DOWNLOAD PDF PLANTS ARE LIKE KIDS

Chapter 1 : Plant-Like Ediacarans Were Possibly One Of The Earliest Animals On Earth Kids News Article

Kids love to "pet" the fuzzy, red, catkin-like blooms of the chenille plant, in both its trailing and shrubby forms. Whether you choose to grow chenille indoors as a houseplant or outdoors in-ground, this lovable plant will attract the interest of your garden visitors.

Corpse Flower, Titan Arum Scientific name: Sumatra About the Plant: The Corpse Flower smells like a rotting corpse, and it looks like it belongs in the movie Avatar. I would imagine that the smell helps prevent it from being eaten, but, despite this defense mechanism, the plant is still very rare. It comes from the forests of Sumatra. These exude oils, while the center collects heat. The heat causes the oils to create the smell that attracts the beetles that pollinate the flower. In case you were wondering, a mature plant can weigh pounds. Corpse Flower, Titan Arum. Not only is it ugly, it smells like a corpse. Luckily only 28 have bloomed in the United States. Elephant-Foot Yam Scientific name: Southeast Asia About the Plant: Guess who this cute little guy is related to? Yep, the Corpse Flower. Not only are they related, they also share many characteristics. For example, this guy also smells like a corpse. These elephant-foot yams vary in color, as well. Some are pure white. This odd plant is actually edible. In one Southeast Asian culture they are grown as a delicacy , while in another they are a last-resort food source. Amorphophallus Elephant-Foot Yam with flies Source 3. Another "Corpse Flower" Scientific name: Indonesia About the Plant: Because of its stench, the Rafflesia is another "corpse flower" I promise this is the last plant here that smells like a corpse. It is also wacky because it has no stems, leaves, or roots, though it does seem to be a plant of some kind. The Kew Botanical Gardens website puts it in class Equisetopsia related to horsetails , but Wikipedia puts it in the class Malphigiales a large category including willows and flaxes. Do you want to find one so you can plant it in your backyard? However, these are extremely hard to find. They live most of their lives as inconspicuous strands of parasitic tissue on Tetrastigma vines in tropical rainforests, until the strands develop a little inconspicuous bud, which for a few brief days explosively transforms into the terrifying plant you see in the picture below. Venus Flytrap Scientific name: North and South Carolina About the Plant: Even fewer about four species are capable of rapid movement. This makes the Venus Flytrap seem like it might be from another planet. It craves a high-nitrogen snack once in a while. You might wonder how the trap is triggered. Well, with trigger hairs. When two hairs are touched within 20 seconds of each other or, if a single hair is touched twice, the trap snaps shut. Healthier Venus Flytraps close quicker. Scientists are unsure about the mechanism it has to do with neighboring cells sending chemical messages to each other. They do their best to restrain the insect from escaping. Flies, will you ever learn? Do NOT go near the plant with jaws! Tropical Pitcher Plants Scientific name: Sumatra, Borneo, and the Philippines About the Plant: Monkeys have been spotted drinking from it. Rats have been spotted partially digested in it. The pitcher plant is truly terrifying. About species are known, mostly from the forests of Sumatra, Borneo, and the Philippines. The diet of a tropical pitcher plant includes just about anything that can fit into its pouch of sticky sap, including lizards, termites, spiders, and worms though it seems to prefer smaller insects. The individual species have complex relationships with their ecosystems. Some Nepenthes have evolved into toilet bowls for tree shrews, providing a shrew-sized perch and sweet exudate to attract shrews while they do their business. These plants get the bulk of their nitrogen from the tree-shrew dung they collect. Nepenthese edwardsiana Source Scientific name: South Africa About the Plant: There are more carnivorous plants out there than you probably realized more than I realized, anyway. This process is slow on the average it takes about 30 minutes and is probably fairly cruel. This is also the first plant on the list that is very good at reproducing. It reseeds easily and can survive a wide range of temperatures. Another carnivore Source Scientific name: Ficus several tropical and subtropical species Location: Australia About the Plant: The strangler fig is the biggest mooch of the plant kingdom. Not only does it mooch, it kills. There are many different species of strangler fig, but they all are basically the same thing: They are usually dispersed by hitch-hiking on birds and being dropped on the canopy of trees of a dense forest. They are wacky because they will grow up and down. They grow down so that their roots can rob the living tree of all its nutrients. It grows upwards to absorb sunlight. They often outlive the host tree by years.

