



# Agri-Business Supplement

## Zarai Taraqati Bank Limited.

### CITRUS CANKER

#### Introduction

Citrus canker is a contagious disease of citrus and some other plant species of the Rutaceae family caused by the bacteria *Xanthomonas axonopodis*



pathovar *citri*. Infected trees display unsightly lesions which can form on leaves, fruit and stems. Trees infected with the disease may suffer from low vigor and a reduction in fruit quality and quantity. Citrus canker is a serious disease impacting on citrus production and is the subject of a number of control and eradication programs around the world.

Different strains of citrus canker have been reported throughout the world. The Asiatic strain (A-strain) is the most widespread and severe form. Strains can be differentiated by molecular tests and host range.

#### Disease Cycle

Citrus canker is not vectored by any organism but is spread by wind-driven rain. However, wounds caused by feeding of the Asian citrus leaf miner (*Phyllocnistis citrella* Stainton) may serve as an entry point for the bacterium if citrus canker inoculum is present.

The bacterium enters the plant tissue and causes the development of blister-like formations (lesions).

#### Symptoms

Lesions are usually raised, colored tan to brown, surrounded by an oily, water-soaked margin and a yellow ring or halo. Large or older lesions may have a crater-like appearance.



Leaf - typical citrus canker lesions on leaves will range from 2-10 mm in size and will have raised concentric circles on the underside of the leaf.

Frequently, lesions will be surrounded by a water-soaked margin and a yellow halo. As a canker lesion ages, it may lose its palpable roughness, but the concentric circles will still be visible with a hand lens on the underside of the leaves. The yellow halo eventually changes to dark brown or black and the water-soaked margin surrounding the lesion may diminish. The middle of the lesion on underside of leaf will be corky in texture with a volcano or pimple-like point. With the exception of very young lesions, they always penetrate through both sides of the leaf. In the presence of damage, the lesion may follow the contours of the damage and therefore may not be circular. In older lesions, a saprophytic white fungus may grow over the center of the lesion. The center of a lesion may fall out producing a shot hole appearance.

Fruit - typical citrus canker lesions on fruit will range from 1-10 mm in size. Larger lesions usually penetrate a few millimeters into the rind. Fruit lesions may vary in size and may coalesce. Fruit lesions consist of concentric circles. On some varieties these circles are raised with a rough texture and on other varieties the concentric circles are relatively flat like the surface of a record. The middle of the lesion will be corky in texture with a volcano or pimple like point. The center of a lesion may crack and has a crusty material inside that resembles brown sugar. Frequently on green fruit, a yellow halo will be visible; however it will not be visible on ripened fruit. Lesions may have a water-soaked margin and the water-soaked margin is especially evident on smaller lesions. In the presence of damage, the lesion may follow the contours of the damage and therefore not being circular. In older lesions a saprophytic white fungus may grow over the center of the lesion.

#### Distribution

Citrus canker is thought to have originated in Southeast Asia. Different strains of citrus canker are widespread throughout many tropical and subtropical areas of the world. In the United States and its territories citrus canker is only found in Florida as of 2009.

Citrus canker occurs in areas of the world where high rainfall and high temperatures co-exist. In those areas, citrus canker occurs on seedlings and young trees in

which there are continuous flushes of shoots from spring through autumn. However, the disease becomes sporadic as trees reach full fruiting development when flushes of growth occur sporadically. Leaves and stems are susceptible to infection for only a short time period after flushes begin growth. If weather conditions are not favorable for infection during the susceptibility period disease will not develop. Fruit are susceptible for longer periods after set than are leaves and stems. Disease severity also depends on the susceptibility of the host plant species and cultivar.

Canker lesions are formed on the leaves, twigs and fruits of host plants. The occurrence of canker lesions on root systems in soil is not confirmed. *X. citri* can also be isolated from discolored areas in bark on branches, limbs and trunks; however, it is not certain whether these are novel lesions resulting from direct infection or scars remaining from infection at an earlier stage of growth.

### Citrus Canker in Pakistan

Citrus stands as the second most important fruit worldwide after grapes in terms of area and production. Although citrus is very popular, its present status is threatened by a number of problems including low production due to pests. Of all the agricultural pests and diseases that threaten citrus crops, citrus canker is one of the most devastating diseases.

At present the world's citrus yield is 105 million tones per annum. Pakistan occupies 13th position among the eminent citrus producing countries, with an area of about 200,000 hectares (2.25 per cent of the world), and a yield of two million tones of the fruit per year. In 2006, 22.57 million tones of citrus was produced in the country earning Rs 5,394 million foreign exchange.

Citrus stands on top among the 30 fruits grown throughout the country with Punjab dominating in production. About 59 per cent of the total area and 64 per cent of the production among citrus is captured by kinnow alone.

Citrus fruit has been reported to prevent liver, lungs and skin cancer, heart diseases, birth defects and contributes to a balance and healthy lifestyle. It is the best source of vitamin C, sugar, amino acids and other nutrients.

Orange farms in the Sargodha region of Punjab account for over 90% of the national production of

oranges in Pakistan. However, these farms are losing out on income as a result of diseases such as citrus canker, which causes characteristic lesions surrounded by yellow discoloration on leaves, stems and fruit. Early abscission of fruits and defoliation of the trees can also be caused by this disease. Any fruit that do develop but that are infected with citrus canker are safe to eat but are too unsightly to be sold, causing farmers to lose out on income.

