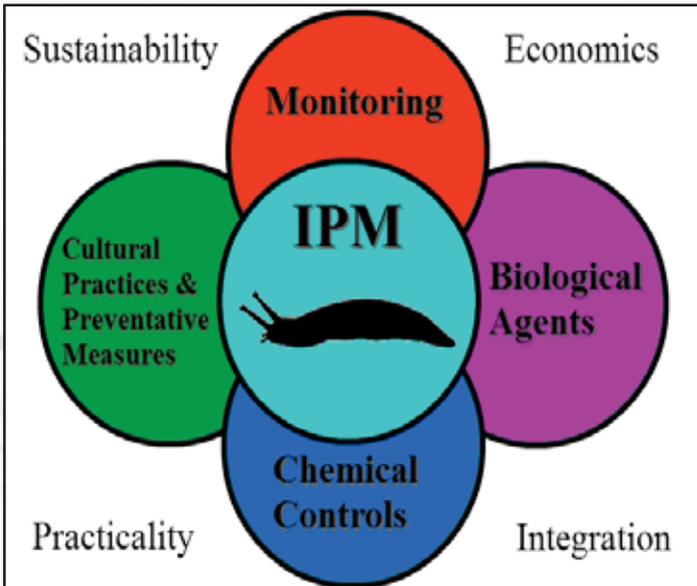




Agri-Business Supplement Zarai Taraqati Bank Limited.

INTEGRATED PEST MANAGEMENT

Introduction



Dependency on pesticides for protection of crops is associated with undesirable effects on the environment, health, and the sustained efficacy of their use. An aggressive use of pesticides on crops has developed resistance among insect and pests, posing a serious threat to the rural economy in the country. Hence, this situation has highlighted the need to promote the concept of Integrated Pest Management (IPM) among the farmers. IPM can be defined as “applied pest control which combines and integrates biological, mechanical and chemical control”. Integrated Pest Management (IPM) approach is based upon the judicious mix of physical, cultural, biological and chemical control methods, employed to manage and control pests. It is an effective and environment friendly approach to pest management that relies on a combination of common-sense practices.

An IPM program uses current, comprehensive information on the life cycles of host, pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment. The IPM approach can be applied to both agricultural and non-agricultural settings, such as the home, garden, and workplace.

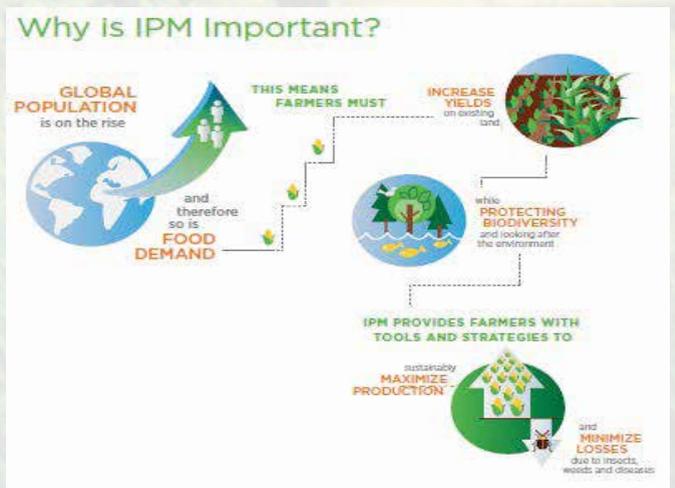
IPM takes advantage of all appropriate pest management options including, the judicious use of pesticides.

IPM in Pakistan

In Pakistan, research and development on IPM was initiated in 1971 by PARC-IIBC station, Rawalpindi (now CASI Biosciences Regional Center Pakistan). A seven years project on cotton bollworms, a three year project on cotton whitefly and an institutional three year support project on IPM, were the first IPM projects in the country. Similarly, IPM activities like introduction of natural enemies of sugarcane pyrilla in Sindh and KP, cultural control of Gurdarspur borer in sugarcane, pheromones (methyl eugenol) to control fruit fly and effective environment friendly use of pesticides against cotton pests were successfully carried out on large scale by various researches.

To overcome/reduce the misuse of pesticides and their negative impacts on the society, IPM has been identified as a key element for sustainable agriculture development in its policy and strategy on agriculture by the Government of Pakistan. In this regard, a consultative process among potential stakeholders was started; which launched the National Integrated Pest Management Programs (Nat-IPM) in December 2000. These Nat-IPM programs were dealt by Department of Plant and Environment Protection (DPEP), NARC Islamabad in past. However, no updated data is available yet on the achievement of the targets and outcomes of the Nat-IPM.

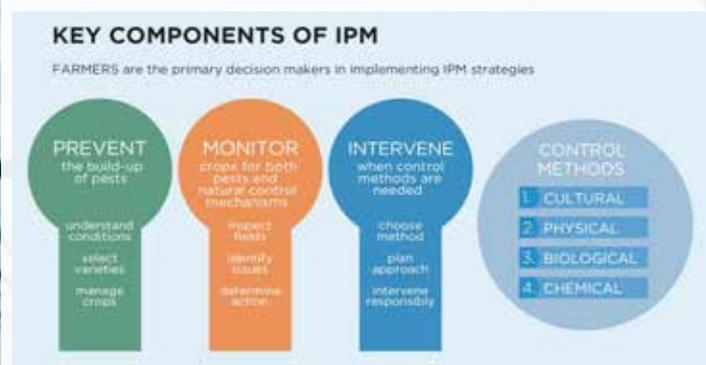
Why IPM Is Important?



