



Agri-Business Supplement

Zarai Taraqati Bank Limited.

PERMACULTURE

Permaculture is a system of agricultural and social design principles centered around simulating or directly utilizing the patterns and features observed in natural ecosystems. The term permaculture was developed and coined by David Holmgren and his professor, Bill Mollison, in 1978. The word *permaculture* originally referred to "permanent agriculture". Permaculture is "the development of agricultural ecosystems that are intended to be sustainable and self-sufficient.

Permaculture has many branches that include, but are not limited to, ecological design, ecological engineering, environmental design, construction.

Permaculture also includes integrated water resources management that develops sustainable architecture, and regenerative and self-maintained habitat and agricultural systems modeled from natural ecosystems.

Permaculture includes integrated water resources management (IWRM) that develops sustainable architecture, regenerative, self-maintained habitat and agricultural systems modeled from natural ecosystems. Permaculture is a creative design process based on whole-systems thinking informed by ethics and design principles that feature on this site. This approach guides us to mimic the patterns and relationships we can find in nature and can be applied to all aspects of human habitation, from agriculture to ecological building, from appropriate technology to education and even economics. By adopting the ethics and applying these principles in our daily life we can



Examples of PERMACULTURE in Action



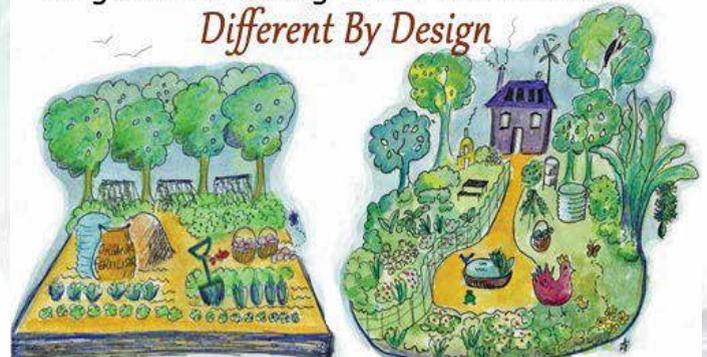
make the transition from being dependent consumers to becoming responsible producers.

A primary goal of permaculture is leaving the planet in better condition than how it was found. Scientist has observed how industrial agriculture revolved around maximizing production while destroying biodiversity and soil health. Conventional farming or agriculture is neither sustainable nor respectful of the planet and its diversity. Permaculture is viewed as one inclusive, holistic solution to this problem, since it both benefits the environment while helping to maintain valuable, and often scarce, resources. Permaculture is very different than conventional agricultural systems, which contribute to problems such as:

- Depleted topsoil
- Drought
- Contamination of ground water via human sludge
- Endangerment of plant and animal species
- Deforestation
- Increased pesticide resistance
- Poor social/economic conditions in certain parts of the world that are impacted and growing concerns over climate change/global warming

Organic Gardening and Permaculture?

Different By Design



As Permaculture mimics ecosystems by working with nature instead of against it, it limits the need for outside influencers, such as synthetic chemicals and use of sprinkler systems. In response to the conventional agricultural concerns mentioned above, scientists established permaculture systems to help with causes such as:

- Recycling, renewing and repairing resources/materials in order to limit waste

- Replenishing soil content
- Holding water on a landscape to help with hydration and cut down on water use
- Maintaining diversity of species
- Creating resiliency so a system can withstand changes in the environment and adapting to change

Permaculture is not just a green way of living or a guiding system of ethics, it is a way of designing using nature's principles as a model; 'bending' them as much as possible to create fertile, self-reliant, productive landscapes and communities.

Permaculture Farming Techniques

- **Guilds:** Guilds rely on certain composition and placement of different species in a way allows them to benefit each other. Species become interconnected and help each other by reducing root competition, providing each other with physical shelter/light/shade, providing nutrients for soil, pollinating and assisting in pest control. Guild arrangement helps determine how plants are layered. For example, you first choose an "anchor species," such as your canopy and sub-canopy species, and then add in layers of support species that help to fertilize and irrigate the land. Certain plants species help to pull nitrogen out of the air and fix it into a form that other plants can use. Large and small lower level plants can act as nitrogen-fixing species, since they tend to grow quickly and can be pruned to generate mulch and compost.

- **Keyline Design:** It is a technique that used for maximizing use of water resources. "Holding water" has to do with how plants stay hydrated. One of the primary goals of keyline design is controlling rainfall runoff and enabling fast flood irrigation. It's possible to build or utilize a series of swales or ditches in a permaculture system in order to help contours or ponds fill up with rainwater and slowly soak the surrounding soil or provide water for cattle/other animals.