Strangler Fig, probably the biggest asshole plant on Earth. North America About the Fungus: Well just look at it. This amazing mushroom fights cancer, stimulates nerve growth, and helps kill roundworms. How do we know? Well, some really brave soul found out it was edible. The creativity of Mother Nature It has been given other pleasant names such as yellow brain and golden jelly fungus. It also reproduces by both sexual and asexual production. Some believe that they will prove to have health benefits. It grows on recently fallen and dead trees. It must have been a triple dog dare to make the first person eat that. Hammer Orchid Scientific name: This endangered orchid from western Australia gets pollinated in a unique way. Does that red thing on the side look like it belongs there? Female thynnid wasps happen to be flightless. They also happen to climb on top of plants to signal to the male wasps, who can fly. The male picks them up and does his thing to reproduce with them during flight. The male wasp tries to pick up the fake female wasp and, instead, gets pitched into a mass of pollen. To actually finish pollinating a plant and keep this orchid species going, he has to come in contact with yet another Drakea glyptodon and try to mate with it. So, he has to be fooled twice. Also, the plant smells like raw meat. It kind of looks like it, too. It is a member of the Brassica mustard family along with arugula, broccoli and turnips. Watermelon radishes are edible globular roots attached to thin stems and wavy green leaves. Domesticated in Europe Weeping Larch Weeping larch Larix decidua "Pendula" is a moderately fast-growing European larch cultivar that grows to a modest height of 10 to 12 feet, boasting long, weeping branches. Unusually for a conifer, weeping larch is deciduous, dropping its needles in the fall. Siberia and Canada Wild Maypop Passiflora incarnata, commonly known as maypop, purple passionflower, true passionflower, wild apricot, and wild passion vine, is a fast-growing perennial vine with climbing or trailing stems. A member of the passionflower genus Passiflora, the maypop has large, intricate flowers with prominent styles and stamens.

Chapter 2 : Plants for Kids - Free Games, Fun Experiments, Activities, Science Online

Kids love dirt, and they love planting seeds and watching them grow. But what kids love most are fun plants, which hold their interest. Capture a child's attention through sensory elements by including plants with interesting or unusual characteristics as well as those that stimulate or appeal to.

Algae Algae comprise several different groups of organisms which produce food by photosynthesis and thus have traditionally been included in the plant kingdom. The seaweeds range from large multicellular algae to single-celled organisms and are classified into three groups, the brown , red and green algae. There is good evidence that the brown algae evolved independently from the others, from non-photosynthetic ancestors that formed endosymbiotic relationships with red algae rather than from cyanobacteria, and they are no longer classified as plants as defined here. With a few exceptions, the green plants have the following features in common; primary chloroplasts derived from cyanobacteria containing chlorophylls a and b, cell walls containing cellulose , and food stores in the form of starch contained within the plastids. They undergo closed mitosis without centrioles , and typically have mitochondria with flat cristae. The chloroplasts of green plants are surrounded by two membranes, suggesting they originated directly from endosymbiotic cyanobacteria. Two additional groups, the Rhodophyta red algae and Glaucophyta glaucophyte algae , also have primary chloroplasts that appear to be derived directly from endosymbiotic cyanobacteria , although they differ from Viridiplantae in the pigments which are used in photosynthesis and so are different in colour. These groups also differ from green plants in that the storage polysaccharide is floridean starch and is stored in the cytoplasm rather than in the plastids. They appear to have had a common origin with Viridiplantae and the three groups form the clade Archaeplastida , whose name implies that their chloroplasts were derived from a single ancient endosymbiotic event. In contrast, most other algae e. They are not close relatives of the Archaeplastida, presumably having acquired chloroplasts separately from ingested or symbiotic green and red algae. They are thus not included in even the broadest modern definition of the plant kingdom, although they were in the past. The green plants or Viridiplantae were traditionally divided into the green algae including the stoneworts and the land plants. However, it is now known that the land plants evolved from within a group of green algae, so that the green algae by themselves are a paraphyletic group, i. Paraphyletic groups are generally avoided in modern classifications, so that in recent treatments the Viridiplantae have been divided into two clades, the Chlorophyta and the Streptophyta including the land plants and Charophyta. There are about 4, species, [26] mainly unicellular or multicellular marine organisms such as the sea lettuce, Ulva. The other group within the Viridiplantae are the mainly freshwater or terrestrial Streptophyta, which consists of the land plants together with the Charophyta, itself consisting of several groups of green algae such as the desmids and stoneworts. Streptophyte algae are either unicellular or form multicellular filaments, branched or unbranched. The freshwater stoneworts strongly resemble land plants and are believed to be their closest relatives. With 19th century developments in microbiology , Ernst Haeckel introduced the new kingdom Protista in addition to Plantae and Animalia, but whether fungi were best placed in the Plantae or should be reclassified as protists remained controversial. In , Robert Whittaker proposed the creation of the kingdom Fungi. Molecular evidence has since shown that the most recent common ancestor concestor , of the Fungi was probably more similar to that of the Animalia than to that of Plantae or any other kingdom. Unlike plants, which generally gain carbon through photosynthesis, and so are called autotrophs , fungi do not possess chloroplasts and generally obtain carbon by breaking down and absorbing surrounding materials, and so are called heterotrophic saprotrophs. In addition, the substructure of multicellular fungi is different from that of plants, taking the form of many chitinous microscopic strands called hyphae , which may be further subdivided into cells or may form a syncytium containing many eukaryotic nuclei. Fruiting bodies, of which mushrooms are the most familiar example, are the reproductive structures of fungi, and are unlike any structures produced by plants. Diversity of living green plant Viridiplantae divisions Informal group.