The demands of a growing world population for food and fiber require farmers to produce more crops on existing farmland. To increase this requires continuous improvement of agricultural technologies to minimize crop losses. The challenge is to do this, while protecting the environment.

IPM is a big part of the solution. It is being adopted in both developed and developing countries for long-term, sustainable agriculture that achieves adequate, safe & quality food production, improves farmer livelihoods and conserves non-renewable resource.

IPM COMPONENTS



Prevention: First component of an IPM program defines prevention of crop from building of economically damaging levels/Economic threshold level developed by insects/pests.

Monitoring: Second component determines if, when and what action should be taken to maximize crop production and quality. Pest scouting tools like pheromone traps, diagnostics and forecasting systems can assist monitoring of insect pest attack. Getting real-time information on what is happening in the field is ideal management of any crop which requires routine inspections to assess how well plants are growing and what actions need to be taken from seeding to harvest.

Intervention: Third component involves reduction of damaging pests to acceptable levels, which may involve cultural, physical, biological and chemical control measures individually or in combination. Costs, benefits, timing, labor force and equipment as well as economic, environmental and social impacts all have to be taken into consideration.

General Pest Management Tactics/Control measures

i. **Cultural Controls:** Cultural control includes maintenance of eco-system, removal of dead plant parts and debris that can serve as protective or over watering sites. Diversification

of vegetation in habitat may attract beneficial insects. Proper fertilization is important, but over-fertilization can lead to excessive, lush growth that can be attractive to aphids and other foliage pests. Increasing organic matter of soil where it is low can improve the growth and health of plants.

ii. **Mechanical Controls:** Mechanically removal of weeds before their reproductive stage is a very effective management tool. Traps can be used to attract pest population from the environment or monitor their activity.

iii. **Physical Barriers:** There are many types of physical barriers that can be used to block or disrupt the movement of pests. For example, sticky bands placed around the trunks of trees can prevent some mite and insect pests from crawling up into trees.

iv. **Biological Controls:** In the simplest terms, biological control is the reduction of pest populations through natural enemies or beneficial species. Practices that are often compatible with biological control include cultural controls, crop rotation, planting pest-resistant varieties, using insecticides with selective modes of action, or spot treatments that leave untreated areas to serve as refuges for natural enemies.

v. **Chemical Controls:** It includes application of synthetic, organic and biological herbicides/pesticides like diazinon, malathion, rotenone, sabadilla, bacteria, viruses, and fungi.

Some Agronomic Practices in IPM

Following are the important Agronomic components of IPM.

1. **Land Preparation:** Tillage operations can be beneficial, as it disrupts the life cycle of insect pests and can expose pests to predators.
2. **Cultivars Selection:** Cultivars with high yield potential, quality and resistances against pest and disease are important part in an IPM Program.
3. **Time of Sowing:** Adjustments in sowing time is often thought as an agronomic strategy to escape the crop losses.
4. **Plant Population:** Maintenance of inter and intra row plant population may be used as a tool to minimize humidity and other favorable conditions for insect pest growth.

5. **Inter-cultivation:** Mechanical or manual Inter-cultivation suppresses the pest, diseases and weeds. Weeds that serve as alternate host to insect and pathogen can be efficiently controlled with Inter-cultivation.
6. **Manures and Fertilizers:** Balanced fertilizer application may help to tolerate pest and diseases considerably.
7. **Irrigation and Drainage:** Irrigation can reduce the soil inhabiting pests by suffocation or exposing them to soil surface to be preyed upon by birds.
8. **Crop Rotation:** It serves the purpose of plant protection by reducing the nutrition of pests in every subsequent year or season or totally deprives them of food.
9. **Mulches:** Mulches, both organic and synthetic, can help to reduce insect pest problems. Plastic mulch is often used to speed early season crop growth that makes plants better able to tolerate insect feeding.



IPM Process

IPM is applicable to all types of agriculture and sites such as residential and commercial structures, lawn and turf areas, and home and community gardens. The process includes:

1. **Proper Identification of Pest Damage and Responsible Pests:** Identification of pest must be the first objective of an IPM program. When the identity of a pest is unknown, then, a strategy built to control the pest cannot be developed. Thus, a solid foundation must be built on systematic, taxonomy, etiology, and spatial distribution.
2. **Pest and Host Life Cycles Biology:** The interactions between crop and pest (as well as the environment) are very important. To develop an efficient IPM Programme, literature and other data sources about the pest, pest’s life cycle, host range, distribution, movement, and basic biology need to be researched and understood.
3. **Monitor or Sample the Environment for Pest Populations:** After correct identification of pest, monitoring must be done before it becomes a

- problem. Sampling and monitoring methodologies must be designed and tested to provide the ability for assessing instantaneous and dynamic aspects of the pest’s density, activity, or incidence.
4. **Choose an Appropriate Combination of Management Tactics:** The word ‘integrated’ in IPM referred to the simultaneous use or integration of any number of tactics in combination, with focus on maintaining a single pest species below its economic injury level.
 5. **Evaluate and Record Results:** Evaluation is often one of the most important steps in Integrated Pest Management. It is the process of reviewing an IPM program and recording of results.

