ثقافة الوقاية لأستعادة خدمات النظم الايكولوجية للاهوار

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1وزارة العلوم والتكنولوجيا, العراق، 2كلية الفنون التطبيقية / هيئة التعليم التقني

الملخص

تعد الاهوار من اكثر الموارد الطبيعية الواعدة في رفع الاقتصاد العراقي الوطني من خلال كونها من المناطق محميات الطبيعية للجوء الطيور المهاجرة لها خلال فترة الشتاء من المناطق الباردة كأوربا. وان المحافظة عليها ، واستثمارها بالشكل الأمثل يعطي نتيجة إيجابية بلا شك في تطور اقتصاد العراق ، لذا فان أنظمة الزراعية العضوية سيعمل على إيجاد الآليات الحديثة ذات الأثر السليم والصحي على البيئة والمحيط الخارجي. تم دراسة جمعت مخلفات النباتية من هواري الحمار والحويزة. جمعت النباتات لتحضير الوسط الزرعي الكمبوست للزراعة الحقلية لنبات الفاصوليا. نسب المادة العضوية (0 , 1 , 2.5 , 5 , 10 , 20%) مضافا على أساس الوزن الجاف ومحسوبا على وزن التربة لعمق 30 سم. اجريت القياسات الفيزيائية والكيميائية للتربة والبتموس واشتملت قياس ملوحة التربة ودرجة التفاعل والمحتوى المعدني. كما درست موصفات النبات بعد الحصاد وبينت النتائج ان ارتفاع نسب المادة العضوية اعطى زيادة في الانتاج والمحتوى التغذوي من الفسفور والبوتاسيوم كما وان زيادة المادة العضوية انعكست معنويا على زيادة في محتوى البروتين والكاربوهيدرات في الثمار وبالتالي اعطت ناتج صحي سليم خالي من تراكم المغذيات المعدنية .

الكلمات المفتاحية: بيتموس، فاصوليا، انتاج، نمو النبات

INTRODUCTION

Create a "culture of prevention" that promotes alternative livelihoods can find strategies to preserve and protect dry land Desertification is just the beginning are still ongoing. Build expertise and innovation in the long term, and can protect dry land Ground of desertification by improving agricultural and grazing practices in a sustainable way, rehabilitation, and restoration and help restore lost ecosystem services (Al-Zubaidy, 1985; Abed, 1989; Al-Mausawi and Hussein, 1991). The success of rehabilitation practices depends on the availability of human resources, funds, and infrastructure. It requires a combination of policies and technologies and the active participation of local communities. A culture of prevention to recover lost ecosystem services for marshland.

Marshlands have been utilized for horticulture for thousands of years (Al-Aarajy, 1988; Al-Imarah et al., 2006). They give a scope of profitable environment administrations, for example, the arrangement of nourishment and clean water, the maintenance of soil and the cycling of supplements. Be that as it may, the estimation of these administrations is in some cases belittled. In a few ranges, the seepage and recovery of marshlands for agribusiness has been broad, however there is expanding acknowledgment of the basic interdependencies amongst agribusiness and sound marshlands. Some farming practices can prompt expanded levels of supplements and poison loads (in the shape of pesticides, composts and creature dung), coming about in expanded phytoplankton and sea-going plant development prompting algal sprout. The direction of waterways and streams can change the recurrence, term and degree of streams, influencing basic life phases of water ward species including fish and waterbirds (). This can influence the soundness of marshlands and their parts in the development what's more, renewal of soils and in looking after water quality. A portion of the biggest effects are through the waste or transformation of wetlands to developed land what's more, the unsettling influence of biological system works due to substantial apparatus utilize or domesticated animals nearness. Coordinated nuisance administration arrangements diminish the requirement for pesticides, while practices, for example, protection culturing and natural cultivating can decrease contamination loads entering conduits. Consolidated creation frameworks utilize domesticated animals fertilizer for aquaculture and to prepare crops. Procedures like these can be especially powerful in little, escalated operations and on family ranches.