- **Rotational Grazing:** There are two basic types of livestock grazing systems: Continuous and rotational grazing. Grazing utilizes animals because they are the main driver in rebuilding soil. Rotating grazing systems work by dividing pasture into two or more cells called "paddocks." Livestock graze in one paddock before being moved to a new pasture, which allows for soil to be trampled and manure from the livestock to be deposited. "Intensive Rotational

Grazing" utilizes more than 7 paddocks and has faster grazing periods consisting of between less than one week and half a day, which



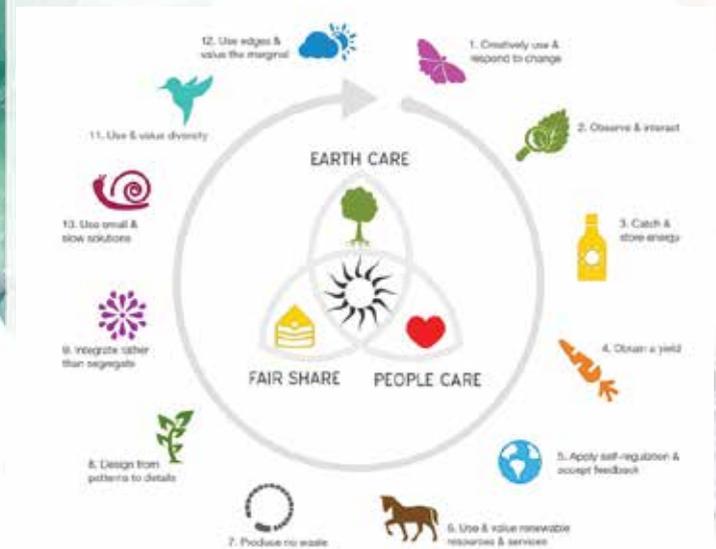
prevents overgrazing. Grazing works because livestock eat certain species down to a minimum, their hooves help to upturn flora in the soil while they stamp depressions in the ground and they deposit heavy amounts of urine and manure onto the ground, which is rich in nutrients. Manure is a great source of nitrogen (N), phosphorus (P) and potassium and helps to return organic matter to soil, including calcium, magnesium and sulfur.

Principle of Permaculture

There are three core tenets of permaculture (along with 12 design principles, explained below). These tenets include:

- Caring for the earth (including its diverse species and resources)
- Caring for the people who inhabit the earth.
- Returning/reinvesting surplus of resources and energy back into the system

Permaculture can be used by just about everyone and helps to create a sustainable future for all of us. Even if they don't necessarily realize that they are using



permaculture techniques, the following groups of people commonly incorporate one or more permaculture principles into the planning of their homes and/or gardens: those who purchase eco-friendly products, environmentalists,

conservationists, organic gardeners or farmers, land-use planners, urban activists or farmers, recyclers and indigenous peoples.

Ways to incorporate Permaculture into your lifestyle include: growing your own food in a space that's designed based on permaculture principles (including in your own backyard or an urban environment); building a home that is eco-friendly due to its ability to renew resources; using heat from the earth's surface to control the temperature in a greenhouse or indoors; catching rain water to be used as drinking water; recycling and reusing water that's utilized in your home for things like laundry or washing dishes; and repairing damaged land with depleted soils by rotating crops and incorporating animal grazing.

Source:

- <https://draxe.com/permaculture/>
- <https://en.wikipedia.org/wiki/Permaculture>

CHIA: CROP CULTIVATION AND USES

Chia (*Salvia rhyacophila*) is a hardy annual herb 1-1.5m high, that belongs to the *Salvia* family, with its name coming from the Latin 'salare' which means to save, referring to its curative properties. Blue flowers spike to 10cm long, set on terminal stems, and fill out to a seed head (that is similar in appearance to a wheat seed head) with pin-head sized, brown, shiny seeds. Plants adapt to a wide range of soils, climates and minimal rainfall.



Chia Cultivation

Growing chia from seed is very easy. Under the right conditions the seed will sprout in 3 to 5 days. It's important to use sterilized soil because there are many fungi or diseases that can kill the sprouts or even stop the seed from germinating. Whether growing indoors or outdoors make sure not to let the soil dry out. Keep the soil moist but avoid soggy conditions. It only takes a few days to germinate chia seeds, so it's okay if you have to start over again. The ease and quick germination of the seeds makes it a fun project for kids to enjoy.

To start, place some sterilized black earth into pots, water the soil until it is moist but not soggy. Surface sow the seeds – as they need light to germinate. Press

the seeds gently into the soil. As the chia seed sprout and get large enough to handle you can divide the plants. Don't sow the seeds too close together or it will be harder to separate them. Some people cover the pots with plastic to keep the seeds moist and humid, and when the seeds sprout they remove the plastic. This is not necessary but it may work better if sprouting the chia seed in the cold winter months.

Chia Harvest

The size of harvest will determine how many days are required to separate the seeds, but if the time is short, store dried flower heads in a large calico bag until it's time for next seed separating session. Successful collection of chia seeds without waste has a lot to do with timing. When growing chia at home, it is possible to pick individual flower heads when they look ready instead of doing a mass harvesting like they do in a commercial growing environment. If we wait until the flower head browns, we risk losing the seeds. Harvesting Chia should began very soon as most of the petals have fallen off the flower. Give the heads time to dry in paper bags or on a drying rack. Expect at least some of the chia seeds will break free in the process. Do not hang the plants upside down in your shed.



In the plant's native habitat of South-west America, it has been highly valued as a staple food for hundreds of years. In Mexico, it was used as money and to pay taxes. A small handful of seeds and plenty of water supplied energy and sustenance, for a man traveling for 24 hours, and it is said that an Indian can exist on it for many days if necessary. Several USA universities have researched the endurance properties of chia and found that a tablespoon of seed could sustain a person for 24 hours, with hard labour.