Drone Technology

Unmanned Aerial Vehicles (UAVs), commonly known as drones, for agriculture. Drones are remote controlled aircraft with no human pilot on-board.



The use of drones in agriculture is extending at a brisk pace in crop production, early warning systems, disaster risk reduction, forestry, fisheries, as well as in wildlife conservation, for example. There are a number of applications of drone technology convergence with advanced image data analytics that can be utilized in the agriculture industry.

The most established application based on drone-acquired image data is to assess the health of crop vegetation.

- Drone technology can be used to assess soil condition and thus potential yields. The key application in assessing soil condition is actual 3D mapping of the terrain with precise soil color coverage. This helps to assess the soil quality as well as the moisture and water flow precisely.
- This mapping also helps in seed sowing, irrigation management and nutrient management.
- Drones with hyper-spectral, multispectral, or thermal sensors can identify which parts of a field are dry or need improvements.

Advantages and Drawbacks

The benefits of Integrated Pest Management programme has direct impact on farmers and indirect on society.

- a. Integrated Pest Management (IPM) protects environment through elimination of unnecessary pesticide applications.
- b. IPM improves profitability of the growers. Since IPM Programme applies the most economical management pest tactics, profitability is ensured for the grower or farmer.
- c. It reduces risk of crop loss by a pest. Applying pest management and monitoring tactics will also ensure the reduction of crop loss or damage by pests.
- d. Long term sociological benefits of IPM would also emerge in areas of employment, public health, and well being of persons associated with agriculture.

In spite of many benefits of IPM stated so far, there are also some drawbacks of it:

- a. An IPM program requires a higher degree of management.
- b. Making the decision not to use pesticides on a routine or regular basis requires advanced planning and higher degree of management. This planning includes attention to field histories to anticipate what the pest problems might be, selecting crop varieties which are resistant or tolerant to pest damage, choosing tillage systems that will suppress anticipated pest damage while giving crop the greatest yield potential.

References:

- Diane G. Alston, *Entomologist*.2011.*Important Components of a Successful Pest Management Program*. Utah State University Extension and Utah Plant Pest Diagnostic Laboratory.
- Irshad. Q., T. Ali, Babar S. and M. Maqsood.2016. *IMPACT ASSESSMENT OF THE IPM-FFS PROGRAM ON AGRONOMIC PRACTICES ADOPTED BY COTTON GROWERS IN PUNJAB PAKISTAN*.*J. Agric. Res.*, 2016, Vol. 54(2):321-330 ISSN
- Javed. M.A. Muhammad I and Ahmad K. 2018. *Awareness and Adoption of Integrated Pest Management in Cotton by Growers of Hasilpur Area in Pakistan*. March 2018, Volume 34, Issue 1, Page 79
- Khan, A. M., Muhammad I and Iftikhar A. 2007. *Environment-Friendly Cotton Production through Implementing Integrated Pest Management Approach*. *the Pakistan Development Review* 46 : 4 Part II (Winter 2007) pp. 1119–1135
- C.O. Ehi-Eromosele, O.C. Nwinyi and O.O. Ajani. *Integrated Pest Management*.
- <http://parc.gov.pk/index.php/en/faqy/95-narc/national-integrated-pest-management-program>
- www.agrifarming.in

GREEN BANKING



Green Banking refers to the initiatives taken by financial institutions to support environment friendly projects/investments by extending lending priority to those industries which have already turned green or are trying to grow green and thereby helping to restore the natural environment. This initiative of green banking is mutually beneficial for banks, industries and the economy.

Contrary to the belief, environmental friendly technologies make economic sense for the industries and lessen the financial burden as well. The industries causing pollution are often forced to close down or face massive resistance from the public. This adds to their cost enormously. Adopting environmentally sustainable technologies or modes of production is no more considered as a financial burden; rather it brings new business opportunities and higher profit. Green banking optimizes costs, reduces the risk, enhance banks reputations and contribute to the common good of environmental sustainability. So it serves both the commercial objective of the bank as well as its social responsibility.

Green Banking Strategies

Banks can adopt green banking as business model for sustainable banking. Some of following strategies must be adopted by banks:

1. **Carbon Credit Business:** It is the responsibility of all the banks to put their role in reduction of Green House Gases emission and reduce carbon emissions in order to protect the environment.
2. **Green Banking Financial Products:** Banks can develop innovative green products or may offer green loans on low rate of interest.
3. **Paperless Banking:** All banks are shifting on CBS or ATM platform and are providing electronic

banking products and services. So there is ample scope for banks to adopt paperless or less-paper banking. Private and foreign banks are using electronic means for their office correspondence but still many banks are using huge quantity of paper. Official letters are being typed and printed rather than sending over an email or a drop box message.

4. Energy Consciousness: Banks need to install energy efficient equipments in their offices, use Compact Fluorescent Light (CFL) and avoid misutilization of these equipments.

Role of Green Banking

Banks affect the environment indirectly by financing intermediaries that have an external impact on the environment. They are the major source of long term funding to various industries such as cement, fertilizers, nuclear power, steel, oil and gas, paper etc. which pollute the environment badly.