Organic farming is one of alternative farming introduced lately. It successfully sustains the heath of soils, ecosystems and people. In this regard organic farming adepts several techniques such as group rotation, a green manure, compost and biological pest control (Mary, 2001). Its scientific (manufactured) fertilizers pesticides, plant growth hormones live stock, antibiotic, food additives (Razaq, 1989), genetic modified organisms (Mohammed, 2010), and human sewage sludge and Nano material are excluded under this technique of farming. Accordingly organic farming is a production system that sustains the healthy soil, ecosystems (Mary, 2001). The driving forces for this need are (a) ensuring the most efficient use of the nutrients in the farming system and (b) pressure (supported through current and impending legislation) to limit emissions of nitrate (NO_3), ammonia (NH_3), nitrous oxide (N_2O), methane (CH_4) and P to the wider environment. With a likely increase in the organically farmed area, information is needed on best practices for manure management in organic systems to minimise the

environmental impacts of these systems. Therefore it relies on ecological process, biodiversity. Mohammed (2002) developed roles regulation of organic farming most successful for arid regions in generals and Iraq in particular however, future information concerning plant growth and development need to be made available for growers and scientists at will. Due to the fact that organic farming in marshland has not been introduced to Iraq yet this study was conducted under a primary objective for establishing laws and condition of ecosysytem farming in Iraq to serve as a first base for future development as well. Secondary objectives however are: general review of the world rules of organic farming, establish the requirements depending on the local available materials taking in consideration their availability and cost.

Background

The aggregate scope territory of the bogs was 35000 Km^2 (Buringh, 1960). The swamps frame level zones; in this manner, the level of immersion by water relies on upon the level of the water in the Tigris and Euphrates Rivers and the related regular changes, since the waterways don't have levees inside the swamp territories (Yacoub et al., 1985). The profundity of the water is additionally factor in various parts, inside the swamps. At the point when the profundity of the water is more than 2 m, then the water without any vegetation and shape little pools of clear water. Something else, distinctive sorts of common vegetation develop in the swamps. Distinctive sorts of fish and feathered was creature live in the bogs as well, however the larger part of these are of migrant sort. The nearby individuals live in little groups in somewhat raised and dry terrains (Al-Saadi and Al-Mousawi, 1988; Al-Sayab, 1989). They assemble their houses from reed; their primary wellsprings of living are fish and exceptional kind of bulls that are privately called "Jamoos". The swamps were subjected to drying operations since the mid eighties of the last century, because of oil investigation operations, as happened toward the southern parts of Hor Al-Hammar and Hor Al-Huwaizah. Last on, they turned out to be completely dried, since 1991, by changing over and controlling the courses of the Tigris and Euphrates Rivers inside the swamps (Al-Saad and Al-Timari, 1993; 1994). The drying operation prompted intense changes in the earth, the atmosphere, crawling of the sand ridges towards ex-bog zones, dryness of the land, expanding of Sabkhas, and nonattendance of vegetation, fishes, and feathered creatures and of the movement of the nearby individuals. in the

year 1990, on the grounds that the nearby individuals required by development after the bogs were dried. Be that as it may, these ranges began to diminish because of the continuation of the drying operations, till the year 2000, and due to shallow water saline groundwater level that expanded the saltiness of the dirt, the territories got to be unacceptable for development. As indicated by UNEP (2000), the neighborhood individuals began to emigrate from the swamp territories because of previously mentioned reasons. Drastic increment in the sabkha zones (Al-Kaisi, 1979; Iraqi Ministries, 2006) (Fig.2). As indicated by UNEP (2001), 1000 Kg of salt were added to every hectare of land, because of the narrow activity. Thusly, 3 million tons of salt is added yearly to the bog territories. In the Central Marshes, the scope territories, after the drying operations, constituted 3% just, when contrasted with the first secured territories, though after the recovery of the swamps, in the year 2005, just 24 % of their unique regions were recaptured. This is for the most part due to the nearness of an expansive manufactured channel (Al-Lammi, 1986; Al-Rekabi, 1992; Mohammed, 2005; 2012), furthermore to the way that the neighborhood individuals wouldn't leave their horticultural grounds, subsequent to being developed.