Chapter 3 : 23 Games Like Plants vs Zombies () - Games Finder

Easy self-directed learning for young kids about plants. Fun science about plants for homeschooled kids. Even if you don't like to eat your vegetables, they are.

Plant proteins, mostly globulins, have been obtained chiefly from the protein-rich seeds of cereals and legumes. Small amounts of albumins are found in seeds. The best known globulins, insoluble in water, can be extracted from seeds by treatment with 2 to 10 percentâ€¦ Definition of the kingdom The kingdom Plantae includes organisms that range in size from tiny mosses to giant trees. Despite this enormous variation, all plants are multicellular and eukaryotic i. They generally possess pigments chlorophylls a and b and carotenoids , which play a central role in converting the energy of sunlight into chemical energy by means of photosynthesis. Most plants, therefore, are independent in their nutritional needs autotrophic and store their excess food in the form of macromolecules of starch. The relatively few plants that are not autotrophic have lost pigments and are dependent on other organisms for nutrients. Although plants are nonmotile organisms, some produce motile cells gametes propelled by whiplike flagella. Plant cells are surrounded by a more or less rigid cell wall composed of the carbohydrate cellulose, and adjacent cells are interconnected by microscopic strands of cytoplasm called plasmodesmata, which traverse the cell walls. Many plants have the capacity for unlimited growth at localized regions of cell division , called meristems. Plants, unlike animals, can use inorganic forms of the element nitrogen N , such as nitrate and ammonia â€”which are made available to plants through the activities of microorganisms or through the industrial production of fertilizers â€”and the element sulfur S ; thus, they do not require an external source of protein in which nitrogen is a major constituent to survive. Cutaway drawing of a plant cell, showing the cell wall and internal organelles. Diversity Plants have evolved into many diverse forms that define and sustain ecosystems. The life histories of plants include two phases, or generations, one of which is diploid the nuclei of the cells contain two sets of chromosomes , whereas the other is haploid with one set of chromosomes. The diploid generation is known as the sporophyte , which literally means spore -producing plant. The haploid generation, called the gametophyte , produces the sex cells, or gametes. The complete life cycle of a plant thus involves an alternation of generations. The sporophyte and gametophyte generations of plants are structurally quite dissimilar. Life cycle of a typical angiospermThe angiosperm life cycle consists of a sporophyte phase and a gametophyte phase. The cells of a sporophyte body have a full complement of chromosomes i. The gametophyte arises when cells of the sporophyte, in preparation for reproduction, undergo meiotic division and produce reproductive cells that have only half the number of chromosomes i. A two-celled microgametophyte called a pollen grain germinates into a pollen tube and through division produces the haploid sperm. An eight-celled megagametophyte called the embryo sac produces the egg. Fertilization occurs with the fusion of a sperm with an egg to produce a zygote, which eventually develops into an embryo. After fertilization, the ovule develops into a seed, and the ovary develops into a fruit. The concept of what constitutes a plant has undergone significant change over time. For example, at one time the photosynthetic aquatic organisms commonly referred to as algae were considered members of the plant kingdom. The various major algal groups, such as the green algae , brown algae , and red algae , are now placed in the kingdom Protista because they lack one or more of the features that are characteristic of plants. The organisms known as fungi also were once considered to be plants because they reproduce by spores and possess a cell wall. The fungi, however, uniformly lack chlorophyll, and they are heterotrophic and chemically distinct from the plants; thus, they are placed in a separate kingdom, Fungi. No definition of the kingdom completely excludes all nonplant organisms or even includes all plants. There are plants, for example, that do not produce their food by photosynthesis but rather are parasitic on other living plants. Some animals possess plantlike characteristics, such as the lack of mobility e. Despite such differences, plants share the following features common to all living things. Their cells undergo complex metabolic reactions that result in the production of chemical energy, nutrients, and new structural components. They respond to internal and external stimuli in a self-preserving manner. They reproduce by passing their genetic information to descendants that resemble them. They have evolved over