Benefits of Chia

The calcium content of chia seed is 5 times that of milk. Enzymes in chia act as catalysts to aid the digestion of food. Chia seeds contain the trace mineral strontium, which acts as a catalyst in the assimilation of protein and production of energy. The seeds contain one of the highest known sources of



Essential Fatty Acids (EFA), as linolenic acid (LNA) 30-60%, and linoleic acid (LA) 30%. EFA's carry a slightly negative charge and spread out as a thin layer over surfaces and do not form aggregations; this makes cell membranes soft, fluid and flexible, allowing nutrients to flow in and wastes out. Energy charged by EFA's produces measurable bioelectrical currents. These currents make possible the vast number of chemical reactions in the body, which are important in nerve, muscle and membrane function. EFA's absorb sunlight and attract oxygen. A bounteous supply of oxygen, carried with the blood to the cells, is vital for vitality, pain relief and healing. The oxygen is able to be held by the action of EFA, at the cell membranes, making a barrier against viruses and bacteria. EFA's are important in immune function and metabolic reactions in the body resulting in fat burn, food absorption, mental health and the process of oxidation and growth. They can substantially shorten the time required for recovery of fatigued muscles after exercise or physical work.

EFA's are the highest source of energy in nutrition and govern many life processes in the body. When EFA's are deficient, a diversity of health problems may follow. Due to high refining and processing of many natural foods, EFA's may be low or non-existent, therefore, we need to look at what we can grow to give us these essentials, daily. Chia seeds provide a rich source of EFA's, and many other seeds that we can use for sprouting are also a good source.

The mucilaginous properties of the seeds have a swelling action, similar to guar or psyllium as a bulking agent and fibre source, and are valuable for cleansing and soothing the colon. Chia acts like a sponge, absorbing toxins, lubricating the colon and strengthening the peristaltic action. Chia seeds come to the rescue when the tummy is upset and will not tolerate other foods; or to fortify the body against the exhaustive effects of extreme summer temperatures. The seed helps to quench the thirst, if added to a glass of water, a very practical benefit in our hot summers. It is an appetite satisfier and, therefore, useful to dieters. Chia is valued for calming the nerves and said to strengthen the memory: use 1 teasp. chia seed to 1 cup of boiling water, steep 5-10 minutes, take 2-3 cups a day.

As the seeds are able to absorb more than 7 times their weight, in water, and form a thick gel, this causes a slow release of carbohydrate; facilitating an equally slow conversion of carbohydrates, into

glucose (blood sugar), for energy. The outer layer of the seeds are rich in mucilloid soluble fibre and, when mixed with water or stomach juices, a gel forms that creates a physical barrier between the carbohydrate foods eaten and the digestive enzymes that break them down. This means that the carbohydrates are digested slower and at a more uniform rate. There is no insulin surge needed to lower the blood sugar level after eating chia. The chia gel is able to hold moisture, which also retains electrolyte balance.



Chia sprouts can come to the rescue for digestive problems, particularly when 'windy'. Passing gas may be relieved by slowly chewing 1-2 tablesp. of chia sprouts, making sure that plenty of saliva is mixed with them. Together with the nutrients, chlorophyll, and enzymes from the saliva, the combination can act to relieve and prevent flatulence.

Chia seeds have a nutty flavour and can be sprinkled over meals, or seeds can be soaked in a little water (for several hours or overnight, to start the seed germination process) giving better assimilation when eaten. Soaking is also beneficial, since vitamin C will start to be manufactured. When seeds are sprouted, the vitamin content multiplies considerably and they can add a spicy, warm flavour to meals. Sprinkle soaked or sprouted seeds over breakfast cereal or tossed salads.

SALINE AGRICULTURE AND PAKISTAN

Soil salinity and sodicity problems are common in arid and semiarid regions, where rainfall is insufficient to leach salts and excess sodium ions out of the rhizosphere. Nearly 10% of the total land surface is covered with different types of salt-affected soils. At present, there are nearly 954 million hectares of saline soils on the earth's surface. All these salt affected soils are distributed throughout the world. More than 80 million hectares of such soils are in Africa, 50 million hectares in Europe, 357 million hectares in Australasia, nearly 147 million hectares in Central, North and South America. Similarly, a large bulk of about 320 million hectares and land in South and South East Asia is under the grip of salinity.

The total geographical areas of Pakistan is 80.0 million hectares or 197.0 million acres, with a very



good canal irrigated system of about 62,400 km long and mainly confined to Indus plain covering an area of 19.43 million hectares (48 million acres). The salt affected soils are mainly situated in this plain. In Pakistan, about 6.30 million hectares of land are salt-affected and of which 1.89 hectare is saline, 1.85 million hectare is permeable saline-sodic, 1.02 million hectare is impermeable saline-sodic and 0.028 million hectare is sodic in nature. It is estimated that out of 1.89 million hectares saline patches, 0.45 million hectares present in Punjab, 0.94 million hectares in Sindh and 0.5 million hectares in NWFP. Out of 19.3 mha area available for farming, irrigated agriculture is practised on about 16 mha. The irrigation water is mainly supplied through the worlds largest canal system arranged through dams. Intensive and continuous use of surface irrigation has altered the hydrological balance of the irrigated areas, specially Indus basin. The substantial rise in the water table has caused salinity and water logging in large areas of Sindh, Punjab, NWFP and Balochistan. The magnitude of the problem can be gauged from the fact that the area of productive land was being damaged by salinity at a rate of about 40000 hectares annually.