MATHERIAL AND METHODS

Field experiment was conducted in agricultural experimental station of Ministry of science and Technology at winter season of (2002-2003). Collected soil samples were dried and ground to pass 2 mm sieve. Sub samples were extracted and ground to pass 0.15 mm sieve for analysis of trace elements and organic Carbon. Relevant soil characteristics were as given in Table 1. Compost of marshland was collected from the Hor Al – Hammar and Hor Al-Hwaiza after used to prepare the requested growth medium. Both soil and compost were solar pasteurized for a period of one month (July). Therefore, no chemical pesticides or herbicides were used. Marshland compost was added to soil in 1, 2.5, 5, 10 and 20 % percent of soil dry weight to depth of 30 cm. Other treatment was the control in which no organic carbon was added. Phosphate rock and potassium sulfate were applied as a source for phosphorus (P) and potassium (K) respectively. Integrated Pest Management (IPM) Technique was implemented to control plant pests. Ketosam (1.5ml/l) and Tricoderma (3gro/m2) neem oil extract in 0.2 mL/L were used as biological control agents. For control treatment conversional fertilizers were applied in a rate of 1200 kg N as urea/ha, P as monocalcium phosphate in a rate of 200 kg/ha and k as K_2SO_4 in 400 kg/ha. Perefke in concentration of 0.5ml/L and hustatheon in 0.5ml/l were used for pest control. Bean Plant fresh and dry weight and carbohydrate contents

were determined. Nitrogen, phosphorus and potassium contents were also determined. These two groups of parameters were used to evaluate plant growth as affected by level of organic matter added under organic farming practices compared to that of conventional farming.