geological time scales hundreds of millions of years by the process of natural selection into a wide array of forms and life-history strategies. The earliest plants undoubtedly evolved from an aquatic green algal ancestor as evidenced by similarities in pigmentation, cell-wall chemistry, biochemistry, and method of cell division , and different plant groups have become adapted to terrestrial life to varying degrees. Land plants face severe environmental threats or difficulties, such as desiccation, drastic changes in temperature , support, nutrient availability to each of the cells of the plant, regulation of gas exchange between the plant and the atmosphere, and successful reproduction. Thus, many adaptations to land existence have evolved in the plant kingdom and are reflected among the different major plant groups. An example is the development of a waxy covering the cuticle that covers the plant body, preventing excess water loss. Specialized tissues and cells vascular tissue enabled early land plants to absorb and transport water and nutrients to distant parts of the body more effectively and, eventually, to develop a more complex body composed of organs called stems , leaves, and roots. The evolution and incorporation of the substance lignin into the cell walls of plants provided strength and support. Significant events in plant evolution. AdaptationsPlants, ranging from the simple liverwort a bryophyte to the flowering plants angiosperms , have evolved structures enabling them to colonize the land of almost any habitat. Nonvascular plants Definition of the category Informally known as bryophytes , nonvascular plants lack specialized vascular tissue xylem and phloem for internal water and food conduction and support. They also do not possess true roots , stems , or leaves. Some larger mosses , however, contain a central core of elongated thick-walled cells called hydroids that are involved in water conduction and that have been compared to the xylem elements of other plants. Bryophytes are second in diversity only to the flowering plants angiosperms and are generally regarded as composed of three divisions: Bryophtya the mosses , Marchantiophyta the liverworts , and Anthocerotophyta the hornworts. Red carpet moss Bryoerythrophyllum columbianum. BryophytesBryophytes, such as mosses and liverworts, are the most primitive plants. Because bryophytes generally lack conducting cells and a well-developed cuticle that would limit dehydration , they depend on their immediate surroundings for an adequate supply of moisture. As a result, most bryophytes live in moist or wet shady locations, growing on rocks, trees, and soil. Some, however, have become adapted to totally aquatic habitats; others have become adapted to alternately wet and dry environments by growing during wet periods and becoming dormant during dry intervals. Although bryophytes are widely distributed, occurring in practically all parts of the world, none are found in salt water. Ecologically, some mosses are considered pioneer plants because they can invade bare areas. Bryophytes are typically land plants but seldom attain a height of more than a few centimetres. They possess the photosynthetic pigment chlorophyll both a and b forms and carotenoids in cell organelles called chloroplasts. The life histories of these plants show a well-defined alternation of generations , with the independent and free-living gametophyte as the dominant photosynthetic phase in the life cycle. This is in contrast to the vascular plants , in which the dominant photosynthetic phase is the sporophyte. The sporophyte generation develops from, and is almost entirely parasitic on, the gametophyte. The gametophyte produces multicellular sex organs gametangia. Female gametangia are called archegonia ; male gametangia, antheridia. At maturity, archegonia each contain one egg , and antheridia produce many sperm cells. Because the egg is retained and fertilized within the archegonium, the early stages of the developing sporophyte are protected and nourished by the gametophytic tissue. The young undifferentiated sporophyte is called an embryo. Although bryophytes have become adapted to life on land, an apparent vestige of their aquatic ancestry is that the motile flagellated sperm depend on water to allow gamete transport and fertilization. Bryophytes share some traits with green algae, such as motile sperm, similar photosynthetic pigments, and the general absence of vascular tissue. However, bryophytes have multicellular reproductive structures, whereas those of green algae are unicellular, and bryophytes are mostly terrestrial and have complex plant bodies, whereas the green algae are primarily aquatic and have less-complex forms. Representative members Division Bryophyta Moss is a term erroneously applied to many different plants Spanish moss , a flowering plant; Irish moss , a red alga; pond moss, filamentous algae; and reindeer moss , a lichen. True mosses are classified as the division Bryophyta. Peat moss Sphagnum flexuosum K. Multicellular rhizoids anchor the gametophyte to the substrate. The sporophyte plant develops from the tip of the fertile leafy shoot. After repeated cell divisions, the young sporophyte embryo transforms