Agricultural banks mostly used to finance the farmers for purchasing chemical fertilizers, pesticides and herbicides that pollute the environment as well as our food.

Banks like any other business directly interact with the environment as consumers of natural resources. During their day to day business, banks heavily contributes towards the carbon emission in terms of use of paper, electricity, stationary, lighting, air conditioning, electronic equipment etc. even though this is moderate compared to other carbon sensitive industries like steel, oil and gas etc.

Sustainable Development

Green banking can help a lot in attaining sustainable development by creating awareness and by imparting training. Awareness can be created through communication. The first step would be defining target groups and means of communication. We can divide the whole system into two subsystems that is internal and external sub-system. For internal subsystems, means, which can be followed to create awareness on the issue, can be weekly green news on internet, clearing programmes, high level meetings, bank's news letter, publication etc. and the target groups are managers and other personnel. As far as external subsystems are concerned, effective means which can be followed are websites, capacity building, road shows, event meetings, bench marking, media etc. whereas clients, subsidiaries and general public are target groups.

Role of ZTBL in Green Banking Activities

Keeping in view guidelines of State Banks of Pakistan for Green Banking, ZTBL has established its Green Banking Unit in order to implement the Green Culture in the organization and also formulated its Green Banking Policy.

The salient features of the Green Banking Policy of ZTBL are as under:

- The Bank would establish risk management procedures to identify, assess, mitigate and monitor environmental risks arising from operations.
- The Bank would allocate funding resources for green business facilitation having direct or indirect impact on improving the carbon foot print and be more resource efficient.
- The Bank would setup its branches and offices in such a way that its operations use minimum energy and other resources leading to own impact reduction having minimum impact on the environment.

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Green Operation Officer, Green Banking Unit

PRODUCTION TECHNOLOGY OF SUNFLOWER

Introduction

Sunflower (*Helianthus annuus* L.) is one of the four most important annual crops in the world grown for edible oil. In Pakistan although it



was introduced as an oilseed crop but its expansion in acreage and production is fluctuating due to various production and socio-economic constraints. Its seed contains 35-55% oil contents. Research work on this crop has shown that there is great potential of growing it under all the soil and climatic conditions in rainfed as well as irrigated farming system in different agro-ecological zones.

Importance

Sunflower is an important oilseed crop and is successfully grown under different climatic conditions of the country, i.e., in the warm and harsh conditions of southern part of the country to mild and cool climate in the north. It has great potential to bridge the gaps between the production and consumption of edible oil.

Adaptation

The area of adaptation for this crop are in the cotton belt (Vehari, Lodhran, Bahawalpur, Umerkot) and rice growing areas of Sialkot and Badin in Punjab and Sindh, respectively. The crop is grown in spring as well as in autumn. The average yield in Pakistan is 1.3 tons/ha. Almost 99% area is under hybrids imported by different multinational seed companies. However, local hybrids are also available and area under them is increasing with the time. It has good prospects as intercrop with sugarcane.

Recommended Varieties

Hybrid	Institute	Yield potential (kg/ha)
NK-265	Cargill	3667
SF-187	Cargill	4000
PI-6480	Pioneer Seeds	3015
Hysun-33	ICI Pakistan	4750

Soil: Sandy to clay soil (pH 6.5 to 7.5)

Seedbed Preparation

Many different tillage systems can be used effectively for sunflower production. Conventional systems of seedbed preparation consist of moldboard plowing or chisel plowing to invert residue and several secondary field operations. Conventional systems have been shown to increase the availability and improve the distribution of potassium and nitrogen and to increase the seed zone temperatures. However, the risk of erosion and expense of the several tillage operations has led to greater interest in minimum or ridge tillage systems.

Both germination percentage and lodging have been shown to increase in ridge-till systems vs. level plantings. Several tillage systems have been used with some success in specific environments. Major considerations are: 1) firm placement of seed near moist soil, 2) absence of green vegetation during emergence, 3) maintaining an option to cultivate and 4) reduce the risk of soil erosion.

Seed Rate: 5-6 kg/ha

Method of planting: Row to row spacing = 75 cm
Plant to plant spacing = 25 cm

Planting Time Punjab	Spring Crop	Autumn Crop
Rawalpindi, Lahore, Sialkot	25 th Jan - 28 th Feb	1 st July - 31 th June
Khanewal,	15 th Jan - 10 th Feb	25 th July -

Vehari, Multan D.G.Khan		10 th Aug
Sindh		
Southern Sindh	1 st Dec - 20 th Feb	25 th July - 5 th Aug
Northern Sindh	15 th Dec -20 th Feb	25 th July - 15 th Aug
Dobari Crop	1 st Nov - 28 th Feb	
Balochistan		
Plain Area (Naseer Abad Division)	15 th Dec - 10 th Feb	25 th July - 15 th Aug
Hilly Areas (Quetta, Khuzdar, Noshki)	15 th Mar - 20 th June	
KP		
Plain Areas (D.I.Khan, Bannu and Kohat)	15 th Jan - 28 th Feb	15 th July -20 th Aug
Hilly Areas		
Swat, Mansehra and other areas	1 st Mar - 30 th June	
Fertilizer	Nitrogen	150 kg/ha (1/2 at planting + 1/2 at first irrigation)
	Phosphorus	60 kg/ha
	Potassium	60 kg/ha
Irrigations		
4-5	Spring Crop	Autumn Crop
1 st	25 days after germination	25 days after germination
2 nd	15 to 20 days after 1st irrigation	15 to 20 days after 1st irrigation
3 rd	At the time of head initiation	At the time of flower initiation
4 th	At the time of flower completion	At the time of seed setting
5 th	10-15 days before harvest	