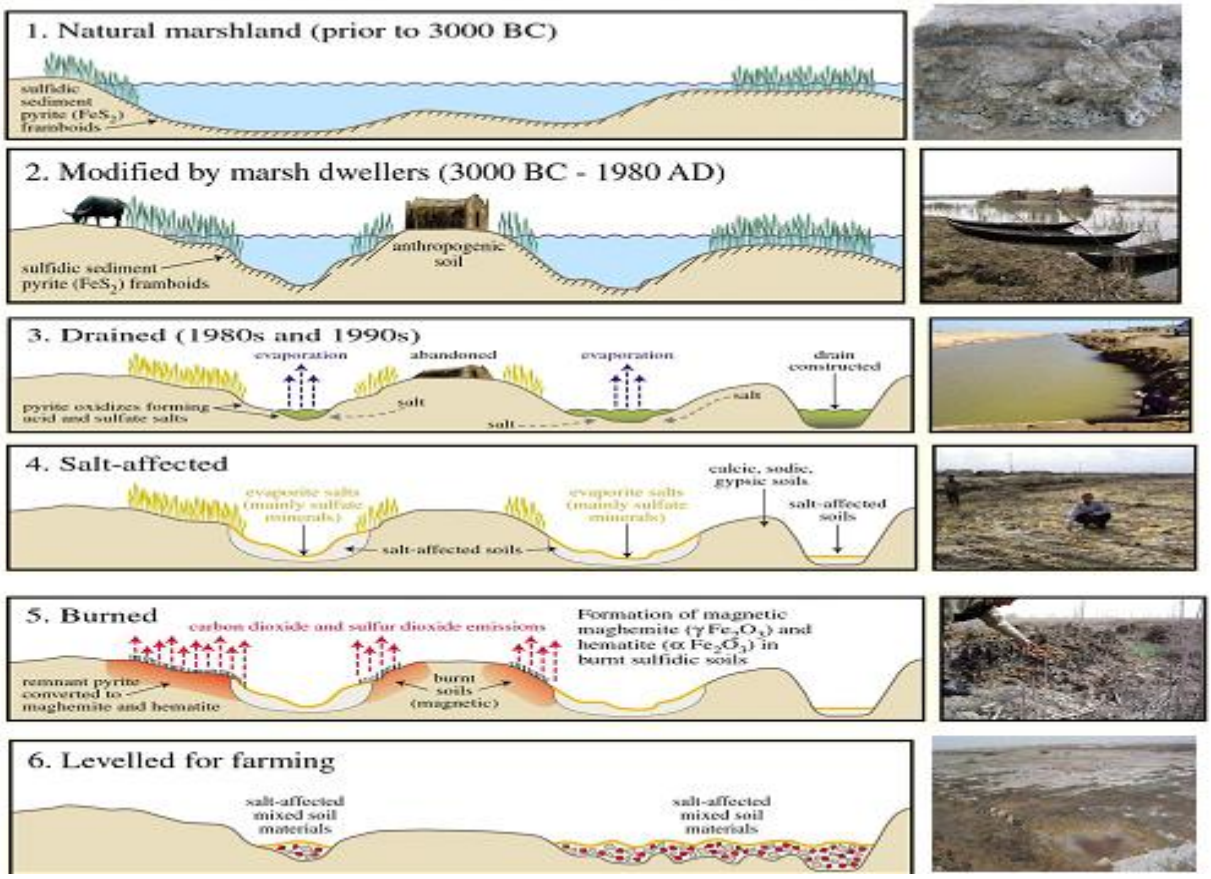

Figure 1. Modified by Marsh Marsh westward from 3000 BC-2016AD.

Table (1): Some physicochemical properties of soil used in these experiments.

Parameter	Soil texture and values
Texture	Clay loam
PH	7.41

Ec (dS/m)	2.3
O.M%	0.91
CEC (cmol/Kg)	24
$CaCO_3$ gm/kg	150
Na gm/kg	17
K gm/kg	14
Ca gm/kg	60
Mg gm/kg	19
N gm/kg	0.2
P gm/kg	0.16

Characteristics of compost of corn cob was given in Table 2. Analysis of the compost showed that it is of high water holding capacity. Water saturation percent of the peat is 100%. C/N ratio is within the recommended range adequate for plant growth and development. All other peat characteristics are shown in the table below.

Table (2): Some chemical properties of the compost used in these experiments.

Properties	*Values*
PH	*7*
Ec (dS/m)	*3.1*
O.M %	*71*
O.C %	*37*
C/N	*18*
Total concentration of elements (gm/kg)	
K	*5*
Mg	*10*
Cu	*8*
Zn	*1.2*
Mn	*1.5*
Fe	*1*

Results and Discussion

Vegetative growth

Vegetative growth properties were inturn increased with the increase of the logarithm of percentage of organic matter. The organic matter added as a percentage of total weight of the 30 cm of the soil surface. Results in Figure 1 showed that rate of increase of plant height and length of plant root which in turn varied depending on level of addition of OM. The highest rate of logarithmic increase of plant height and length of plant root (0.029, 0.184) was observed at 100 days after plantation stage respectively.

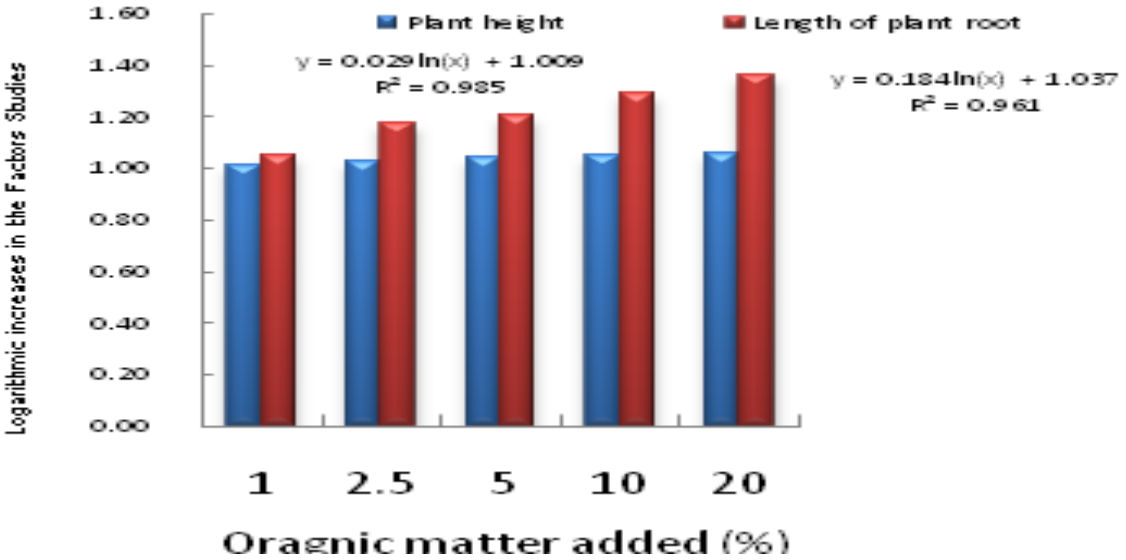

Figure 1: Effect of organic matter on increases for the Nitrogen accumulation in height and length of Bean plant root under organic farming system.