Causes of Salt Accumulation

The location of Pakistan is in arid and semi-arid climatic zones. Generally high evapo-transpiration in semi-arid and arid zones is the basic cause for salt accumulation on the soil surface. The average summer temperature is about 40°C and the minimum winter temperature remains between 2°C to 5°C. The annual rainfall varies between 100 mm to 700 mm throughout the country. The evaporation rate is generally very high and exceeds that of precipitation. Thus, the insufficient rainfall followed by high

evaporative demand and shallow ground water depth, enhances the movement of salts towards soil surface.

Salinity is an important problem affecting irrigated agriculture of Pakistan. Improper irrigation practices and lack of drainage have generally led to accumulation of salts in the soil in concentrations, which are harmful to the crops. There is a major imbalance in the amount of salt entering and leaving the soil in Pakistan. Each year about 120 million tonnes of salts are added to the land in canal water and brackish under ground water. Only about 1/5th of this salt finds its ways to the sea. The remainder accumulates in the soil, it continues to decrease the growth and survival of crops.

The soils with electrical conductivity of less than 4 dSm⁻¹ are generally considered as salts free, where almost all crops can be grown. As the salt concentration increases, the choice becomes limited and one has to go for tolerant plants suited for specific conditions.

Improving Salt-Affected Soils

Saline agriculture almost always involves some compromise on yields as even a very salt tolerant species is bound to suffer some yield losses under the adverse conditions. It is hence advisable to observe precautions in such ventures. Saline soils may be improved by leaching the salts from the root zone. Leaching is the process in which extra water is added to a field and allowed to soak through the soil and drain away underground. A common method of leaching is to pond the water in basins over the entire field. Sometimes the excess water is removed by pumping from wells. Permissible depths for ground-water tables vary according to the type of soil being irrigated. The amount of leaching water that enters the soil by surface flooding determines how much salt is removed from the soil. When water is leached through the soil, a surface depth of 6 inches of water for every foot of plant root will leach out 50 per cent of the salt. One foot of water for every foot of root zone leaches out 80 per cent of the salt. Two feet of water per foot root zone leaches out 90 per cent of the salt.

The leaching of salts through irrigation however, requires extreme care as this should not add to the underground water table. Tube wells are generally sunk to get rid of such shallow water tables without which leaching may not be advisable. The upward movements of saline water from shallow water tables can cause salt build up in the plant root zone. A water

table should be at least 4 1/2 to 5 feet below the surface during most of the crop growing season.

Adding Chemical Amendments

Most saline soils need chemical amendments to restore their productivity. Many suitable amendments are available, gypsum, sulphur and sulphuric acid are the most common, but application of acid needs special care due to its corrosive action. Application of acid is effective in reclaiming saline soils by lowering ESP (exchangeable sodium percentage), SAR (sodium adsorption ratio), pH. Scrapping of salt layer, land leveling, deep ploughing, sub-soiling, sanding (i.e. adding sand), flushing with good quality and enough quantity of water and drainage also help in improving soil condition. For better results in cultivating saline soils, higher seed rate for higher plant population, crop rotation, proper choice of crops, sufficient amount of NPK fertilizers, avoiding urea and using ammonium sulphate as an N source is advised.

Green manuring through leguminous crops and application of farm yard manure not only provide organic matter and other nutrient, but also make the soil porous for aeration and moisture absorption and enhance soil microorganisms, thus improving the overall condition of the soil. Similarly replacement of sodium-ions by calcium using gypsum helps in mitigating the adverse conditions.

It should also be stressed that lands, specially the saline ones should never be left fallow for extended periods, because in uncultivated lands there is a constant upward flux of water, which keeps evaporating and leaves behind the salts on the surface. Presence of vegetation of any kind helps to minimize this development.

Modern research has identified of more than 1500 plant species that have high levels of tolerance to saline soils, these are called halophytes. Some of these are able to withstand salt concentrations in excess of those found in sea-water. These plants (trees, shrubs and salt tolerant grasses and herbs) are a major resource that can be used in the development of agricultural systems for salt affected soils. In addition, there are opportunities to increase the salt tolerance of existing crops using conventional plant breeding and molecular biological approaches.

The research that has been conducted in Pakistan over the last decade shows that there is a wide range of plant species with varying levels of salt tolerance that

can be used in saline agriculture. Furthermore, at least some of these plants are able to lower local water-tables, improving the condition of the land, and acting as 'biological pumps'.

Growing of suitable crops at ECe, 0-15 dSm-1 - a moderately saline soil.