### Conditions that Favor Development

1. Strong winds and wind borne rain
2. Citrus psyllids, people, birds and animals, farm equipments that carry the bacteria
3. Movements of infected plants or plant parts

### Dissemination

*X. citri* is disseminated by rainwater running over the surfaces of lesions and splashing onto uninfected shoots. The concentration of bacteria is largely dependent on the age of the lesions with a maximum of a million cells/drop. Rainstorms such as typhoons and hurricanes encourage outbreaks of citrus canker where active sources of inoculums are available because strong winds can injure the leaves and twigs and force bacteria through the stomata. Although rainstorms can transport bacteria up to 100 m or more in small raindrops and/or aerosols, effective infection rarely occurs more than a few rows downwind. Overhead irrigation worsens the spatial and temporal development of the disease due to splash dispersal of the pathogen, and causes great concern in nurseries producing canker-free young trees.

### Leaves

Citrus canker infections move into your plant's leaves through wounds and stomata's, or natural pores in the leaf surface. Symptoms



on leaves first appear as small, raised lesions that resemble blisters. They eventually turn tan and then brown and the edges appear water-soaked and develop a yellow halo. As infection progresses, the lesions take on a raised, corky appearance, and the center of old lesions may eventually drop out. Moist weather conditions and temperatures that range between 68 and 86 degrees <sup>0</sup>F favor the development of infection, and lesions will develop within seven days of the bacteria entering the tissue. However, if

conditions are not favorable, it could take up to 60 days before lesions appear.

### Fruit

Citrus canker infections will also cause symptoms on citrus fruit. These begin as dark brown raised lesions that are similar to what you find on stems and twigs, but on the fruit these lesions often have a yellow halo like those that appear on the leaves. Citrus canker infections on fruit can lead to early fruit drop, but the fruit that remains on the tree is still edible, if unappealing in appearance, because the lesions typically do not penetrate the skin.



### Stems and Twigs

Symptoms of citrus canker on twigs and stems typically appear as raised corky lesions that are dark brown in color. Initially, these may appear water-soaked or oily at the edges, but they do not have the yellow halo that shows on the leaves and fruit. As stem and twig lesions age, they become dry and scabby. Stem lesions may also store inoculums that re-infects new tissue as it is produced by the citrus tree. Citrus stems and twigs are not as vulnerable to infection as the leaves, so the appearance of symptoms on these areas often indicates your tree has been infected for a long time.



### Control and Prevention

In case of chemical control, citrus canker is managed with preventive sprays of copper-based bactericides i.e. copper oxychloride. Such bactericides are used to reduce inoculums build up on new leaf flushes and to protect expanding fruit surfaces from infection. Effective suppression of the disease by copper-based sprays depends on several factors, such as the susceptibility of the citrus cultivar, environmental conditions, and adoption of other control measures.

The timing and number of copper-based sprays for effective control of the disease also depends on the same factors. In general, three to five sprays are necessary for effective control of citrus canker on citrus cultivars with intermediate levels of resistance,

whereas, in years with weather that is highly conducive for epidemic development of citrus canker, up to six sprays may be recommended.

Moreover, spraying neem cake solution (50g/liter water) during rainy season at 15 days interval reduces the disease incidence and increases the shoot and leaf growth. The incidence of leaf miner, which is involved in spreading of the disease, should essentially be checked by means of insecticides. The infected twigs should be pruned and emerging flushes should be sprayed with one per cent Bordeaux mixture or streptomycin should be applied at 20-25 days interval. Antibiotics like agrimycin and streptomycin may also be used.

In orchard production areas like Sargodha, Faisalabad, Islamabad-Rawalpindi, Lahore, Sahiwal, Multan and Bahawalpur, there is need to prevent or reduce the risk of citrus canker epidemics through the establishment of windbreaks, construction of fences to restrict the bacterial access to the orchards, and the use of antibiotics and preventive copper based sprays

In a gathering, key players in Pakistan's orange production came together for the first Orange Exporters Awards, organised by the Pakistan Fruit and Vegetable Association and the Department of Plant Protection. During this meeting, Sikandar Hayat Khan Bosan, Pakistan's Federal Minister for National Food Security and Research, announced that orange farms in the Sargodha region of Punjab are under threat from diseases, especially citrus canker. Mr Sikandar Bosan pledged financial reward for any farm owners that encourage new research to overcome the region's citrus canker problem.

With the development of increasingly successful control measures for citrus diseases, Pakistan could increase its orange exports from \$200 million to \$1 billion. Plant wise has helped to train extension workers in Pakistan to run plant clinics, which could play a role in this by helping to identify crop problems and provide practical solutions for farmers. Any crop can be brought to the clinic for diagnosis, and the clinics are run frequently in locations convenient for farmers to access, such as in town centers and at markets.

*Sources: www.vivekonexport.com*

## HAY PACKING

### Introduction

Hay is the general name for a number of dried grasses, flowers and other plants used as off-season

food for horses and other animals. Producers usually grow rye grass, oats, or alfalfa in large open fields and wait until the



leaves have reached a specific maturity, generally just before their flowering stage. The grasses or plants are then cut with machinery and left to dry on the ground for several days. The goal of

haymaking is to capture the nutrients in grass in a storable form to make them available as a forage feed in the winter months.

As plants mature their lignin content increases and traps the nutrients within indigestible cell walls. Although cutting hay early will result in lower yields, the increase in nutritive value will compensate for reduced yields. The second, third and fourth cuttings that grow back are leafy and high in quality and often harvested when the weather is hotter, making the hay easier to cure.

Once the grass or alfalfa has dried sufficiently, it is gathered up mechanically by a machine called a baler. The rear section of the baler creates rectangular or round bales of hay held together by wire. These bales are left in the field until other laborers can collect them. The traditional rectangular bales are generally stored in special barns called haymows or hay lofts. Modern round bales are usually stacked together in a dry outdoor location and covered with a special plastic tarp for weather protection.