Qualitative properties

Concentration of N, P and K in plant leaves, at any stage of plant growth increased with the increase of the natural Logarithm of the percentage of organic matter addition (Figures 2, 3, 4). Highest rate N concentration increase occurred after 75 days of plantation which was 1.7 and 1.2 time that the 45 or 100 days after plantation respectively. Phosphorus results were relatively similar to that of nitrogen. The least rate of percent occurred after 45 days while the highest occurred after 100 days. Rate of increase of K in the leaves after 75 days in 1.94 and 1.29 time that at 45 and 100 days after plantation respectively. These variations among elements were explained by the differences in physiological rate of each concentration of these elements, which was found to increase with the increased level of addition of OM. Maximum concentration of nitrogen in the fruit was found after 75 days of plantation while for P and K it was after

about 100 days respectively. Rate of increase (a) of nitrogen concentration alien in the fruit was the highest. After 75 days while for P was after 45 days and it was after 100 days for K. . Total content of protein and carbohydrate in fruit significantly increase with the increase of percentage of OM addition. The results also showed that the effect fertility and chemical soil for periods of different growth was much better in transactions that have been added by the organic matter in comparison with the observation that the response to any recipe of the qualities of chemical soil vary according to such thoughtful and different organic matter added, with more carbon organic increase of the proportion of organic matter added while there is a decrease in the values of the pH increase of organic matter added and increased content of soil organic nitrogen and the metal to increase the organic matter added, and the concentration of nitrate in soil solution decreases with time as the proportion of N after 100 days from planting was 10% of what it was after 45 Days of agriculture. The increased level of ready-elements (P, K) and needed by the plant to increase the percentage of organic matter added.

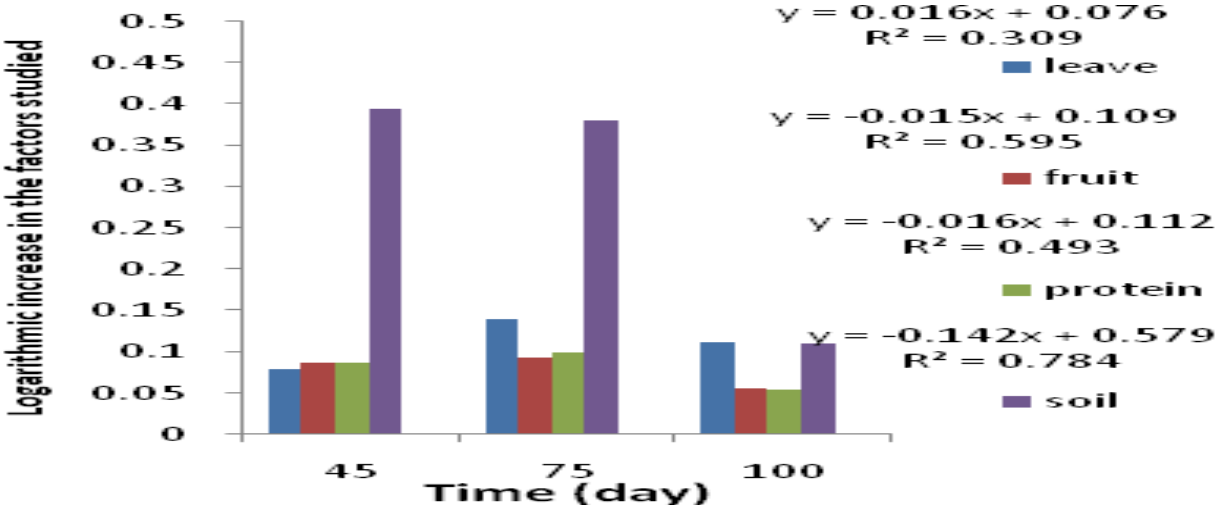

Figure 2: Effect of organic matter on increases for the Nitrogen accumulation in Bean plant and soil under an organic farming system.