If the average Electrical Conductivity (ECe) of a plot is 0-15 dSm-1 (9600 ppm), which is fairly high and may have serious effects on the growth of plants, but the soil is of loamy texture, the underground water table is not shallow i.e. at 8-10 ft some good quality irrigation water is available, it makes the conditions less hostile for plant sustenance. A number of species may be grown here as given below. Good quality irrigation water should be used during the initial establishment phase and for periodical leaching of salts from soil surface. Under proper management, this can be a cost effective venture.

i) Cereals - Paddy rice (*Oryza sativa*), Sugar cane, Oat, Wheat (*Triticum* and durum), Aegilops, Triticale, Sorghum (*Sorghum bicolor* L.), Barley (*Hordeum vulgare* L.), Corn (*Zea maiz* L.), Pearl millet (*Penasitum thypdodeum* L.), Rye

ii) Oilseed: Rape, Canola, Mustard

iii) Vegetables: Spinach, Sugar beet, Red beet, Tomato, Carrot etc.

iv) Fodder and Forage: Guar, Dhancha (*Sesbania sesban* L.), Berseem (*Trifolium alexandrinum*), Lucerne (*Medicago sativa* L.), Melilotus species, i.e. Sweet clover, Honey clover, Indian clover, White clover

v) Fibre: Cotton, Sunhemp, Kenaf vi) Fruits: Fig, Grape, Pomegranate, Zizyphus (*Zizyphus jujuba*)

Growing of suitable crops at ECe, 15-20 dSm-1 — a highly saline soil.

At high salinity (ECe 15-20 dSm-1, 9600-12800 ppm), with coarse textured soil, where good quality irrigation water is not available, the growth of majority of plants will be restricted and only some salt tolerant plants (given below) can grow, provided under ground water table is not shallow. The establishment and sustenance of these plant species will be improved with periodical use of good quality irrigation water or in areas with regular rains.

i) Fruits: Date palm, Wild date palm and Coconut

ii) Grass: Kallar grass (*Leptochloa fusca*), Orchard grass, Bermuda grass, Rhodes grass

(Chloris guyana), Para grass, Tall wheat grass (Agropyron elongatum), Rye grass, Sudan grass

iii) Woody species: Jojoba (Simmondsia chinensis L.), Guava (Psidium guajava L.), Jujube (Zizyphus mauritiana L), Mesquite (Prosopis species), Mangroves, Acacias (nilotica, ampliceps, stenophylla, machonochieana), Atriplex species, Mustard tree (Salvadora persica)

iv) Miscellaneous: Life plant (Bryophyllum pinnatum), Aloe (Aloe perfolia), Dodonaea (Dodonaea viscosa), Periwinkle (Vinca rosea), Purslane (Portulacea oleraceae), Reed plant (Saccharum arundinacea), Bottle palm, Cactus, China rose, Drumstick tree, Wild banana (Agave americana), Wild cherry (Withania somnifera), Senna (Cassia angustifolia)

Conclusion

It transpires from the foregoing that saline agriculture can be a profitable and practical venture under proper management and by observing suitable precautionary measures. Initial establishment is crucial for subsequent growth and hence stress should be minimized as far as possible at this stage. Saline agriculture is an economical and effective approach to use unproductive lands for growing various plant and food crops.

If the plant survives the shock at seeding/transplanting stage, the chances of its subsequent survival and growth are likely to be increased. Several salt-tolerant grain, fruit and fodder species have been identified for practising saline agriculture in the country. This approach, if prudently adapted, can help to reduce the imports of agricultural commodities to a great extent. Leaching with only good quality water or by rain reduces shock and improves growth. Use of mulch to conserve moisture, planting on ridges, light but more frequent irrigation often helps under such conditions. Out of about 5000 crops that are cultivated throughout the world, a few can survive with water that contained more than 1% salt. The world food base can be vastly expanded if the currently cultivated crops can be grown by maintaining proper soil management. It is also necessary that Government should encourage the local agencies by supplying all sorts of facilities for the betterment and reclaiming of salt affected lands. At present, it is a burning topic from agricultural point of view. Because for the last ten years the production of agricultural crops have become stagnant, rather it is towards deteriorating

side. This situation is of course inforcing the government to import wheat and other cereal products from foreign countries. This is causing expenditure of huge amount and thus affecting the economy of the country. A true, honesty and real efforts by the population will of course InshaAllah bring the situation at a recoverable stage and this will help to get rid of such turmoil situation of the agricultural scenario of the country.



Source: Dr. S. M. Alam, Dr. R. Ansari and M. Athar Khan. Nuclear Institute of Agriculture, Tando Jam, Pakistan

SUCCESS STORY OF MR. SHAHNAWAZ BHATTI



Mr. Shahnawaz Bhatti is a progressive farmer of wheat and rice, resident of Awan Bhattian, which falls under the territorial jurisdiction of tehsil and district Sheikhpura, having land holding of 6 Acres. He uses tubewell as a source of irrigation.



The latest allied agriculture activity he adopted and started is Ostrich Farming. He started ostrich farming with 50 birds of one month age. His purpose of Ostrich Farming is for meat and hatching in future. He devotes proper time on his major crops and it gives sufficient monetary gains which he utilizes on Ostrich farming. He takes the animals from the hatchery of national ostrich company RWP.

He is very dedicated person with an urge to learn and promote sustainable agriculture practices. He got the motivation from a program aired on GEO news. This program was specifically for the ostrich farming. He took loan from ZTBL and started his own ostrich farming business. Initially he had to face certain problems like its management, marketing and supply which he catered with the passage of time to some extent.