### Background

During the late 1800s and early 1900s, farming was changing dramatically with the introduction of many new machines. Until that time, hay had been stored loose, or in "haymow," where it took up considerable space. By compressing the hay, or baling it, more hay could be stored in the same amount of space. Improvements in hydraulics allowed the introduction of the large round baler in the late 1960s. Many companies have continually refined the baler into a modern farm implement.

In winter months or the areas where fresh grass is not readily available, ranchers and farmers typically rely on hay to feed their animals. It is not always as nutritional as regular feed, but it does have enough vitamins and roughage to keep animals healthy for a few months. It might help to think of it as a form of granola or breakfast cereal

One important part is having the equipment maintained and ready to go when the grass is ready. The winter months are a good time to check the equipment over and replace any worn or broken parts. A delay in harvest caused by an equipment breakdown can never be made up. It is good to have an early start date for haying just to get things ready. Shoot for a goal of May 15, in southern areas and May 25, farther north, even though conditions may not be right at that time every year.

### What is Hay Baler?

The term "hay baler" refers to a particular piece of agricultural equipment used to harvest hay. Hay includes grasses and other plants called legumes. These crops, used as animal feed, are cut with a mowing machine. The mowing machine cuts and crimps the forage. The baler gathers the cut hay from the windrow and compresses it into square- or round-shaped bales for easy transportation and storage.

Most hay is stored as bales, with small square bales weighing 40-70 pounds (18-32 kg) and large round bales weighing 750-2,000 pounds (341-908 kg). Small bales must be protected from rain in a dry place such as a barn or hay shed. The large round bales can be left outside because the rain will run off the sides, instead of soaking through and rotting the hay. Small bales can be fed by hand into feed bunks or hay feeders. The larger round bales are handled with a tractor equipped with a "bale mover," a spear-like attachment that pierces the bale and allows the hydraulic loader to lift and transport it to the feeder.

Hay balers are pulled behind and powered by the tractor in the field. The baler has flotation tires, which reduce the damage to the hay stubble by distributing its weight over a larger area. Also connected to the tractor is the Power Takeoff Shaft (PTO), which transmits rotary power from the tractor to the baling mechanism.

The hay enters the baler through the pickup, and the teeth gently rake the hay from the ground to prevent the loss of leaves and ingestion of rocks or debris into the baler. Directly behind the pickup is the compressor bar, which holds the hay in place so the auger can feed it into the bale chamber. The bale chamber contains a plunger that drives in and out, each time packing and compressing hay into the desired shape. The plunger also cuts the ends of the hay to make the bale an uniform size. The chamber feeds into a spring tension section that keeps the bale

tightly compressed until enough hay has been processed to complete the bale.

When the correct length of bale is achieved, a mechanism wraps the bale with two lengths of twine or wire and ties it securely. The twine is carried on spools and fed through two curved needles that are timed to miss the cycle of the plunger. After the twine is in place, a gear mechanism called a knotter ties the knot and cuts the twine free of the supply spool. All of this motion must be carefully timed to prevent interference with the continued operation of the rest of the baler. After it is tied, the bale is pushed down the bale chute and falls to the ground.

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**ZTBL Financing for Hay Packing**

In order to facilitate the farming community and to overcome the feed/fodder problems of dairy/livestock animals especially during off seasons, ZTBL has decided to introduce the subject scheme.

**Terms & Conditions**

<b>Operational Jurisdiction:</b>	All ZTBL Branches across the country.
<b>Eligibility</b>	<ul style="list-style-type: none"> <li>i) All new as well as old creditworthy farmers, are eligible to get financing under the scheme, however preference will be given to those farmers who are already engaged in this business/activity.</li> <li>ii) The borrower/farmers must have valid copy of CNIC.</li> <li>iii) Clear CWR</li> <li>iv) ORR rating up to 4.</li> </ul>
<b>Documents Required</b>	CNIC Copy, Loan Case File, Agri. Pass Book/Fard Jamabandi & 2 recent photographs
<b>Maximum Loan Limit</b>	Under the scheme, maximum financing limit is upto Rs. 1.500 million per

<b>Collateral</b>	<p>borrower/party.</p> <p>The loan would be secured against all types of securities acceptable to the Bank as per its standing instructions.</p>
<b>Equity Contribution</b>	10% of the loan amount be kept in the Deposit Account of the borrower which will be accounted for in the last loan installment
<b>Rate of Markup</b>	Prevailing rate of mark up on development loans is applicable
<b>Cost of Credit</b>	As per standing instructions of the Bank.
<b>Repayment Schedule</b>	<p>The loan under the scheme is recoverable within 05 years in 08 to 09 half yearly installments on 7th January or 7th July with grace period of six months with the following provisions.</p> <ul style="list-style-type: none"> <li>i) 100% cash on due date must be recovered.</li> <li>ii) No roll-over is allowed under the scheme.</li> <li>iii) Targeted NPLs must not to exceed &gt; 10%.</li> <li>iv) Hay Packing Machine is not be rented to third party.</li> </ul>
<b>Utilization/Monitoring</b>	MCO & Manager concerned will be fully responsible for monitoring, assisting and guiding the borrower for proper utilization of loan. However, MCO will check the utilization of loans within one month of disbursement in 100% cases. Moreover, Manager, Zonal Manager (Recovery) and Bank's Internal Auditor will also check the utilization of loans within prescribed share percentage.