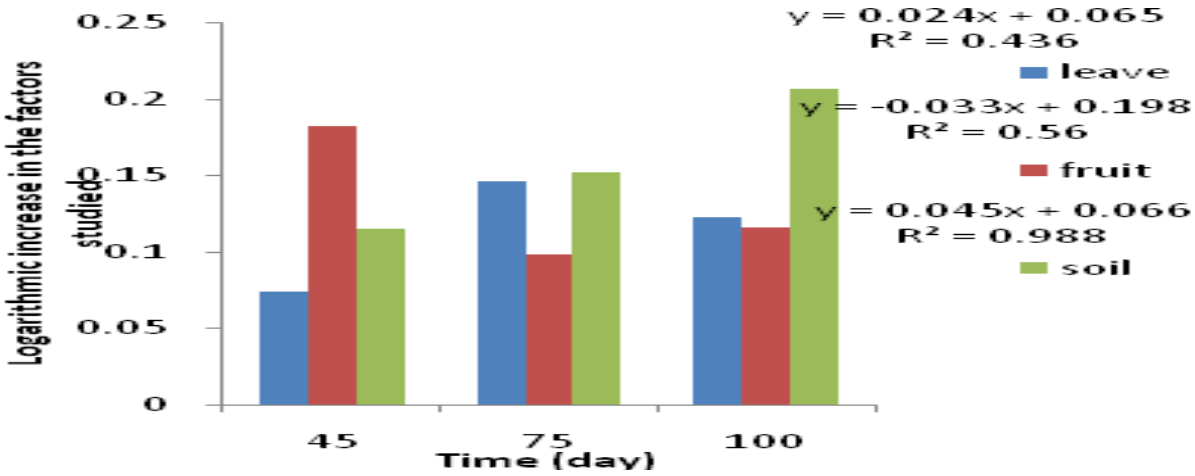

Figure 3: Effect of organic matter on increases for the Phosphor accumulation in Bean plant and soil under organic farming system.

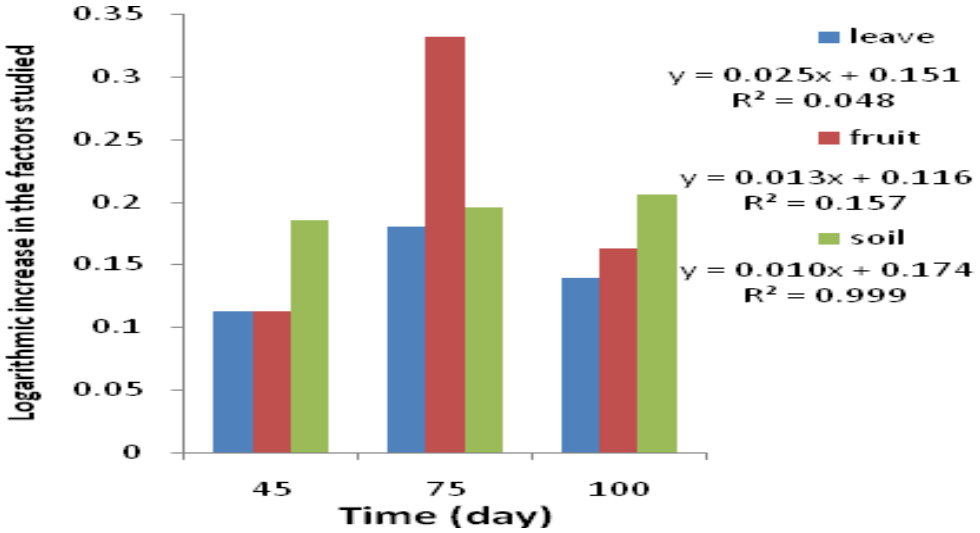

Figure: 4: Effect of organic matter on increases for the Potassium accumulation in Bean plant and soil under an organic farming system.

Conclusions

To overcome such problems, organic farming receives the top priority in sustainable agriculture (Mohammed, 2002; 2012, 2015). It is clear that organic farming is a practical proposition for sustainable agriculture if adequate attention is paid to this issue. There is urgent need to involve more and more scientists to identify the thrust area of research for the development of eco-friendly production technology.

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