into a mature sporophyte consisting of foot, elongate seta, and capsule. The capsule is often covered by a calyptra, which is the enlarged remains of the archegonium. The capsule is capped by an operculum lid , which falls off, exposing a ring of teeth the peristome that regulates the dispersal of spores. Division Marchantiophyta Liverworts , the second major division of nonvascular plants, are found in the same types of habitat as mosses, and species of the two classes are often intermingled on the same site. There are two types of liverworts also called hepatics based on reproductive features and thallus structure. Thalloid thallose liverworts have a ribbonlike, or strap-shaped, body that grows flat on the ground. They have a high degree of internal structural differentiation into photosynthetic and storage zones. Liverwort gametophytes have unicellular rhizoids. Liverworts have an alternation of generations similar to that of mosses, and, as with mosses, the gametophyte generation is dominant. The sporophytes, however, are not microscopic and are often borne on specialized structures. They sometimes resemble small umbrellas and are called antheridiophores and archegoniophores. Division Anthocerotophyta The third division of bryophytes comprises the hornworts , a minor group numbering fewer than species. The gametophyte is a small ribbonlike thallus that resembles a thallose liverwort. The name hornwort is derived from the unique slender, upright sporophytes, which are about 3â€”4 cm 1. Vascular plants Definition of the category Vascular plants tracheophytes differ from the nonvascular bryophytes in that they possess specialized supporting and water-conducting tissue, called xylem , and food-conducting tissue, called phloem. The xylem is composed of nonliving cells tracheids and vessel elements that are stiffened by the presence of lignin , a hardening substance that reinforces the cellulose cell wall. The living sieve elements that comprise the phloem are not lignified. Xylem and phloem are collectively called vascular tissue and form a central column stele through the plant axis. The ferns , gymnosperms , and flowering plants are all vascular plants. Because they possess vascular tissues, these plants have true stems, leaves, and roots. Before the development of vascular tissues, the only plants of considerable size existed in aquatic environments where support and water conduction were not necessary. A second major difference between the vascular plants and bryophytes is that the larger, more conspicuous generation among vascular plants is the sporophytic phase of the life cycle. Tree fern Cyathea medullaris.

Chapter 4 : Fun Carnivorous Plant Facts for Kids

Natasha Sligh, 24, from Brooklyn just dropped $80 on a 4-inch rubber tree, a couple of colorful calatheas (a.k.a. prayer plants) and a philodendron, among other guilty-pleasure greenery.

I know exactly what it is like to be motherly because I have been in the parenting game for over 20 years. Contributors control their own work and posted freely to our site. If you need to flag this entry as abusive, send us an email. Some people say that you should have a pet before you have kids. The thought is that you will become familiar with the intensely high level of responsibility that taking care of another living being requires. You will learn that your pet, like the kids that come after it, comes along with not only cuteness but also with bouts of illness, a need for nurturing, sacrificing, etc. Since my daughter has left the nest and seems to be taking wonderful care of herself with, of course, several attempts on my part to always remain important and necessary, I have noticed that I have become a bit motherly with my plants. When the plants are babies they are simply adorable and it is so much fun to find the perfect pots for them. This is very similar to dressing a baby in the cutest little outfit. Plants like babies require feedings and you need to learn what schedule works best for them. Whereas my snake plant likes water every two weeks, my ficus seems to like weekly waterings and being sprayed on an almost daily basis. Some babies are on an every four hour feeding schedule whereas others have different schedules. Kids cry, get quiet or even upset when they are distressed. Similarly, my plants wilt. Their formerly beautifully colored and richly saturated leaves become brown and sometimes even crumble. With plants it takes a lot of trial and error to find out why they are not thriving. Sometimes they are getting too much sun and are getting sunburned while others are just too cold and need to be placed in a new location. Kids of all ages also need lots of attention to detail when they appear to be going through a rough patch. Every good parent has tried this and that and more of this and more of that to see their kids flourish again. Sometimes your plants surprise you with a new flower and you see the fruits of your labor when you were least expecting it. If you pay careful enough attention to your kids they too will surprise you with little gifts. Your plants require different amounts of sunshine, water, etc. Sometimes it will be easy to figure things out and other times it will be quite trying. We all turn to books and other people who have experience with kids when we are trying to figure out the right thing to do. We invest a lot in our indoor gardens just like we invest a lot in our offspring. How does your garden grow? Suggest a correction MORE:

Chapter 5 : Welcome to the PLANTS Database | USDA PLANTS

The plant-like creatures, however, have always been identified as animals, primarily because they were unearthed among other fossils belonging to known animal species and preserved in a similar fashion. Cuthill says as she examined specimen after specimen, she became increasingly excited.