## Advantages of Hay Packing

Packaging is a major operation for many businesses in the agricultural industry. From grains to fertilizers, soils and hay, a bulk agricultural



packaging system needs to be able to handle various kinds of product and package them efficiently before transport. Filling bulk bags or containers manually uses a lot of time, energy and manpower, and it increases your risk of product wastage. Automating the bulk agricultural packaging process will often result in a wealth of benefits for farmers.

### Enhanced Safety

The more manual or labour-intensive your packaging process is, the higher the chances of workplace accidents. If your workers have to manually move machinery, close filled bags, or use heavy equipment to lift packages, they are more likely to be injured. Automating your bulk agricultural packaging line means your workers will be able to supervise or control the process from a distance, and they won't need to be directly involved with any hands-on steps of the packaging process. An automated bulk packaging line can also be designed with dust collection systems and exhaust ventilation, which will reduce your workers' risk of exposure to hazardous materials.

### Extra Control

When you use an automated bulk agricultural packaging system, you'll have much greater control than you would with a manual system. A fully automated packaging line can instantly alert the operator to any problems, such as an improperly filled container or a jam on the line. Automated systems can be set to reject containers that have not been filled correctly, and they can even move product from a defective container to a new one. Having more precise control over your packaging system, and being alerted to any irregularities, means you can quickly identify and resolve any technical issues – minimising your downtime and increasing your productivity.

### Increased Efficiency

Automated lines are designed to achieve the highest filling speed with the least amount of labor. With the ability to load multiple bags or containers

simultaneously, it's possible to achieve an output of 15-20 bags per hour in an automated system. If you are packaging heavy products, automating your system will increase your efficiency even further as the weigh-bagging line can support weights over 1,000kg. Some lines can even be designed to use the same piece of equipment for two different functions at the same time.

### Reduced Waste

Automated packaging systems reduce the chance of product damage and loss because they are more accurate at filling bags and containers, and they reduce the likelihood of cross-contamination. By making sure bags are filled precisely, automated systems can minimise or eliminate the amount of bags transported with too much or too little product. In addition to this, an automated system can pause the whole line if there is a technical problem during the filling process, which helps reduce the chance of lost or damaged products due to equipment breakdown.

### Saves you Money

While there is an upfront cost in installing an automated bulk packaging system, the investment will pay off in the long run by saving you time and money. Automating the packaging line will reduce your labour costs, improve safety for workers, and dramatically speed up your packaging time. This all translates to less time spent filling each container, and more product packaged per day.

Source: <http://www.madehow.com/Volume-2/Hay-Baler.html>

## PARTHENOCARPY

### (A Tool of Seedless Fruit Production)

#### Introduction

Parthenocarpy, literally meaning virgin fruit, is the natural, artificially induced, or genetically modified production of fruit without fertilization. In the absence of



pollination, parthenocarpic plants will set seedless fruit. Thus, parthenocarpy can be regarded as a primary requirement for the production of seedless fruit. However it differs from Stenospermocarpy seed develops but aborted during its early growth. Parthenocarpy (or stenospermocarpy) can occur occasionally due to mutation in nature. If it affects every flower the plant

can no longer sexually reproduce but might be able to propagate by apomixes or by vegetative means.

Seedlessness is a very desirable trait in edible fruit with hard seeds such as pineapple, banana, orange and grapefruit etc. Parthenocarpy is also desirable in fruit crops that may be difficult to pollinate or fertilize, such as tomato and summer squash. Seedless fruits are produced through the processes of either stenospermocarpy or parthenocarpy, and they are a more commercially valuable product than fruits with seeds. Stenospermocarpy is the production of fruit by fertilization of the embryo followed by abortion of the embryo prior to fruit formation. The fruit will form with a slightly smaller size; this is due to the absence of hormones that are released from the seed after developing into a fruit.

### Types of Parthenocarpy

Various types of parthenocarpy have been recognized. In some plants, pollination or other stimulation is required for parthenocarpy is termed as stimulative parthenocarpy. Plants that do not require pollination or other stimulation to produce parthenocarpic fruit have vegetative parthenocarpy. Seedless cucumbers are an example of vegetative parthenocarpy.



Squash and eggplants can exhibit facultative parthenocarpy, that is, parthenocarpy

that occurs under environmental conditions where pollination and seed would not occur normally. Cool weather (early spring or late fall) or greenhouse growth conditions are the most common environments where this type of parthenocarpy occurs. Commercial-quality fruit can be produced in cool environments or in greenhouse winter production locations where pollination is limiting. Under summer growth conditions, normal pollination, fruit production, and seed set occurs. Hormone treatments cannot be reliably used under these conditions to induce parthenocarpy or increase fruit size. Seedless summer squash, zucchini, has been obtained by crossing two varieties, DG4 and Striata. This parthenocarpy variety is stable and has been used to produce additional commercial squash hybrids.

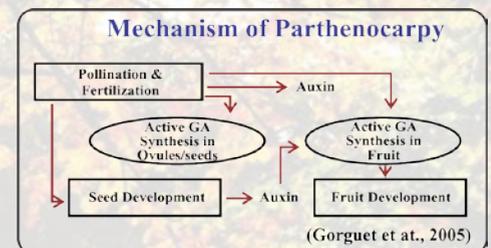
### Genetic Basis of Parthenocarpy

Parthenocarpy is heritable, but does not fit in a simple genetic model. Molecular and physiological basis of parthenocarpy have showed involvement of genes controlling auxins and gibberellins biosynthesis, self-

incompatibility, histones and alcohol dehydrogenase activity

The absence of developed seeds in fruit improves its eating quality. Moreover, it may allow more uniform fruit production in different environments. Seedless fruit occurs when seed (embryo and endosperm) growth is inhibited or the seed dies early, while the remainder of the fruit continues to grow. Bananas and grapes are the most commonly available seedless fruits. Bananas are seedless because the parent banana tree is triploid (3X chromosome sets) even though pollination is normal. Generally, species with a chromosome set number divisible by two (e.g., 2X or 4X chromosome sets) are capable of seed production while uneven sets of chromosomes (e.g., 3X or 5X) are either **sterile** or do not produce seeds. After fertilization, banana fruit development can proceed normally but seed development is arrested because of the genetic imbalance. Plant breeders have also produced seedless watermelons (*Citrullus lanatus*).