Proposed crop rotations for sunflower

Spring Crop (Irrigated areas)	Autumn Crop (Irrigated areas)
Cotton-Sunflower-Cotton-Wheat	Sunflower - Wheat - Soybean-Wheat
Rice-Sunflower-Rice-Wheat	Sunflower-Wheat-Groundnut
Potato-Sunflower-Potato-Potato	Fodder-Sunflower-Wheat
Potato-Sunflower-Maize-Wheat	

Weed Control

As a crop, sunflower yields are reduced, but rarely eliminated by weeds which compete with sunflower for moisture and nutrients and occasionally for light. Sunflower is a strong competitor with weeds,

especially for light, but does not cover the ground early enough to prevent weed establishment. Therefore, early season weed control is essential for good yields. Annual weeds have been the primary focus of weed control research. Perennial weeds can also present problems but are usually not specific to sunflower. Successful weed control should include a combination of cultural and chemical methods. Postemergence cultivation with a coilspring harrow, spike tooth harrow or rotary hoe is possible with as little as 5 to 7% stand loss when sunflowers are at the four to six leaf stage (beyond cotyledon), preferably in dry afternoons when the plants are less turgid. One or two between row cultivations are common after the plants are at least 6 inches tall.

Diseases

The most serious diseases of sunflower are caused by fungi. The major diseases include rust, downy mildew, verticillium wilt, sclerotinia stalk and head rot, phoma black stem and leaf spot. The severity of these disease effects on total crop yield might be ranked: 1) sclerotinia, 2) verticillium, 3) rust (recently more severe), 4) phoma, and 5) downy mildew. Resistance to rust, downy mildew, and verticillium wilt has been incorporated into improved sunflower germplasm.



Major sunflower diseases and symptoms

Downy mildew <i>Plasmopara halstedii</i>	Cottony fungus on underside of leaves. Dwarfing, contrasting discoloration of yellow-green and green. Blackening and sometimes swelling at base of stem. Disease most severe when rain occurs before and after emergence.
Powdery mildew <i>Erysiphe cichoracearum</i>	Cottony fungus on green leaves late in summer - not largely damaging.
Leaf spot <i>Septoria helianthi</i>	Dead blotches on flower leaves before heading. Has not caused appreciable loss.
Verticillium	Before heading, dead areas along leaf

wilt <i>Sclerotinia sclerotiorum</i>	veins, bordered by light yellow-green margins. Decayed vascular tissue in cross-section of stem.
Rust <i>Puccini helianthi</i>	Rust colored pustules on leaves, latter black specks on stems.
Sclerotinia head and stem rot <i>Verticillium dahliae</i>	Wilt soon after flowering. Light tan band around the stem at soil level. Grey-black sclerotia (size of seed) in rotted heads and stems. Seed and meats discolored.
Phoma black stem <i>Phoma macdonaldii</i>	Large chocolate colored blotches on stems at maturity.

Insects, Pollinators and Birds

Bees are beneficial to sunflower yield because they carry pollen from plant to plant which results in cross pollination. Some sunflower varieties will not produce highest yields unless pollinators are present. All varieties will produce some sterile seed (without meats), but varieties differ in their degree of dependence on insect pollinators.

Insect pests have become major potential yield-reducing factors in sunflower. Insects specific to sunflower that feed on the heads include the larvae of three moths; sunflower moth, banded sunflower moth and sunflower bud moth.

Resistance to seed insects can be improved by the presence of a dark colored "armor" layer in the seed coat. Resistance to midge has been suggested but is not currently effective. Only currently approved insecticides should be used for control of insects.

Birds can be major pests in sunflowers. Especially important are blackbird, goldfinch, dove, grosbeak and sparrow. Many approaches to disruption of feeding have been tried, including scarecrows, fright owls, aluminum strips that flutter in the wind, and carbide exploders. No techniques are 100% effective, as birds will adapt to many of these techniques.

Harvesting: Harvest when the back of heads turn yellow and bracts brownish.

Threshing: Dry for 4-5 days and thresh with thresher.

Drying and Storage: For storage 9.5 % moisture is considered suitable.

Source: www.parc.gov.pk

SUCCESS STORY OF MR. HASHIM A PROGRESSIVE FISH FARMER

Fish farming or pisciculture involves raising fish commercially in tanks or enclosures such as fish ponds, usually for food. It is the principal form of aquaculture, while other methods may fall under mariculture. ZTBL



PATU Staff Hyderabad visited Mr. Hashim's farm near Hyderabad who holds about 17 acres of land in total, where he is growing different crops, keeping in view rising costs of living and expensive inputs required for farming, Mr. Hashim is doing fish farming on a total area of 4 acres. He started fish farming by investing an amount of Rs. 50,000 only. He explored different avenues for financing and visited various fish hatcheries to bargain for lowest bid to buy baby fishes and domesticated them to grow bigger fish. He looked for inexpensive but healthy feed and adopted methods to nurture fishes. He ensured soil tests and water tests. He uses irrigation ditches/ponds farm to raise fish.



