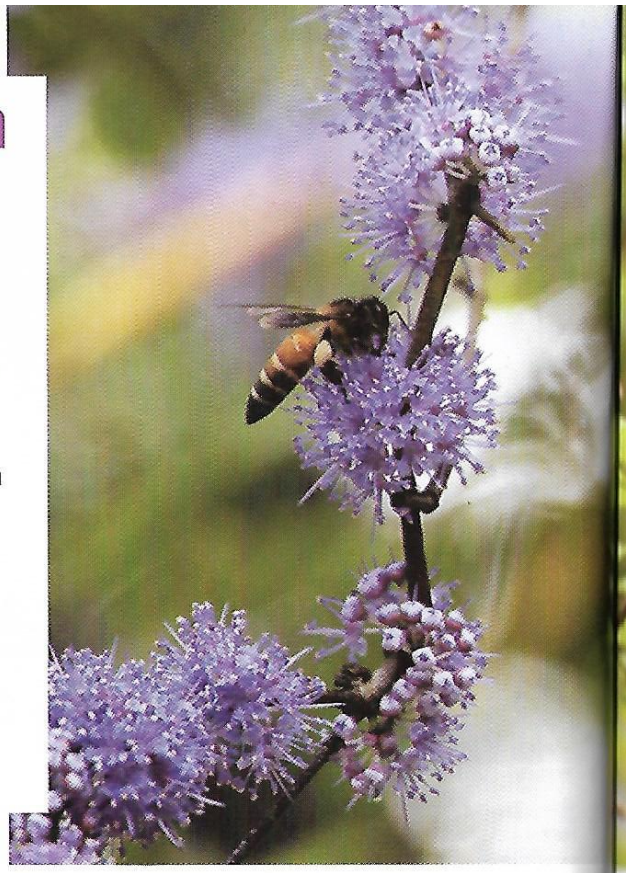
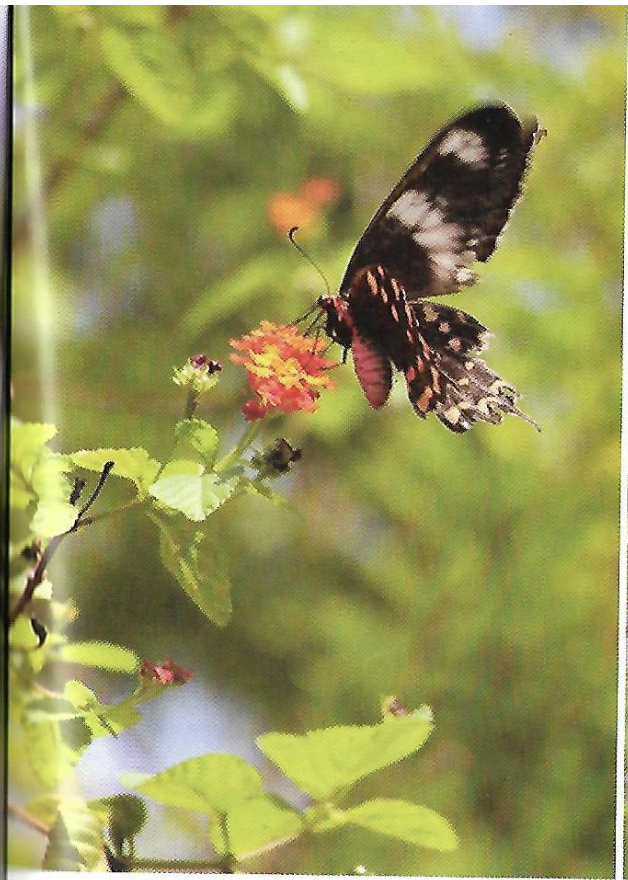
Pollination

Creates a colourful world

~ Siril Wijesundara

Plants with beautiful flowers make our environment colorful and attractive. Everyone loves flowers with vivid colors, beautiful shapes and sizes with irresistible scents.
It is well known that plants with flowers produce seeds that would develop into new plants. For flowers to produce seeds pollen grains from the male anther of a flower need to be transferred to the female stigma.





This process is called pollination. The most important purpose of pollination is to pass the genetic information to the next generation. However, in some plants the reproduction takes place by other means such as propagation of aboveground or underground parts.

If the pollen grains are transferred from anther to the sigma of the same flower it is called self-pollination. When pollen grains are transferred from anther to the stigma of a different plant the process is called cross pollination. Transfer of pollen grains can take place with the involvement of other organisms (pollinators) or without pollinators. In cases where a pollinator is not involved the pollination takes place by non-biological factors such as wind or water.

Pollination by wind is very imprecise, with a minute proportion of pollen grains landing by chance on a suitable receptive stigma, the rest being wasted in the environment. The most common group of plants that are pollinated by wind are grasses. Pollination by water, occurs in aquatic plants which release their pollen directly into the surrounding water

It is known that over 80% of flowering plants use pollinated by animal pollinators. These pollinators include invertebrates such as bees, wasps, ants, flies, mosquitoes, butterflies, and beetles, vertebrates, mainly bats, birds, monkeys, lemurs, possums, rodents and even some lizards. The existence of insect pollination dates back to the era of dinosaurs.

Plants pollinated by insects such as bees, wasps, beetles, flies, butterflies and moths have developed colorful petals and strong scents. Those pollinated by bats (and moths) have white colour that bloom at night. Generally the plants that use nocturnal pollinators have scented , white flowers. Plants that use birds as pollinators mostly produce copious nectar and have red petals.

Unlike animals plants tend to expose their reproductive parts as much as possible. They make those attractive to pollinators in every possible way. The colors, shapes and scents of the flowers are meant for pollinators. Some flowers such as those in bee orchid (Ophrysapifera) mimic female bees in shape and also produce a scent similar to the scent of the female bee. Pollination takes place while the male bees who would attempt to copulate those flowers.

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Of the 100,000 odd invertebrate pollinators, bees are considered as the most important group of animals that are involved in pollination. In tropical countries such as Sri Lanka the bambara bee (Apisdorsata) is believed to be the most important pollinator. Sadly, many bambara bee hives are destroyed every year in Sri Lanka without realizing the important ecological role played by those bees in pollinating agriculturally important crops as well as important indigenous plant species. According to the national Red List of 2012 about 44% of flowering plants indigenous to Sri Lanka are threatened. Destruction of pollinators may be one of the causal factors threatening those plant species. Unfortunately the cost of pollination is not estimated in Sri Lanka.

In USA and several other western countries bees are used commercially for pollination of crops. In Californian almond orchards, nearly half (about one million hives) of the US honey bees are trucked to the almond orchards each spring. New York's apple crop needs about 30,000 hives; Maine's blueberry crop uses about 50,000 hives each year. Bees are also used in cultivation off cucumbers, squash, melons, strawberries, and many other crops. According to the American Institute of Biological Sciences native insect pollination saves the United States agricultural economy nearly an estimated $3.1 billion annually through natural crop production. Managed pollination produces some $40 billion worth of products annually in the United States alone.