Now as his business is giving steady profits so he is planning to take further such initiatives which may lead to exporting ostrich in future. He proposes other farmers to diversify their farming activities for sustainable development. Ostrich farming is more profitable than fish, dairy or wildlife farming, he believes.

He suggests farmers to keep in view following critical factors for starting successful Ostrich business;

- Technical know-how, relevant expertise and experience of entrepreneur.
- Selection of high quality ostrich breeding birds.
- Selection of appropriate farm tools and equipment.
- The farm supervisor should ensure timely feeding, watering, lighting, vaccination, medication, temperature / humidity control and culling of ostrich birds as per best husbandry practices.
- Time management is also important in Ostrich Farming business.
- Delay in eggs hatching can result in high cost and delay in meat delivery can cost in thousands, as the product is perishable.
- Sanitation and disinfection program should be strictly followed and regularly monitored.
- Birds should be given enough space according to their age as less space could lead to give rise to different complexities.
- Feed should not be stored for a long time as it would lose its nutrition and there is a chance that feed may develop fungus and can prove to be poisonous.
- The entrepreneur should be well aware of the supply and demand of ostrich meat and other by-products in the market.
- Higher return on investment and a steady growth of business is closely associated with regular training and capacity building of the entrepreneur and employees



زرعی سفارشات برائے کسان گندم

- ☆ کمپاس، بکھی اور کساد کے بعد کاشت کی جانے والی گندم کو پہلا پانی کاشت کے 20 تا 25 دن بعد اور دھان کے بعد کاشت سے 35 تا 45 دن بعد لگائیں۔
 - ☆ آبپاش علاقوں کی کمزور زمینوں میں 2 بوری ڈی اے پی، آڈھی بوری یوریا اور ایک بوری پوٹاشیم سلفیٹ جبکہ اوسط زمینوں میں ڈیڑھ بوری ڈی اے پی، آڈھی بوری یوریا اور ایک بوری پوٹاشیم سلفیٹ اور زرخیز زمینوں کے لیے ایک بوری ڈی اے پی، آڈھی بوری یوریا اور ایک بوری پوٹاشیم سلفیٹ فی ایکڑ استعمال کریں۔
 - ☆ گندم کی تکھتی کاشت ہر صورت وسط دسمبر سے پہلے مکمل کر لیں اور غیر معمولی تاخیر سے بچنے کے لیے جہاں ضروری ہو خشک ہوائی کریں۔
- ### دائیں
- ☆ جڑی بوٹیاں فصل کے لیے موجودگی اور خوراک استعمال کر لیتے ہیں۔ اس لئے ان کا بروقت تدارک پودوں کی بڑھوتری کے لیے ضروری ہے۔
 - ☆ فصل کا باقاعدگی سے معائنہ رکھا جائے اگر فصل میں ٹوکے کا حملہ نظر آئے تو محکمہ زراعت کے ماہرین کے مشورہ کے مطابق سفارش کردہ زہروں کا استعمال کریں۔ مثلاً میتھیلین بھسب 1.5 لیٹر فی ایکڑ استعمال کریں۔
 - ☆ دالوں کو زیادہ آبپاشی کی ضرورت نئی ہوتی بلکہ یہ فصل بارشوں سے ہی پک جاتی ہے۔ بصورت دیگر اس کو دوپانی درکار ہوتے ہیں۔ پہلا پانی پھول آنے سے پہلے اور دوسرا پانی پھلیاں بننے پر دیں۔
 - ☆ مسورا اور چنے کی فصل پر مختلف بیماریاں حملہ آور ہوتی ہیں۔ جن میں مرجھاؤ، جھلساؤ، کنگلی، مسور کی پھپھوندی زیادہ اہم ہیں۔ اس کے علاوہ ان پر دیمک، ٹوکا، چور کیزا، رس چوسنے والے کیڑے مثلاً ست تیلہ، سفید مکھی، تھرپس، لشکری سنڈی کا حملہ کر سکتے ہیں۔

روغنمدار اجناس

- ☆ سرسوں اور تارامیرا پر تیلہ کا حملہ نظر آئے تو محکمہ زراعت کے مشورہ سے زہر آبپاشی کریں۔
- ☆ جڑی بوٹیاں فصل کی خوراک، پانی اور روشنی میں حصہ دار بننے کے ساتھ بیماریوں اور ضرر رساں کیڑوں کو پھیلانے میں مددگار بنتی ہیں۔ اس لیے ان کی تلفی نہایت ضروری ہے۔

چارہ جات

- ☆ برسیم کی کاشت بھی گندم کی طرح دسمبر تک وسط تک مکمل کر لیں اور شرح بیج 8 کلوگرام فی ایکڑ رکھیں۔
- ☆ ڈیڑھ بوری ڈی اے پی فی ایکڑ بوقت کاشت ڈالیں۔ اگر بوائی بذریعہ مچھ اور کھڑے پانی میں کی گئی ہے تو پہلا پانی بوائی کے 7 دن بعد دینا چاہیے تاکہ اگاؤ اچھا ہو۔
- ☆ لوسرن کی فصل کو پہلا پانی بوائی کے 3 ہفتہ بعد اور پھر پانی حسب ضرورت دیں۔
- ☆ برسیم کے بیج کو بوائی سے پہلے جراثیمی ٹیکہ لگائیں یا پچھلے سال والے برسیم کے کھیت سے 80 کلوگرام مفید جراثیم والی مٹی لاکر ایک ایکڑ کے کھیت میں مکس کریں۔

