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GROWING ANNUAL FLOWERING PLANTS

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In the early 90s, the USAID thru their extension program called ASAP (Agribusiness Systems Assistance Program) helped the Philippines a great deal by bringing American resource speakers who gave lectures on livelihood including production of potted flowering plants. Those ere exciting times as the Filipinos were exposed to the latest trends in horticulture through educational tours of nurseries and breeding companies in the US. The economy then was booming so it was perfect to adopt those new trends in our country and that was the time when growing annuals started to gain popularity.

Annual plants are fast growing compared to the tropical perennials because they can bloom within 40 to 70 days from sowing. They sometimes cover themselves completely with their own flowers that their leaves are hidden. With petunias and impatiens, the range of colors is so wide, it is possible to cover large areas with masses of colors and hues. They can stay in flowering condition for 2-4 months. They make attractive hanging plants because they can grow well in small quantity of soil. When petunias, impatiens and vincas are used as hanging plants, soil borne diseases found in tropical soils are easily avoided.

Annuals demand more attention as compared to the perennials. They require almost constant feeding with fertilizers to grow and bloom abundantly. A special soil mix that is porous, rich in organic matter, free from insects and weed seeds and with the proper pH are required. They grow best during the cool and dry months from November to March and annuals should not be grown during the rainy season. It is possible to grow them off- season if plastic covers over raised screen-covered tables are used to prevent disease but once the plants are out of the safe confines of the greenhouse, they succumb.

Invest in a greenhouse or a plastic covered structure to have some control over the climate. Use wire screen covered benches to raise the trays or pots of seedlings off the floor to prevent disease. I discovered that electric fans blowing over the seedlings after their germination prevent the occurrence of damping-off disease because it disperses the high humidity of the crowded seedlings in the germination trays.

Growth retardants are used to produce compact plants with shorter stems and a more floriferous presentation. With the use of retardants, plants can be spaced more closely because they will not stretch and turn lanky. The only disadvantage though is that they are expensive and not affordable for small growers. Cultar is the recommended retardant, it is locally available, highly concentrated and it is highly effective in concentrations of .5 to 4 ppm range and applied as drench into the medium.

When growing annuals, it is important to choose the proper variety of seeds. Find a reliable source of quality seeds. Seed packets found in the supermarkets turn out to be disappointing. Germination turns out poor because the packets have been exposed to warm temperatures. Sometimes the plants will give blooms that are a far cry from the picture on the packet. I buy my seeds from Allied Botanical Corporation.

Next to acquiring the seeds, provide a proper storage. Refrigerate them once the original seal is opened to help preserve their germinating ability. Under ordinary room temperature, with the heat and humidity, the seeds lose their viability in about 2 months. Properly stored in a bottle with desiccant, the seeds can last up to 2-3 years while seeds in their unopened packs can last even longer.

The soil mix that we use is made up of sifted coco coir dust, approx. 45%; sifted river sand, approx. 40%; medium grade perlite, approx. 5-10%; and high grade compost, approx. 10%.For each cubic meter mixture of the above, we add the following: 1kg. Ferrous sulfate; 1kg. Magnesium sulfate; 1kg. Limestone; 1kg. 14-14-14. The chemicals are sprinkled over the heap and mixed in with a shovel 3 times then moistened with water from a hose to initiate the reaction of the chemicals with the other components. After about 30 minutes, the mixture is given another 3 rounds of mixing and then color changes from dark reddish brown to black. Use a soil test kit from the Bureau of Soils to measure the pH. The ideal pH should be from 5.4 to 5.6. To acidify, add more ferrous sulfate at 100 grams at a time, while to increase pH, sprinkle and mix in more limestone. The pH should then be tested again after 1-2 hours. The reaction time will be quite slow but in general, the pH will start to rise after a few days and will stabilize at around pH6.

Proper pH is important because it affects the availability of the trace elements. A pH of 7 and above will make the trace elements unavailable causing the leaves of petunia or ymca seedlings to become pale green or even white in extreme cases despite the application of a complete fertilizer with trace elements. The solution is to dip the tray of seedlings or pot(s) with ferrous sulfate at the rate of 1/2 to 1 tsp, per gallon to acidify the soil. The seedling will improve in 2days. Seedlings with white leaves are often irreversible so it is best to start over. Do not wet the leaves with the ferrous sulfate solution, it is acidic and it will burn the leaves. Test the pH of the soil mix before planting to avoid this problem. Do a few trials before finalizing your soil mix because the quality of the compost used will affect the final quality of the medium.