The first practical system for producing seedless watermelons was the 4X-2X hybridization method. Hybrid seed is produced from crossing a tetraploid (4X) female and diploid (2X) male. Seedless fruit is produced on the resulting triploid (3X) hybrids. Pollination occurs, but just as in bananas, the fruit continues to grow while seed growth is reduced or absent because of uneven sets of chromosomes.

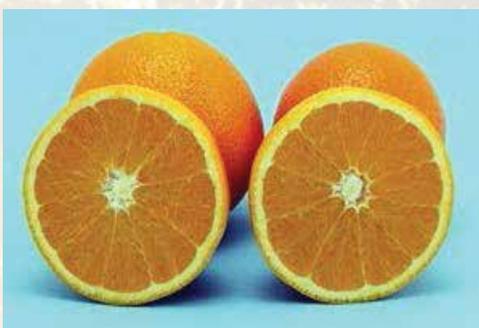


Parthenocarpy, fruit development without pollen fertilization and seed set, can result in seedless fruits such as grapes, squash (*Cucurbita pepo*), and eggplants (*Solanum melongena*). The majority of table grapes and raisins are seedless. Thompson seedless grapes have a normal chromosome constitution and pollination but have specific genes causing seedlessness. In addition, seedless grapes are treated with the hormone gibberellin, which is applied early in fruit development. The application of this hormone increases the size and consistency of the fruit.

### Economic and Commercial Value

Parthenocarpy is an economically valuable trait in a number of horticultural crops. Consumers often prefer seedless fruit for aesthetic reasons, because many

such fruit have a more attractive appearance and offer added convenience, in terms of preparation



and consumption. Manufacturers prefer them because they facilitate processing. For example, the processing of parthenocarpic tomato (*Solanum lycopersicum L.*) is easier because no seeds have to be removed.

In dioecious species, such as persimmon, parthenocarpy increases fruit production because staminate trees do not need to be planted to provide pollen. Parthenocarpy is undesirable in nut crops, such as pistachio, where the seed is the edible part. Horticulturists have selected and propagated parthenocarpic cultivars of many plants, including banana, fig, cactus pear (*Opuntia*), breadfruit and eggplant. Some plants, such as pineapple, produce seedless fruits when a single cultivar is grown because they are self-infertile. Some cucumbers produce seedless fruit if pollinators are excluded.

### Factors Influencing Seedlessness

Factors inducing Seedlessness include certain environmental conditions, such as low or high temperatures, chemical treatments, chromosomal aberrations, and genetic factors, such as genes controlling meiosis. Alternatively, self-incompatibility can be combined with the trait of parthenocarpy. Among these factors, the most important is temperature stress, which induces parthenocarpic fruit growth in tomato plants due to flower abortion. In grapes, two kinds of seedlessness exist. The first is caused by parthenocarpy, but the berries of these grape cultivars (e.g., Corinth) are very small. The second kind of seedlessness in grape is caused by stenospermocarpy, which fruit with seeds that are only partially formed due to embryo abortion. Traces of the seeds are present, but they are very soft. To obtain well developed berries, it is necessary to apply GAs.

### Technique of Seedless Watermelon Production

Common seedless watermelon planting configurations are in proportion of 1 row of the seeded variety (pollinator) for every 2 to 3 rows of the seedless

variety. In within-row plantings, the ratio of seedless to pollinator plants ranges from 2:1 to 5:1. As the seedless to pollinator ratio increases, the number of bee hives should be increased to ensure pollination. Germination of triploid watermelon seed is inhibited at temperatures below 80°F. Because of the strict temperature requirements and the emergence problems associated with the thickened seed coats, getting a satisfactory stand of triploid melons by direct seeding in the field is difficult. Because triploid seed is expensive (20 to 30 percents each), over seeding and thinning is not an option.

### Exploitation of Parthenocarpy in Vegetable Crops

Parthenocarpy is an economically valuable trait in number of horticultural crops. Some benefits of parthenocarpy are given below:

- Parthenocarpic cucumber does not require pollination, even though, it is a cross-pollinated crop. Combination of parthenocarpy and gynocism gave added advantage of yield and palatability of cucumber.
- In eggplant, parthenocarpy improves fruit quality and reduces the labour needed for its out-of-season cultivation. Since the commercial ripeness of eggplant fruits precedes its physiological maturity, the presence of seeds considerably depreciates the value of fruits for both fresh and processed market. The absence of seeds increased the shelf life of the fruits for better conservation. This effect was also observed in watermelon, where seeds are the origin of fruit deterioration.
- In tomato seedless fruits are tastier than the seeded variety. The parthenocarpic tomato does not require removal of seed during processing. Seedless tomatoes have 1% more dry matter, more sugars, less acidity, less cellulose and more soluble solids than seeded cultivars.
- An important advantage of parthenocarpic plants is that they set and develop fruits under environmental conditions that are unfavorable for successful pollination and fertilization, particularly green house cultivation.