سبزیات

- ☆ نومبر کے مہینے میں کاشت کی گئی ٹماٹر اور پیاز کی زمری کو کھیت میں منتقل کریں۔
- ☆ چھوٹی اور تازک بزیوں کو سردی اور کورے سے بچانے کے لیے پلاسٹک شیٹ کا استعمال کریں۔
- ☆ آلوی فصل کا معائنہ کرتے رہیں۔ بیماری یا کیڑے کی صورت میں محکمہ زراعت کے عملے کے مشورہ کریں۔
- ☆ بیماری یا کیڑے کے حملے کی صورت میں محکمہ زراعت کے مقامی عملے کے مشورہ کے مطابق مناسب زہروں کا استعمال کریں۔

باغات

- ☆ باغات کو کورے سے بچائیں۔ کورے اور سردی سے بچاؤ کے لیے چھوٹے پودوں کو کسی شیٹ سے ڈھانپ دیں اور پانی لگائیں۔
- ☆ رات کے وقت باغ کی زمری میں دھونی دیتے رہیں اور ترشاوہ پھل کی برداشت جاری رکھیں۔
- ☆ گوبر کی گلی سرٹی کھاد 40 تا 50 کلوگرام، ہنگل سپر فاسفیٹ 4.20 کلوگرام، پوٹاشیم سلفیٹ 1 کلوگرام اور زنک سلفیٹ 250 گرام فی پودا درخت کی چھتری کے نیچے سے ایک سے ڈیڑھ فٹ دور ڈالیں۔

MANAGEMENT TIPS

Document Actions Worthy of Praise

Praise and recognition are powerful motivators. Don't let them vanish immediately after they're delivered. Praising an employee's performance on the spot is good, but afterward, take a few moments to document the action you're recognizing. Write a quick memo or letter describing what happened and why it's worthy of praise, and give a copy to the employee. Keep another copy in his or her file. If appropriate, send a third copy to your own boss to show you're keeping an eye on employee performance.



Source: www.managebetter.biz

Knowing When an Employee Won't Cut It

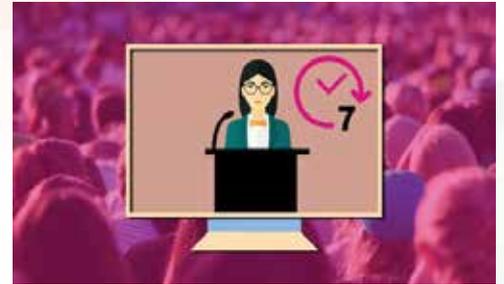


Good bosses help struggling employees to develop and grow into their roles, but while some people need grooming, others simply aren't right for a given position, writes Art Petty. "If after a fair evaluation conducted by observing and engaging with the individual, you still have doubts about the individual's *ability to operate at the current or a higher level, trust your gut and make a change,*" he advises.

Source: *SmartBrief on Leadership*

Having A Strategy for Impromptu Speaking

The key demand in business is the ability to speak off-the-cuff. Whether it's giving an



elevator pitch to a potential investor or being asked to quickly defend a proposal to sales, many of us have had to speak with no preparation. Next time, don't panic. The worst business speeches are those that ramble on. If forced to speak, quickly draft a structure of your main argument on a notecard (or napkin). Jot down an introduction, two or three supporting points, and a conclusion. Use extra time to fill out any examples or data you want to address. Always state your thesis up front so listeners can easily follow your supporting comments. Focus on key stories and statistics, rather than your delivery. If you know your topic, the words will come. Finally, keep it short. When in doubt, say less.

Source: *Management Tip of the Day, Harvard Business Review*

Building Support for Innovation



Innovation should be observed all the time in an organization. One of the aspects that make an innovation effort thrive is to build support for it. Innovation fails without support. Make sure the people who will use the technology are on board with new ideas and experimentation. Also, commit the dollars and hours necessary to keep your program going. A lot of good ideas die a slow death because staff members don't have the money and time they need to keep it up.

Source: <https://www.marketingprofs.com>

NATIONAL NEWS

Plan Evolved To Promote Sunflower, Other Oil Seed Crops In Punjab

Punjab government has formulated a well-knitted plan for the promotion of sunflower and other oil seed crops in the province. Under the programme sunflower would be cultivated on more than two lakh 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 every year. The demand of edible oil was increasing rapidly due to the fast increase in population of the country and under the situation extra efforts were being made for cultivating oil seed crops.

Wheat Stock To Be Sold at Subsidised Rates

The federal government has decided to sell 0.5 million tons of carryover wheat stock of Pakistan Agricultural Storage & Services Corporation Ltd (PASSCO) at subsidised rates. The PASSCO, a subsidiary of Ministry of National Food Security and Research, procures wheat at the support price, approved by the federal government, as per the targets prescribed by the ECC for the purpose of strategic reserves, passing on the state's benefit of support price to the farming community, market stabilisation, meeting the demand of wheat deficient provinces/areas as well as armed forces and fulfilling international obligations. The PASSCO's wheat carried over crop 2014, 2015 and 2016 was 1,602,579 MT, as on April 1, 2017, besides procurement crop 2017 of 899,811 MT and climatic gain (since April 1, 2017) 1,356 MT, totalling it to 2,503,762 MT.