This soil mix might be a bother to prepare but the resulting plants with excellent root system will make your effort worthwhile. The resulting mixture will be soft, porous, well drained, doesn't cake or compact and weed free. Because of ultra-porosity, leaching rate will be high so apply fertilizer solution at least once a week. Use hi-grade compost as it contains antibiotic components that provide protection from diseases. For seed germination, dip the soil mix in a fungicide solution to help prevent damping off. Before using the mix for sowing seeds, sift through a 1/8- inch screen to make the texture finer and lighter and this allows fine seeds such as petunia and begonia to germinate more easily.

Check the month and season before planting the seeds. Do not plant during the rainy season because it will only lead to sickly plants. A small greenhouse is a must to keep out the rain as well as an electric fan blowing over the benches to prevent damping off of the seedlings. I try not to plant too many seeds to avoid over-production. Stagger the plantings 1-2 weeks apart. Plant more if there is an expected major plant sale. I recommend the first week of February as the planting date to avoid poor quality plants.

Do not crowd too many seeds in a pot or tray, it is hard to separate them. It also makes them susceptible to disease caused by poor air circulation. The seeds should be spaced at least four times as far apart as they are wide. This is quite challenging if the seeds are tiny. To space them properly I employ different techniques according size of the seeds. First, to make them more visible on the surface of the medium, I sprinkle the seeds with a talcum powder to make them white and stand out against the dark colored medium. Then for the tiniest seeds like petunia, I would use my fingertips to sprinkle the seeds carefully. For the slightly bigger seeds like that of vinca and impatiens, I would use the moistened tip of the toothpick to pick up the seeds individually and carefully space them along the straight lines created by indenting a pencil on the surface of the medium. Larger seeds like that of the marigold and zinnia can be individually picked up by the fingertips and arranged neatly in line across the medium.

The smallest seeds need not be covered with soil mix because they need some light and will not germinate if they are buried. All they need is a thorough misting of water using a hand sprayer to get them settled into the medium. Bigger seeds like the marigold and zinnia must be covered as deep as they are wide so their roots can sink into the medium otherwise the seeds will be pushed up and out of the surface by their own roots as they germinate.

Most seeds will germinate better with light but it should be diffused to prevent overheating and drying of the soil's surface. I also cover the pot or tray with a sheet of plastic weigh down with clean pebbles to increase the humidity and temperature above the seeds and this helps hasten the germination. Sometimes in places where there are pet cats that might use the trays for their toilet, you will need to cover the trays with wire screens. Some seeds like the dianthus will germinate just overnight while some like the petunia may take 3-4 days. In general the seeds will germinate twice as fast as what is mentioned in foreign books because we have naturally higher temperatures. The plastic cover helps a lot in preventing the medium from drying out and encourages the rapid hydration of the seeds. Once the tiny root tip is observed to start penetrate the medium, the plastic sheet can be removed to prevent the seedlings from stretching due to the heat and humidity under the plastic. Once the cotyledons have opened with the roots firmly into the medium, ventilation must be provided by using an electric fan directed over the plants to encourage compact growth and prevent disease. This is highly recommended especially during the rainy season because of the higher humidity which would make the seedlings susceptible to damping-off disease. Providing ventilation is also observed to promote a more vigorous root growth because it causes a higher transpiration rate which will result in increased demand for water, hence a more active root growth.

Keep the medium moist but avoid over-watering. The newly germinated seedlings need not be watered frequently as they are tiny and consume little. The frequency will gradually increase as the leaves start to expand and increase in number. The surface of the medium should be allowed to dry a bit before each watering so that air can enter into the pores of the medium. Over-watering will prevent air from reaching the roots causing them to die from lack of oxygen because all the pore space will be saturated with water. The best way to water the seedlings with minimal surface disturbance is by sub-irrigation. This is done by placing the pot or tray inside a basin with 1-2 inches of water and allow the water to rise up into the medium to reach the roots of the seedlings. Fertilizer at the rate of 1 tsp. per gallon can be added to the irrigation water to feed the seedlings and alternated every other watering with clear water to prevent salt buildup. Bottom watering also helps greatly to prevent the occurrence of damping off because the leaves will not get wet.