Source:

- <http://www.encyclopedia.com/science/news-wires-white-papers-and-books/fruits-seedless>
- Aliza V., L. Ilan and C. Nir. 2008. Induction of Seedlessness in Citrus: From Classical Techniques to Emerging Biotechnological Approaches. Institute of Plant Sciences, A.R.O. The Volcani Center, Israel. *J. Amer. Soc. Hort. Sci.* 133(1):117-126.

## زرعی سفارشات برائے کسان

دھان

☆ دھان کی کاشت کے لیے ترقی دادہ اور منظور شدہ موٹی اقسام میں کے ایس 282، اری 6، نیاب اری 9، کے ایس کے 133، کے ایس کے 134 اور نیاب 2013 شامل ہیں۔ جبکہ باسستی اقسام میں سپر باسستی، باسستی - 515، باسستی 385، باسستی 2000، باسستی 370 اور باسستی پاک شامل ہیں۔ اور باسٹریڈ اقسام میں وائے 26، پرائیڈ - 1، شہنشاہ - 2، پی ایچ پی - 71، غیر باسستی اقسام میں بی ایس - 2 اور پی کے 386 کے بیج کا انتظام کر لیں۔

☆ غیر موزوں اقسام مثلاً سپرفائن، کشمیری مالنا، ہیر سپر اور اس طرح کی دیگر اقسام ہرگز کاشت نہ کریں۔

☆ تھور سے متاثرہ علاقوں میں کلر کے خلاف قوت مدافعت رکھنے والی اقسام کے ایس 282، باسستی 385 اور شاہین باسستی کاشت کریں۔

☆ پیٹری کی کاشت 30 جون تک اپنے علاقائی شیڈول کے مطابق مرحلہ وار اس طرح کاشت کریں کہ پیٹری کی منتقلی کے وقت اس کی عمر 30 سے 40 دن تک ہو۔

☆ بجائی کے لیے ہمیشہ بیارپوں سے پاک صحت مند بیج کا انتخاب کریں۔ 180% گاؤ کی صلاحیت کے ساتھ طریقہ کار اور اقسام کے لحاظ سے شرح بیج کچھ یوں رکھیں:

نمبر شمار	دھان کی اقسام	طریقہ کار کاشت	شرح بیج کلوگرام فی ایکڑ
01	اری یا موٹی اقسام	تزیاکدو کا طریقہ	6-7
		ختک طریقہ	8-10
		لاب کا طریقہ	12-15
02	باسستی اقسام	تزیاکدو کا طریقہ	4.5-5
		ختک طریقہ	6-7
		لاب کا طریقہ	10-12

☆ اگر پیٹری کمزور نظر آئے تو 250 گرام بوری یا 400 گرام کیشیم امونیم نائٹریٹ فی مرلہ کے حساب سے پیٹری کی منتقلی سے دس دن پہلے استعمال کریں۔

☆ دھان کی پیٹری پر زہریلائی دوسری مرتبہ 15 تا 20 دن کی پیٹری پر دانے دارز ہروں کا استعمال کریں۔

کماد

☆ کماد کی بھر پور فصل کے لیے فردوری کاشتہ فصل کو فی ایکڑ 164 ٹیچ اور ستمبر کاشتہ فصل کے لیے 180 ٹیچ پانی درکار ہوتا ہے۔ پانی کی کمی فی ایکڑ پیداوار پر برا اثر ڈالتی ہے۔ لہذا 10 سے 12 دن کے وقفے سے آبپاشی جاری رکھیں۔

☆ بہار کاشت کی فصل میں سونا پور یا کی تیسری قسط جون کے آخر میں پوناش کے ساتھ کس کر کے ڈالیں۔

☆ جب گنا بننے کا عمل شروع ہو جائے تو بہار کاشت میں جون کے مہینے میں مٹی چڑھانے کا عمل مکمل کر دیں۔

☆ جڑ اور تنے کے گڑوں کے تدارک کے لیے محکمہ زراعت کے عملہ سے مشورہ کے بعد مناسب داند دارز ہریں کونپلوں میں ڈالیں۔

☆ فصل کی زرخیزی بڑھانے کے لیے زرخیز زمین کے لیے 2.5 بوری یوریا + 1 بوری ڈی اے پی اور 1 بوری پوناشیم سلفیٹ، درمیانی زمین کے لیے 3.25 بوری یوریا + 2 بوری ڈی اے پی اور 2 بوری پوناشیم سلفیٹ اور کمزور زمینوں کے لیے 4 بوری یوریا + 3 بوری ڈی اے پی اور 2 بوری پوناشیم سلفیٹ فی ایکڑ ڈالیں۔

کپاس

☆ لائٹوں میں کاشتہ فصل کو پہلا پانی 30 تا 35 دن بعد اور آخری پانی 30 ستمبر تک لگائیں۔ جبکہ پٹیوں پر کاشتہ فصل کو پہلا پانی 3 تا 4 دن بعد جبکہ دوسرا، تیسرا اور چوتھا پانی 6 تا 9 دن کے وقفے سے لگائیں اور آخری پانی 10 تا 15 اکتوبر تک لگائیں۔ ہر آبپاشی کے درمیان میں اگر پانی کی ضرورت محسوس ہو تو مناسب وقفوں کے حساب سے پانی لگائیں۔

☆ روایتی اقسام میں نائٹروجنی کھاد 2 حصوں میں استعمال کریں۔ یعنی 1/3 حصہ پہلے پانی کے ساتھ اور 2/3 حصہ دوسرے پانی کے ساتھ استعمال کریں۔ اور اس کے ساتھ ساتھ بوردوں اور زنگ کا استعمال بذریعہ سپرے بھی کریں۔