Telenor, PLDDB Launch IVR SERVICE For Women Farmers

Aimed at empowering Pakistan's female farmers and extending them the benefits of its flagship mobile agriculture service 'KhushaalZamindar', Telenor Pakistan in partnership with Punjab Livestock and Dairy Development Board (PLDDB) on Tuesday launched a dedicated free of cost IVR service for female farmers in Punjab called 'KhushaalAangan'. Female farmers will simply need to dial 727251 to subscribe to the service and get information regarding

livestock rearing, family health, nutrition, hygiene and sanitation.

Keeping in view the large number of female workforce in today's rural society and their immense contribution towards agriculture, it's imperative to have a service which caters specifically to their needs.

Farmers Advised to Remove Unneeded Plants

The Met Office warned the farmers of a considerable yield loss from outgrown weeds in standing crops, asking them to devise a plan to remove the unneeded plants at earliest. Weeds utilize soil moisture and food, which crops need mainly, causing a considerable production loss every year. Keeping in view the existing weather pattern, it also advised the growers to chalk out a plan to irrigate their crops. It also urged the farmers of rain-crop areas to complete sowing of Rabi season cultivations to allow the seeds attain maximum moisture left by the recent rains for a better agriculture growth.

KP fixes minimum support price of sugar cane

KP government directed the management of all seven operational sugar mills including Khazana Sugar Mills Peshawar, Premier Sugar Mills Mardan, Bannu Sugar Mills Serai Naurang, Al-Moiz Sugar Mills D I Khan, Tandlainwala Sugar Mills D I Khan, Chashma Sugar Mills D I Khan and Chashma (Expansion) Sugar Mills D I Khan to pay minimum support price of Rs 180 per 40 kilogram at factory gate and Rs 180/40 Kg minus transportation charges at the farmer's fields as fixed by government for crushing season 2017-18.

Punjab Allows Use Of Drone Technology In Agriculture Sector

The Punjab government has allowed use of drone technology in agriculture sector with certain conditions for application of pesticides on crops, monitoring of weeds, pests and nutritional deficiencies. the permission to use drone technology in agriculture is a revolutionary step leading to enhancement in agricultural production. A UAV (Unmanned Air Vehicle)/drone consist of a small unmanned aircraft and after the success of this technology it is ready to astound the agricultural sector . Drone/UAV technology can be usefully deployed in application of pesticides on crops, monitoring of weeds, pests and nutritional deficiencies, geographical survey of crops, area and water resources, research and development.

Source: www.brecorder.com

ZTBL NEWS

MoU with NRSP

Zarai Taraqiyati Bank Ltd (ZTBL) has signed a Memorandum of Understanding with the National Rural Support Programme



(NRSP) at its HO, Islamabad. The spirit of the MOU is to leverage synergies between two institutions, benefiting the farmer communities, especially subsistent level small farmers. Syed Talat Mahmood, President/CEO, ZTBL highlighted the direct role of ZTBL as a financing institution for the farmers it has played since past six decades and expressed his resolve to empower small farmers of the country.



Emphasizing the importance of agriculture value chain financing, the Chief Operating Officer of ZTBL Mian Aamir Hussain elaborated bank's plan to offer

broader spectrum of financing services which will not only ensure healthy cash flows for small farmers but also provide them with platforms where farming becomes a risk free business especially hedging price/market risks, inculcation for agriculture best practices, strengthening inputs supply, enhanced and well suited mechanization and developing farmers access to markets. Dr. Rashid Bajwa, Chief Executive Officer of NRSP,



while introducing the operations and business model of NRSP, elaborated that the operational structure of NRSP consisting of COs (Community Organizations) integrated to VOs (Village Organizations) and LSOs (Local Service Organizations) forms the back bone of their successful operational and business structure.

He further elaborated that NRSP at present captures twenty five percent share of microfinance market. Construction of warehousing facility along with silos for rice paddy in Hafizabad is categorized as the project which has developed an entire eco-system by providing end-to-end solution to small farmers. He further elaborated that this project will have multifold impact in increasing farmer's productivity and their profitability being a one window solution for the entire cropping activity of a farmer i.e. from input supply to marketing of the produce. Joint efforts of both these institutions are anticipated to have a lasting impact on the country's agriculture landscape, through combining skills and expertise for empowering the small farmers.

Delegation of Sumitomo Corporation Asia & Oceania Pte. Ltd visited ZTBL



A delegation of Sumitomo Corporation Asia & Oceania Pte. Ltd. comprising of Mr. Junya Ishi- Senior Analyst and Mr. Yukio Sakai General Manager, Pakistan visited ZTBL Head Office, Islamabad to explore areas of bilateral cooperation. Chief Operating Officer of the Bank – Mian Aamir Hussain briefed the delegation about role of ZTBL in elevating farming community of Pakistan. He

assured the delegation that ZTBL would be looking forward for establishing mutual cooperation with the Sumitomo Corporation in all areas which could benefit farmers of the country.



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Planning & Research Department, ZTBL Head Office, Islamabad. Ph: 051-9252024

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