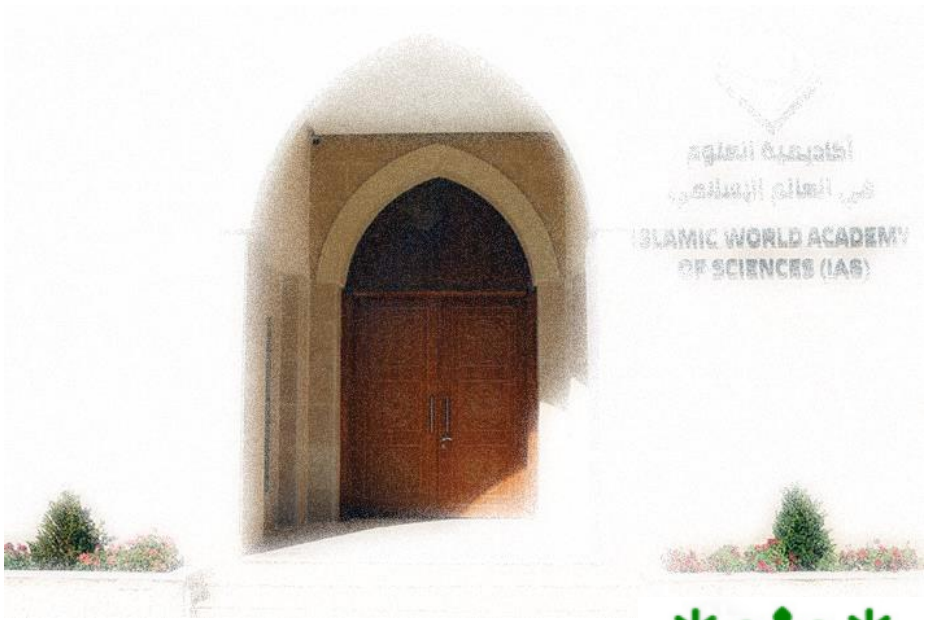

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