Mr. Hashmi says that the basic requirement for fish farming is to have a pond that retains water, possibly for above ground irrigation system. Control of water quality is crucial and fertilizing, clarifying and pH control of water can increase yield sustainably. Over the years, Mr. Hashim observed that composite fish culture has been developed where fish experts use to keep more than one kind of fish in pond like usually five to six fish species are kept in single pond. The careful selection of species is very notable feature. These species are selected carefully so that they may not compete for food by having different food habitats. The fish used in this system include catla and silver carp which is surface feeder, rohu a column feeder, mrigal and common Carp which is bottom feeder. Some major issues related to fish farming involves availability of healthy feed, water testing and

continuous monitoring of fish health. The feed provides balanced nutrition. The feeds in the form of granules, pellets provide nutrition in a stable and concentrated form and help in growth of fish. Modern fish feeds are composed of grinding and mixing together ingredients such as a fish meal, and binding agent such as wheat. Water is added and resulting paste is extruded through holes in a metal plate. It is noticed in some feeds made up of soybean and mixed with other materials.

To determine suitability of the site for fish culture, soil samples should be taken from surface proposed for farming. It should be selected from the surface slightly below the depth that will represent bottom of the pond, i.e. if the three feet of soil was anticipated to be excavated, the soil samples should be taken from between three and four feet depth. A soil sample is taken by drilling a soil auger into desired depth.

The quality of water must be tested be it irrigation drawn or provided via tube wells. For this purpose a sample should be taken in a sealed bottle for testing its alkalinity, hardness, pH, nitrogen, total dissolved solids and other requisite water purity scales.

In a new pond, bottom should be manured prior to water filling with 5000 to 6000 kgs organic manure per acre. Cow dung or poultry waste is mostly suitable and used. Similar quantity is required to be added periodically in subsequent stages to maintain productivity of the pond throughout the growth period i.e from March to October. In addition, fertilizers are also applied during the growth period on and off during two weeks to maintain the productivity of farm.

Bacteria, parasites such as chilodonralla, Trichodina, fungi such as sapmlegnia etc are found. Keep on water testing. Introduction of known pathogens should be prevented. Purchase baby fish from disease free certified hatcheries only.

Mr. Hashim observes that cost of feed is increasing. In order to reduce cost of production, Growers should work out with fisheries department to look for any schemes whereby feed might be provided on lower price. Secondly, he believed that fish health is of great importance that is associated with soil and water treatment. The water scarcity has been a regular issue now a days. Those who are desirous of fish farming are facing acute shortage of water. Fish farming, goat farming, poultry farming, buffalo milking, and developing other sources of income other than agriculture have become indispensable.

زرعی سفارشات برائے کسان گندم

- ☆ ریتلی زمینوں میں کاشت کی گئی فصل میں یوریا کھاد چار برابر اقساط میں ڈالیں۔
- ☆ پہلی آبپاشی کے بعد کھیت و ترحالت میں آنے پر دوہری بارہیر و چلائیں۔
- ☆ جڑی بوٹی مارز ہروں کے سپرے کے لیے 100 تا 120 لٹری پانی فی ایکڑ استعمال کریں۔
- ☆ سپرے اس وقت کریں جب سورج پوری طرح چمک رہا ہو اور دھند یا شبنم کے اثرات فصل پر نہ ہوں۔

سورج مکھی

- ☆ بھاری میرا زمین سورج مکھی کی کاشت کے لیے موزوں ہے۔ سیم زدہ اور بہت ریتلی زمین اس کے لیے موزوں نہیں ہے۔
- ☆ کاشت کے لیے ترقی دادہ/ہا ہمبر ڈاقسام ہائی سن 33، ٹی۔40318، اگورا-4، ایس این جی سن-5264 اور یو ایس 666 کاشت کریں۔
- ☆ جنوبی اضلاع میں یکم جنوری سے دس فروری تک اور وسطی و شمالی اضلاع میں آخری جنوری سے آخری فروری تک کاشت مکمل کر لیں۔
- ☆ فصل کو قطاروں میں کاشت کریں۔ قطاروں کا درمیانی فاصلہ سواد و تاڑھائی فٹ اور پودوں کا درمیانی فاصلہ آبپاش علاقوں میں 9 انچ اور بارانی علاقوں میں 12 انچ رکھیں۔
- ☆ بوائی کے وقت پونے دو بوری ڈی اے پی + ایک بوری ایس او پی فی ایکڑ استعمال کریں۔