Provide the germinated seedlings with bright-diffused light to prevent them from wilting from the hot sun yet not too shaded to cause stretching. Two to three layers of fishnets on top of the plastic sheet of the greenhouse will be sufficient depending on how the plants will react. Zinnias and marigolds however need almost full sun because they elongate quickly when shaded.

The seedlings will be ready for transplanting into individual pots when they have grown their first pair of true leaves (not counting the cotyledons). Try not to delay the transplanting hoping for them to grow bigger because the older they get, the more roots they have. This will cause more damage to the roots while detangling, causing mortality because disease-causing organisms can enter the plant system through the damaged roots. It is very helpful to drench the newly transplanted seedlings with a fungicide solution together with a high phosphorus fertilizer (1 tsp. per gallon each) to promote rooting and reduce transplant shock. They must be sheltered from full sun and rain for a week to aid recovery. They also require careful watering or the seedlings will be washed out of the soil or killed by over-watering.

Compared to seed sowing, transplanting is a more delicate operation because they are so tiny and fragile. The fine crumbly texture of the medium makes it easier to separate the seedlings and disentangle the roots. Spacing the seeds properly during sowing will make the operation much easier.

Uproot seedlings by means of a pointed stick or a pencil to loosen the seedlings along the row. Pick them up by their leaves to avoid damage to the stem and place into the hole made earlier by a finger. Some plants like the marigold and zinnia may be buried almost to their leaves to help them grow more stable because the buried stem will produce new roots. Plants like petunias, impatiens, and begonia prefer to be planted only slightly deeper than their original level or else they get diseased. While positioning the seedling with the left hand over the hole, the right hand carefully closes the hole by pinching the medium toward the stem gently. Prepare several small pots gently packed with potting medium in advance and water them well because using dry medium can shock the delicate roots during transplanting. Transplant only the strongest seedlings because the smallest and the weakest ones will not grow into satisfactory plants. Prepare the fungicide solution with root boosting fertilizer (high in phosphorus) to drench the seedlings soon after planting. This drenching also helps to settle the soil around the roots and prevent air pockets.

Careful watering is required because they are tiny and will not consume all the water in the pot. When transferred out into brighter light and open air they will require more frequent watering up to about twice a day watering when their roots fill the pot completely. Monitor the drying of the medium daily especially around noon because they can die from dehydration. If the seedlings dry out too quickly, it means that the pot is already too small. Replant into a bigger pot so it will hold more medium and water.

As a daily routine, water the seedlings thoroughly in the morning, then check out for the presence of insect damage and assess for application of the appropriate insecticide. Handpicking is ideal if there are just a few insects to minimize spraying of the insecticide. Rearrange growing plants constantly for proper spacing to prevent crowding which results in elongated plants caused by lack of sufficient light. Crowding can cause more pest and disease because air movement is reduced between plants. Certain plants like the petunia and ymca are pinched to encourage branching and result in a bushier plant. The use of plant growth retardant is necessary for the petunia, zinnia, chrysanthemum to make the plants more compact because growing them tall make them susceptible to breakage during transport. Many buyers also find them more attractive when they are compact and bushy.

We use both slow release and water soluble fertilizers to feed our potted plants. The slow release granules are applied about 1-2 weeks after transplanting at the rate of ½ to 1 tsp per pot and these will last for about 2 months under our warm conditions. The water soluble type is applied at the rate of 1 tsp. up to 1 tbsp. per gallon of water twice a week when the plants are growing fast under almost full sun. Applying more frequently can accelerate growth while applying less will slow down growth. Knowing the growth habits of certain plants, the leaf color and size are good guides for the frequency and quality of fertilization. A light green color can mean lack of water or more often lack of nitrogen if the soil is observed to be moist. A well fed plant will have shiny-waxy texture and bright green colored leaves. Flowering plants may be fertilized with a bloom booster fertilizer as they reach maturity to encourage more blooms. Using a high nitrogen fertilizer at this time will encourage more leaves and delay blooming.

Growing potted flowering plants is an art and a science because of the many factors that are carefully managed to promote optimum growth and blooming. It is enjoyable and can be a profitable activity for those who have the talent and perseverance. It is hoped that this article would provide some guidance to beginners as well as experienced growers to help further their skills and enjoyment of the hobby.