Try planting in a small raised bed or growing a few edibles in existing landscaping. Lean a trellis against an outside wall to grow beans or other edible vines. Plants like zucchini, radishes and herbs are fairly easy to grow without a lot of fuss, making them a great return on your investment. There is a myriad of scientific concepts you can discuss with your kids when planting and tending to a garden. One study showed that children who participated in gardening projects scored higher in science achievement than those who did not. The wonder of seeing a garden grow may spark your kids to ask questions like: Why do the plants need sun? Why are worms good for the plants? Soon you will be talking about soil composition, photosynthesis and more! Supplement the experience of gardening with books about plants , trips to a botanical garden, or a photo journal of the plants that you are growing. Once you harvest your produce, think of all the brain-building vitamins, minerals and phytonutrients your kids will be eating and how that will continue to boost brain development. Foods like spinach, garlic and beets which are all easy to grow have been show to help with cognitive function and can give your kids an advantage in their growth and development. Even if kids may not love the foods they grow at first, teach them to keep tasting and trying and to train their taste buds to enjoy the bounty of their garden. How gardening can affect the BODY: When children participate in gardening, the fruits and vegetables that they are inspired to eat will no doubt have a positive effect on their body. But the act of gardening itself can also promote a healthy body. Kids LOVE to get their hands and feet in the dirt, which can run counter to the modern parenting style of compulsively keeping hands and surfaces cleaned and sanitized. Activities like moving soil, carrying a heavy watering can, digging in the dirt and pushing a wheelbarrow can promote gross motor skills and overall strength for a more fit body. How gardening can affect the SOUL: In this electronic age, kids need time for meaningful family connection. Time in the garden allows for team building and promotes communication skills. Planning a garden, planting the seeds and watching them grow give kids a sense of purpose and responsibility. Making sure that the plants get enough fertilizer, water and sun fosters mindfulness. The concepts learned while gardening, like composting food scraps for fertilizer or using gathered rainwater, can show kids a deep respect and responsibility for taking care of our planet. Furthermore, studies show that when children have contact with soil during activities like digging and planting, they have improved moods, better learning experiences and decreased anxiety. Most important, the self-esteem a child gets from eating a perfect cucumber that he grew himself is priceless. You Might Also Like.

Chapter 6 : Top 20 Weirdest and Most Interesting Plants and Fungi in the World | Owlcation

Your plants require different amounts of sunshine, water, etc. depending on the stages of their life and the time of year just like your kids require varying amounts of this or that throughout.

Do Plants Like Music? Do plants have feelings? Can they hear sounds? Do they like music? To the skeptic, the idea that plants have feelings or feel pain is ridiculous. Over the years, several studies have indicated that plants may respond to sound. However, the subject is still hotly debated in scientific circles. Studies Find Positive Effect of Music on Plants If plants respond to the ways they are nurtured and have several sensory perceptions, then how do they respond to sound waves and the vibrations created by musical sounds? Several studies have looked at this question, specifically how music effects plant growth. He initially experimented with classical music. Later, he experimented with raga music improvisations on a set of rhythms and notes played on flute, violin, harmonium, and reena, an Indian instrument. He found similar effects. Singh repeated the experiment with field crops using a particular type of raga played through a gramophone and loudspeakers. Through his several experiments, Singh concluded that the sound of the violin has the greatest effect on plant growth. He also experimented on the effects of vibrations caused by barefoot dancing. Sir Jagadish Chandra Bose , an Indian plant physiologist and physicist, spent a lifetime researching and studying the various environmental responses of plants. He concluded that they react to the attitude with which they are nurtured. He also found that plants are sensitive to factors in the external environment, such as light, cold, heat, and noise. In order to conduct his research, Bose created recorders capable of detecting extremely small movements, like the quivering of injured plants, and he also invented the crescograph, a tool that measures the growth of plants. Luther Burbank , an American botanist and horticulturist, studied how plants react when removed from their natural habitat. He talked to his plants. Based on his horticultural experiments, he attributed approximately 20 sensory perceptions to plants. The book has short description of the experiments with a brief biography of these scientists. It should be mentioned that some, including botanists Arthur Galston and Leslie Audus, consider the book to be a piece of fiction, not science. A lot of the science in The Secret Life of Plants has been discredited but nevertheless, the book has made its mark on our minds and culture. Singh also discovered that seeds that were exposed to music and later germinated produced plants that had more leaves, were of greater size, and had other improved characteristics. Do Plants Like Rock Music? In a experiment by Dorothy Retallack, then a student of Professor Francis Brown, three groups of plants were exposed to various types of musical sounds. For one group, Retallack played the note F for an 8-hour period. For the second group, she played similar note for three hours. The third controlled group remained in silence. The first group died within two weeks, while the second group was much healthier than the controlled group. Plants exposed to Hayden, Beethoven, Brahms, and Schubert grew towards and entwined themselves around the speakers. Another plant group grew away from a speaker that played rock music. That group even tried to climb a glass-walled enclosure in what appeared to be an attempt to get away from the sound. Retallack later replicated the experiment with rock music like Led Zeppelin and Jimi Hendrix on a variety of plants. She observed abnormal vertical growth and smaller leaves. She also observed the plants to have damage similar to that associated with excessive water uptake. In the experiment, marigolds died within two weeks. No matter which way they were turned, plants leaned away from the rock music source. What About Country and Jazz? Plants that are exposed to country music have the same reaction as those who are subjected to no sound at all, showing no unusual growth reaction. According to some studies, jazz music appears to have a beneficial effect, producing better and more abundant growth. The science television show MythBusters did a similar experiment and concluded that plants reacted well to any type of music, whether rock, country, jazz, or classical. Their experiments however, were not thoroughly conducted and are highly debatable. They believe the vibrations help not just of the plants but also in the soil and produce good fungi and bacteria in the soil that are vital for healthy vines, which encourages better and stronger root development, resulting in vigorous growth and better fruit. Many commercial growers play music for their crops, regardless of the fact that there are no reliable studies to support the idea. How Can Plants Hear? To explain how it may work, let us look at