کماڈ

کماڈ کی برداشت

- ☆ گنا سطح زمین سے 1 تا 1/2 انچ گہرا کاٹا جائے اس سے زیر زمین پڑی آنکھیں زیادہ صحت مند ماحول میں پھوٹی ہیں۔
- ☆ کماڈ کی کٹائی اقسام اور فصل کے پکنے کو مد نظر رکھ کر کریں۔ پہلے تمبر کاشت، موٹھی اور پھر اگیتی پکنے والی اقسام اور آخر میں درمیانی اور دیر سے پکنے والی اقسام کی کٹائی کریں۔
- ☆ کماڈ کی بہاریہ کاشت
- ☆ کاشت کے لیے اچھی بھاری میرا اور اچھے نکاس والی زمین کا انتخاب کریں۔
- ☆ گنے کی کاشت کھیلپوں میں کرنے کے لیے ہموار زمین کو گہرا بل چلائیں اور مناسب تیاری کے بعد سہاگہ دیں اور پھر جر کے ذریعے 10 تا 12 انچ گہری کھیلیاں 4 فٹ کے فاصلے پر بنائیں۔

سبزیات و باغات

- ☆ چھوٹے قطعات میں ایسی سبزیات کاشت کی جائیں جو کافی دیر تک پیداوردی رہیں۔ مثلاً پالک، دھنیا، پیٹھی وغیرہ، جبکہ 3 سے 5 مرلہ کے قطعہ میں ان سبزیات کے علاوہ گوبھی، ٹماٹر، شلجم اور مولی سمیت دیگر سبزیات بھی لگائی جاسکتی ہیں۔
- ☆ کورے سے بچانے کے لیے مندرجہ ذیل سفارشات پر عمل کریں:
- ☆ سبزیوں کی بیہری کو پلاسٹک شیٹ سے ڈھانپ کر رکھیں تاکہ موسم کے اثرات سے بچا جاسکے۔
- ☆ پودوں کے تنوں پر بورڈ وکسچر کی سفیدی کی جائے۔
- ☆ کورا پڑنے پر کھیتوں میں ہلکا پانی لگائیں۔
- ☆ پھلدار پودوں پر پوٹاشیم نائٹریٹ بحساب ایک فیصد سپرے کرنے سے بھی پودوں کو کورے سے کافی حد تک بچایا جاسکتا ہے۔

Source: 1) Ziratnama Government of Punjab (Farmer's Advisory)

2) Fauji Fertilizer Company Limited (Farmer's Advisory Service)

MANAGEMENT TIPS

Putting Your Personality into Your Communications



When you are presenting your ideas, you don't have to sublimate your personality, writes John Baldoni, chair of leadership development at N2 Growth. Baldoni adds that effective leaders know how to inject their personality into their ideas. He cited three ways: (i) Think about what you want to say, and make a well-reasoned argument, (ii) Reflect on what your words really mean. Whom do they affect? What are the benefits of your ideas? (iii) Add an anecdote from your own life — or lives of people you know — to make your message more memorable and compelling. Effective presenters connect with their audience on two levels: intellect and emotion. As a leader, you need to keep a balance between the two in order to reach people's hearts as well as their minds, adds Baldoni.

Source: John Baldoni, <http://smartblogs.com/>

Empathy and Teamwork are Essential



People can go to work every day, zone out at pointless meetings and otherwise not get much done, and this is a problem of focus and empathy, says Stewart

Butterfield, CEO of Slack. "One way that empathy manifests itself is courtesy. Respecting people's time is important. Don't let your colleagues down; if you say you're going to do something, do it," he says.

Source: *SmartBrief on Leadership*

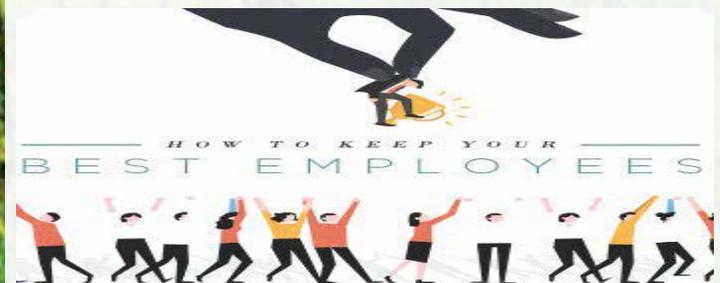
Getting Everyone Involve for a Productive Team Meeting



The point of holding a team meeting is to discuss things as a team, so make sure everyone is involved, writes Rhett Power, Co-Founder, Wild Creations. Ask someone who has remained quiet for his or her opinion, and encourage discussion between team members. Meetings that offer everyone a chance to voice their opinions and insight are much more productive than meetings that only have one or two voices in conversation, he adds.

Source: <http://www.inc.com>

Keeping your Best Workers



Whenever an employee leaves your organization, you lose money, time, and expertise—all hard to replace. In retaining and keeping your best employees, companies need to focus on employee development as most employees are looking for a way to build their skills (additional schooling, technical courses, mentoring and so forth). Great workers are more inclined to work for and stick with a company that makes investments in its people.

Source: www.managebetter.biz

NATIONAL NEWS

Climate Smart Agriculture Profile Launched

Climate Smart Agriculture (CSA) profile for Punjab province has been launched which is jointly prepared by Punjab Agriculture Department, Food and Agriculture Organization of the United Nations (FAO) and The International Centre for Tropical Agriculture (CIAT).

The profile highlights climate smart agriculture strategies that can help to mitigate and adapt to extreme weather events in Punjab, while at the same time contribute to increased agricultural productivity and food security in the province. It emphasizes the need for agricultural diversification and reducing dependence on cash crops.