☆ جڑی بوٹیوں کی تلفی پر خصوصی توجہ دیں۔ اور کیڑوں کی معاشی حد عبور ہونے پر فوراً محکمہ زراعت کے مشورے سے سپرے کریں۔

باغات

☆ آم کے باغات کو 15 سے 30 دن کے وقفے سے آبپاشی کریں۔

☆ جون کے مہینے میں جلد پکنے والی اقسام کی جلد از جلد برداشت مکمل کر لیں۔

☆ پھل کی مکھی کو کنٹرول کرنے کے لیے جنسی پھندے لگائیں، عموماً چار پھندے فی ایکڑ کافی ہوتے ہیں۔ اگر پھل کی مکھی کا حملہ زیادہ ہو اور پھندوں سے کنٹرول کرنا مشکل ہو تو محکمہ زراعت کے توسیع عمل کے مشورے سے سپرے کریں۔

☆ ترشادہ باغات کو 15 دن کے وقفے سے آبپاشی کریں اور مردہ اور گلے سڑے تنوں اور پتیوں کو صحت مند پودوں سے الگ کریں تاکہ کیڑوں کو سڑوں اور بیماریوں کے حملے سے بچا جاسکے۔

Source: 1) Ziratnama Government Of Punjab (Farmers' Advisory)

2) Fauji Fertilizer Company Limited (Farmers' Advisory Services)

3) Pakistan Space & Uper Atmosphere Research Commission, PAK SCMS Bulletins

## MANAGEMENT TIPS

### Having a Strategy for Impromptu Speaking



A key demand in business is the ability to speak off-the-cuff. Whether it's giving an unexpected 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 note card (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*

### Keep Employees in the Loop

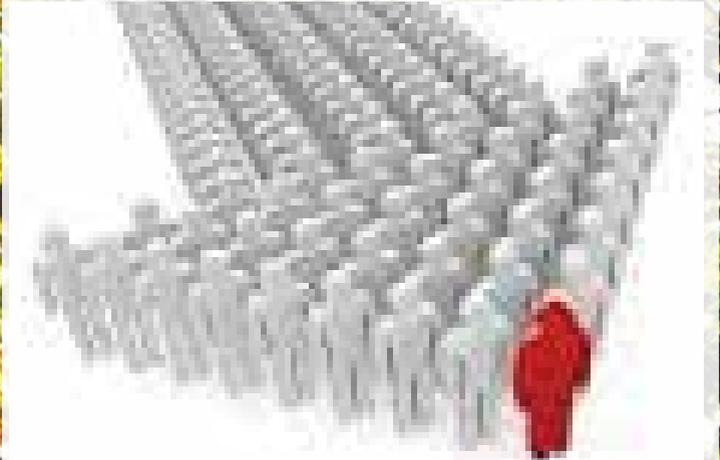


Be prepared to answer these four questions for your staff at any time. In this age of instant communication, employees more than ever want to see the big picture. They should know if your organization is profitable and what strategies are coming next. Be prepared to answer these four questions for your staff at any time, but especially when your organization diversifies in some way or changes policy or course:

- How are we performing?
- What is our strategy?
- What's my role?
- How will I benefit when we're successful?

Source: [www.managebetter.biz](http://www.managebetter.biz)

### Be a Leader your Team can Trust



Leaders can't lead if their followers don't trust them. To get the best results from your team, remember these tips for building and maintaining a relationship based on trust and respect:

**Keep your promises.** Employees want to know they can depend on you to do what you say. Don't make agreements you don't intend to keep. When you make a promise, do everything in your power to keep it and be ready to honestly explain why if you can't.

**Provide Context.** Employees don't want to know just what to do, but why. Let them know why you're asking them to do certain tasks, as well as how their jobs contribute to the organization's success. They'll be more responsive if they understand why their work is important.

**Pay Attention.** Show that you're involved in what your employees say and do. Listen actively, limit distractions, answer questions, and focus on their needs as well as your own.

**Welcome Diversity.** Be open to new people and their ideas. If employees see that you're willing to accept different viewpoints, they'll be more eager to share their thoughts with you.

**Support the team.** Show employees that you have their backs. Make sure they have the resources they need time, equipment, and authority. Defend them when others are on the attack. They'll return your loyalty with their own.

Source: [www.managebetter.biz](http://www.managebetter.biz)

## NATIONAL NEWS

### Federal Budget for Agriculture Sector (2017-18)

The government announced new measures in the federal budget for 2017-18 to boost the agriculture sector. Finance Minister announced in his budget speech that all schemes and initiatives announced under the Prime Minister's 'Kissan Package' in 2015 would continue during 2017-18. As a result of these measures, a stagnant agriculture sector has grown by 3.46 percent during the outgoing fiscal year. The volume of agriculture credit is being enhanced to Rs 1,001 billion from the last year's target of Rs700 billion, showing an increase of 43pc.

Two million small loans of up to Rs 50,000 per farmer will be provided by the Zarai Taraqiati Bank Limited and National Bank of Pakistan, while the State Bank will monitor the implementation of the new schemes. From July 1, ZTBL and NBP will launch the new scheme for farmers with land holdings of up to 12.5 acres who will be provided agricultural loans at a reduced mark-up rate of 9.9pc per annum.

The government decided to remove GST on imported sunflower and canola hybrid seeds and also reduce sales tax on certain imported machinery and equipment for the poultry sector from 17 to 7pc.

Source: [www.dawn.com](http://www.dawn.com)

### Cotton Crop Sowing Witnesses 18 Percent Increase

Cotton cultivation during current sowing season has witnessed 18 percent increase across the crop growing areas of the country.