how we humans receive and hear sound. Sound is transmitted in the form of waves that travel through a medium, such as air or water. The waves cause the particles in this medium to vibrate. When you switch on your radio, the sound waves create vibrations in the air that cause your ear drum to vibrate. This pressure energy is converted into electrical energy for the brain to translate into what you understand as musical sounds. In a similar manner, the pressure from sound waves create vibrations that could be picked up by plants. Plants would not "hear" the music, they would feel the vibrations of the sound wave. Protoplasm, the translucent living matter of which all animals and plant cells are composed, is in a state of perpetual movement. The vibrations picked up by the plant might speed up the protoplasmic movement in the cells. This stimulation then could affect the system and improve performance, such as the manufacture of nutrients that develop a stronger and better plant. Different forms of music have different sound wave frequencies and varying degrees of pressure and vibration. Louder music, like rock, features greater pressure, which some people think might have a detrimental effect on plants. Imagine the effect of strong wind on a plant compared to a mild breeze. Playing Music in Vineyards for Grape Production In , a hectare vineyard, DeMorgenzon wine estate in Stellenbosch, South Africa, experimented with two vineyard blocks, exposing one to baroque music and the other to no music at all. This allowed the vineyard owner to monitor and observe any differences in the production. The musical repertoire consisted of 2, pieces of classical baroque music. With this vast collection, they could play the music nonstop for 7. Despite the outcome of the experiment by Dorothy Retallack, where plants exposed for an eight-hour period died two weeks later, the DeMorgenzon wine estate played the music around the clock with no negative results, not just in the vineyard but also in the wine cellar and tasting room. Another vineyard, Paradiso di Frassina in Tuscany, Italy, uses classical music to get better production from its vineyards. They observed that plants mature faster when exposed to the soothing sounds of Mozart, Vivaldi, Haydn, and Mahler when compared to a controlled site. This project to wire the vineyard for musical sound started in as an attempt to keep pests away. Just like DeMorgenzon wine estate, the music is played non-stop 24 hours a day with no negative results. In both of these vineyard examples, there were no negative results noticed after extensive exposure to music, and the benefits of the music remain anecdotal. But there are sounds that, at least theoretically, it could be advantageous for them to hear. It is true that the positive effects of music on plant growth is still highly debated among scientists. Because the scientific community only values results that can be repeated, and thereby verified, there are many skeptics who regard the studies mentioned above as bad science since most of them were unreplicable, meaning that when others tried to re-do the study as described, their results did not match those of the original study. In some cases, upon further analysis, the original studies themselves were found to be faulty. It was reported in the The Telegraph that scientists from National Institute of Agricultural Biotechnology in Suwon, South Korea played classical music in rice fields, and concluded that plant genes can "hear" and had improved yield. The research was published in the August, issue of New Scientist. Others say too few samples were analyzed for it to be conclusive. She listed several concerns, including: Citing the works of professors in physics and theology, but not in biology. Lack of relevant references. Poor reasoning and biased expectations. Insufficient number of samplings. Publisher that does not specialize in science. Another skeptic, biologist and author of What a Plant Feels, Daniel Chamovitz, criticizes both the Retallack study and The Secret Life of Plants by Peter Tompkins and Christopher Bird both described above as not only perfect examples of bad science but for being detrimental to science as a whole. He also says that "Although research in this area has a long history, most of it is not very scientific and, if you think about it, experiments studying music and plants were doomed from the start.