GUARD to Introduce Drought-Tolerant Rice Variety

After successfully launching the hybrid rice varieties, the Guard Agriculture Research and Services Limited (GUARD) is soon going to introduce drought tolerant rice variety to mitigate the negative impact of water shortage on rice production.

The company started working in 1999 to import, acquire and develop the latest agricultural and crop technologies to produce quality seed aimed at increasing per acre yield and help the nation build grain surpluses to achieve adequate food security. After getting approval of seven different hybrid rice varieties from the Pakistan Agricultural Research Council (PARC), they have successfully being sown across Sindh and other parts of the country while last year the company also introduced a heat tolerant variety.

About 97.17 Percent Wheat Sowing Accomplished in FY 2018-19

Sowing of 97.17 percent wheat crop for the year 2018-19 has been completed on 8.583 million hectares of land against the total target of 8.833 million hectares in the country. Wheat sowing in Punjab and Khyber Pakhtunkhwa has been completed, while seven percent sowing of the crop in Sindh and around 29 percent in Balochistan is remaining. Punjab and Sindh cover around 88 percent of the total area and contribute 92 percent of the total wheat production in the country. Out of 8.583 million hectares, Punjab has completed sowing of wheat over an area of 6.564 million hectares, Sindh 1.046 million hectares, Khyber Pakhtunkhwa 0.687 million hectares, and Balochistan 0.286 million hectares.

The Federal Committee on Agriculture (FCA) has fixed wheat crop production target at 25.572 million tonnes from an area of 8.833 million hectares during Rabi 2018-19. Out of 25.572 million tonnes, Punjab will produce 19.5 million tonnes, Sindh 3.800 million tonnes, Khyber Pakhtunkhwa 1.362 million tonnes and Balochistan will produce 0.900 million tonnes.

Use of HEIS Results in 20 Percent Increase in Crop Yield

Best global agricultural practices and use of High Efficiency Irrigation System (HEIS) adopted by the potato growers of Kasur district under PepsiCo's Sustainable Farming Programme (SFP) have resulted in increase of 10 to 20 percent in yield besides reduced cost of production, saving water and positive impact on environment. The SFP is a global initiative launched by PepsiCo where the company engages with farmers from which it sources directly, and provides education on field agronomy, fertilizers, irrigation, plant protection techniques, environment and new technologies.

This was disclosed at an event arranged by the company on Wednesday showcasing global best practices in sustainable farming, so that PepsiCo potato growers can employ those processes and techniques at the farm level in order to become more sustainable.

The demonstrations were conducted on a grower's model farm in Kasur, where growers had the opportunity to see how sustainable practices improved both quantity as well as quality of potato crop yield. In 2017 alone, PepsiCo growers helped conserve approximately 1 billion litres of water by using HEIS on their farms.

Punjab Government Evolves Plan to Promote Sunflower Cultivation

Punjab government has evolved a comprehensive plan for the promotion of Sunflower and other oil seed crops in the province. Under the programme sunflower would be cultivated on more than 2.10 lac acres of land in different areas of the province.

The step was being taken to produce maximum edible oil aimed at lessening the import and to produce maximum edible oil in the province. At present only 34 percent edible oil is being produced within country while 66 percent was being imported for catering the domestic needs for which government was spending huge foreign exchange on the import of edible oil.

www.brecorder.com

ZTBL NEWS

ZTBL Shooting Ball Team Defeated Punjab Police Team by (2-1)



All Pakistan Jawaid Iqbal Junejo Memorial Inter Departmental Shooting Ball Tournament was played at Hyderabad. ZTBL defeated Punjab Police Shooting Ball Team by 2-1 and remained unbeaten throughout the Tournament.



MoU Signed between AJK Animal Husbandary & Dairy Production Department & ZTBL

The Azad Jammu and Kashmir (AJK) Government launched an interest free loan scheme for people inclined towards dairying in order to create employment and overcome shortage of fresh dairy products.



Under the scheme, Rs186 million would be disbursed for establishment of some 300 dairy farms in different parts of the state. Each dairy farm, required to be in possession of at least five insured buffaloes or cows, would be loaned Rs.10 million.

The markup on loans under the scheme would be paid by the AJK Department of Animal Husbandry And Dairy Production.

A Memorandum of Understanding between the AJK Animal Husbandry and Dairy Production Department and Zarai Taraqiati Bank Limited (ZTBL) was signed by Raja Tariq Masood, the secretary concerned, and Shahzad Iqbal, Zonal Chief ZTBL, at the AJK Prime Minister's office in the presence of premier Raja Farooq Haider. Dairy goat breeds would be distributed in the next phase with the assistance of ZTBL. Loans would be granted in all districts according to the size of population and on average not more than 30 dairy goat farms would be established in one district.

The Bank Won ADFIAP Award 2019 for its "Green Banking Initiative"



The Bank participated in Association of Development Financing Institutions in Asia and the Pacific (ADFIAP) Awards Program 2019 and won the major Award for its "Green Banking Initiative" under the category of Environment Development. The President, ZTBL has been invited to receive the award at the 42nd ADFIAP Annual Meeting to be held from February 20-22, 2019 at the Sheraton Oman Hotel, Muscat, Sultanate of Oman.



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