The government had fixed a target to cultivate the cotton crop over an area of 3.11 million hectares during the crop season 2017-18 to fulfill the domestic requirements of the cotton as well as for exporting purpose. The Punjab Province had achieved 63.5 percent crop sowing targets set for current sowing season, where as Sindh was able to achieve 46 percent area out of the total cultivable area. Federal Committee on Cotton (FCC) had fixed cotton production targets at 14 million during the current crop sowing season. The Punjab Province had been tasked to produced 10 million bales, where as in Sindh, crop out put targets were fixed at 4 million bales.

Source: Copyright APP (Associated Press of Pakistan), 2017

### Agri-Credit Disbursement Increases 22.7pc in 9 months

Agricultural Credit Disbursement in the country during the period from July-March, 2016-17 grew by 22.7 percent as compared to the same period of last year. The agri-credit disbursement was recorded at Rs. 385.5 billion during the corresponding period of last year. Out of the total target, Rs. 340 billion have been allocated to five major banks, Rs. 102.5 billion to ZTBL, Rs. 139.6 billion to 15 domestic private banks and Rs 12.5 billion to Punjab Provincial Cooperative Bank Limited (PPBCL).

Out of the total target Rs. 60.1 billion have been allocated to 10 microfinance banks, Rs. 11.0 billion to four Islamic banks and Rs. 34.3 billion to 16 newly inducted MFIs/RSPs for FY 2016-17. The outstanding portfolio of agriculture loans has also been increased by Rs. 45.3 billion from Rs. 333.8 billion to Rs. 379.1 billion.

The overall performance of banks remained encouraging and witnessed 22.7 percent growth in disbursement. Five major banks as a group have disbursed Rs 236.6 billion or 69.6 percent of its annual target, ZTBL disbursed Rs. 57.5 billion or 56.1 percent of its target of Rs. 102.5 billion while PPCBL disbursed Rs 6.9 billion, 55.1 percent against its target of Rs. 12.5 billion during the period under review.

### Fertilizer Goes Slow and Steady

The National Fertilizer Development Centre recently released fertilizer statistics for April which coincides with the beginning of the new Kharif season. Urea off-take for April stood at 0.25 million tons. The lackluster buying pattern appears understandable as the numbers reflect pre-budget buying.

Urea subsidy mechanism needs more clarity. Government has decided to discontinue portion of cash subsidy and rightly so, but the same has not been compensated in the form of GST reduction on raw material. GST on urea has been maintained at 5 percent, whereas that on feedstock natural gas has been slashed. But that will still leave a room of Rs50-70 per bag that needs some taker.

All this while, DAP off-take has shown good progress on the back of subsidy announced last year, which has been continued this year. Balanced fertilization has long been a dream in Pakistan, and it was the first time in recallable memory that the NP application ratio to the soil in Pakistan was below 3 percent, at 2.5 percent in 2016. These are healthy signs, and should the price support continue, could result in better yields, better methods, and resultantly better farm economy

Source: Copyright APP (Associated Press of Pakistan), 2017

**ZTBL NEWS****Farewell to SVP - Islamic Banking Department**

Mr. Sabah Mufti SVP, Islamic Banking Department has retired from the Bank service on 19.05.2017 after rendering 35 years of meritorious services especially



for Credit Policy Department and Islamic Banking Department of the Bank. In order to commend his services for the Bank in honorable manner, a farewell festivity was arranged at Islamabad club which was attended by EVP-IBD, SVP-HR, SVP- BDMD and other executives of the Bank.

**Exposure Visit of Participants Trainee of First National Training on Commercial Ostrich Farming, Arid Agriculture University Rawalpindi**

A trainee group of first national training on commercial ostrich farming from Arid Agriculture University Rawalpindi comprising of faculty Members, progressive growers and potential Ostrich farmers visited Zarai Taraqiati Bank Limited Farm to practically observe ostrich farming and its pertinent matters.

Visitors were formally graced by Head, Agriculture Technology Department Mr. Muhammad Ikram-ul-Haq who briefed the delegation about the role of ZTBL in agriculture development of the country and different interventions taken by the Bank to uplift the livelihood of farming community.

**Editorial Board**

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

**Technology for Agriculture**

The group was shown Ostrich Farm at ZTBL Farm and they took keen interest in technical knowhow of ostrich farming.

**Bestowing of Appreciation Certificates**

Mr. Farhat Karim Hashmi – EVP (PR&TD) and Mr. Khalid Mehmood Gill-Head HR bestowed appreciation certificates to appreciate and motivate the employees for being a support in arranging/organizing first Regional seminar of the Bank and first Belarus-Pakistan Agriculture Forum.

**ZTBL Won 12<sup>th</sup> Mohtarma Fatima Jinnah National women Cricket Championship 2017**

ZTBL has won 12<sup>th</sup> Mohtarma Fatima Jinnah National Women Cricket Championship 2017 played at Gaddafi stadium Lahore on 14 April, 2017 against Higher Education Commission (HEC) Team. ZTBL qualified for the final match by defeating State bank of Pakistan (SBP) team in the semifinals. Mr. Shehreyar Khan – Ex- PCB Chairman attended and witnessed final match.

HEC chose to bat first by winning the toss and made 100 runs in 40.1 overs. Aiman Anwar, Sana Mir and Nida Dar took 4,2,2 wickets respectively.



ZTBL chased required runs for the loss of 1 wicket in 15.4 overs. Bismah Maroof scored 56 runs while Nain Abidi scored 43 runs.

Sana Mir was declared best bowler and Bismah Maroof was declared best batter of the tournament. Aiman Anwar was declared player of the final.