Chapter 7 : plant | Definition, Evolution, Ecology, & Taxonomy | calendrierdelascience.com

Types of Plants Just like us, plants grow at different places and live for different period of time. Lets learn about them in this video. Tree Shrubs Herbs Climbers

Biology for Kids Fungi Fungi are a group of living organisms which are classified in their own kingdom. This means they are not animals , plants , or bacteria. Unlike bacteria, which have simple prokaryotic cells, fungi have complex eukaryotic cells like animals and plants. Fungi are found throughout the Earth including on land, in the water, in the air, and even in plants and animals. They vary widely in size from microscopically small to the largest organisms on Earth at several square miles large. There are more than , different identified species of fungi. How are fungi different from plants? Fungi were once classified as plants. However, they are different from plants in two important ways: Characteristics of Fungi They get their food by decomposing matter or eating off their hosts as parasites. They do not possess chlorophyll like plants. They reproduce through numerous spores rather than pollen, fruit, or seeds. They are usually not motile, meaning they cannot actively move around. Roles of Fungi Food - Many fungi are used as food such as mushrooms and truffles. Yeast, a type of fungi, is used when baking bread to help it rise and to ferment beverages. Decomposition - Fungi play an important role in the decomposition of organic matter. This decomposition is necessary for many of the cycles of life such as the carbon, nitrogen, and oxygen cycles. By breaking down organic matter, fungi release carbon, nitrogen, and oxygen into the soil and the atmosphere. Medicine - Some fungi are used to killed bacteria that can cause infections and disease in humans. They make antibiotics like penicillin and cephalosporin. Types of Fungi Scientists often divide fungi into four groups: Some of the more common fungi that you are likely to see or use everyday are described below. Mushrooms - Mushrooms are part of the club fungi group. Mushrooms are the fruiting body of a fungus. Some mushrooms are good to eat and are used as food, while others are very poisonous. Never eat a mushroom you find in the woods! Mold - Molds are formed by filaments called hyphae. Molds tend to form on old fruit, bread, and cheese. They sometimes look furry as the hyphae grow upward and release more mold spores from their tips. Yeast - Yeasts are small round single-celled organisms. Yeasts are important in making bread rise. Interesting Facts about Fungi Scientists who specialize in the study of fungi are called mycologists. The fungi kingdom is more similar to the animal kingdom than the plant kingdom. The word "fungus" is a Latin word meaning "mushroom". It is estimated that there are at least 1. The top of a mushroom is called the cap. The small plates under the cap are called gills. The fungus Trichoderma is sometimes used in the process when making stone-washed jeans. Activities Take a ten question quiz about this page.

Chapter 8 : Life Cycle of a Plant - Cool Facts for Kids

The concepts learned while gardening, like composting food scraps for fertilizer or using gathered rainwater, can show kids a deep respect and responsibility for taking care of our planet.

Worksheets Life Cycle of a Plant Where do plants come from? From seeds, of course, you say. But where do seeds come from? And do all plants come from seeds? Where do seeds come from? Every single person in the whole world is either a boy or a girl; a male or a female. Most plants have male parts called stamens and female parts called carpels. The stamens in a plant make the tiny grains called pollen. The carpels make eggs that are called ovules. Seeds are made when the pollen is able to stick to the ovules. This process is called pollination. Pollination happens lots of different ways. Here are some of the ways plants pollinate make seeds: Bees gather pollen from plants to make honey. Some of this pollen falls onto the ovules of a plant instead of being used by the bees. Wind carries pollen from plant to plant in order to make seeds. Rain washes the pollen from the stamens to the ovules so new seeds can be made. Animals eat plants and scatter the pollen to the ovules so seeds can be made. Many times the pollen and ovules will drop off a plant and fall to the ground. When this happens they can get mixed together so seeds can be formed. What happens once a seed is formed Some plants form a single seed for every flower, fruit or vegetable growing on the plant. Other plants, however, have hundredsâ€”even thousandsâ€”of seeds in every flower. Once the seeds are formed, they are ready to become new plants. Some seeds are planted by people for growing flowers, fruits and vegetables. Other seeds fall to the grown when a plant withers and dies, OR are blown by the wind, OR are washed to the ground by water. Once the seed is planted, it can begin to grow IF it has enough water, healthy soil and the sun gives off enough heat and energy to keep the soil warm. If a seed has all those things, it will germinate. A seed that germinates breaks through the seed coat so its roots can grow in the ground and the stem and seed leaves can pop through the soil and begin making food to feed the plant so it can grow. Keep on growing Once the plant is formed, it grows and grows until it is mature. This means it is as big as it should be and is ready to make fruit, vegetables, flowers, or just more pretty green leaves. This depends on what type of plant it is. When the plant is mature, pollination takes place and then the fruit, vegetables or flowers are formed and begin to grow. When they are done growing, weâ€¦ Eat the fruits and vegetables Enjoy the pretty flowers â€¦and let the seeds from these things start their job all over again. What about the old plant Many plants die off each season. The seeds from these plants are gathered and used to grow new plants each year. These plants are called annuals. Some examples of annual plants are:

Chapter 9 : Image Gallery | USDA PLANTS

Game vui cho bÃ© | kids | Plants vs zombies | All zombies out Thank for watching - Like and subscribe.