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Chapter 1 : How to Identify Broccoli | Home Guides | SF Gate

[PDF]Free How To Know The Plant Families download Book How To Know The Plant blog.quintoapp.com Extension Store Tue, 06 Nov GMT Gardens are integral parts of home landscapes.

A member of the cabbage Brassicaceae family, which includes cauliflower Brassica oleracea var. Cabbage Family Broccoli, cauliflower and Brussels sprouts are all annual, cool-season vegetables, and they have more in common than just their love of cool temperatures. All are varieties of the same species. In addition, the cabbage family is so huge that instead of single cultivars, there are groups of cultivars. Both broccoli and cauliflower are part of the botrytis cultivar group, which is why they have the same scientific name. From there, they are usually separated further into a broccoli cultivar group and a cauliflower cultivar group. These things explain why it is so difficult to tell the vegetables apart. Broccoli Broccoli is prized for its high nutrient content and easy of growth. It is easier to cultivate than cauliflower, and many varieties are attractive enough to add aesthetic value to the garden. Broccoli plants thrive in full sun and in well-draining, slightly alkaline soil. They are usually grown from seed and will sometimes overwinter in U. Department of Agriculture plant hardiness zones 7 and warmer. Seedlings As seedlings, broccoli plants have two, finely defined lobes located at the base of each leaf. Seedling leaves are oval, with larger serrations than cauliflower, whereas Brussels sprouts leaves are smooth. Plants Broccoli plants are usually as tall as they are wide, while cauliflower plants are usually a bit wider than tall, and Brussels sprouts are taller than wide. Broccoli plants grow to maximum average heights and widths of about 3 feet. The stems are thick, with multiple branches. In young and fully grown plants, the leaves are long, usually circling the flower head, with large, wavy margins. They have a waxy texture and are bluish-green in color, with white veins. Cauliflower and Brussels sprouts leaves are broader, with a darker green hue. The heads consist of tightly packed, closed flower buds when harvested. Usually, they are dark green, but some cultivars are purple. Cauliflower heads are white, with smaller flower buds that are more closely packed together. The flower buds of Brussels sprouts are larger and rounder and cluster along an upright stem. Neither plant should be harvested or eaten if the flowers are open.

Chapter 2 : 11 poisonous plants you and your family need to know about

I tell my students it is okay if they do not know the name of a single plant at the end of the walk, but I expect them to recognize family characteristics and be able to make logical guesses as to how those plants might be used.

A thicket of wild cannabis in Islamabad , Pakistan. Cannabis is an annual , dioecious , flowering herb. The leaves are palmately compound or digitate , with serrate leaflets. At the top of a flowering plant, this number again diminishes to a single leaflet per leaf. The lower leaf pairs usually occur in an opposite leaf arrangement and the upper leaf pairs in an alternate arrangement on the main stem of a mature plant. The leaves have a peculiar and diagnostic venation pattern that enables persons poorly familiar with the plant to distinguish a cannabis leaf from unrelated species that have confusingly similar leaves see illustration. As is common in serrated leaves, each serration has a central vein extending to its tip. However, the serration vein originates from lower down the central vein of the leaflet, typically opposite to the position of, not the first notch down, but the next notch. This means that on its way from the midrib of the leaflet to the point of the serration, the vein serving the tip of the serration passes close by the intervening notch. Sometimes the vein will actually pass tangent to the notch, but often it will pass by at a small distance, and when that happens a spur vein occasionally a pair of such spur veins branches off and joins the leaf margin at the deepest point of the notch. This venation pattern varies slightly among varieties, but in general it enables one to tell Cannabis leaves from superficially similar leaves without difficulty and without special equipment. Tiny samples of Cannabis plants also can be identified with precision by microscopic examination of leaf cells and similar features, but that requires special expertise and equipment. Cannabis is predominantly dioecious , [12] [14] having imperfect flowers , with staminate "male" and pistillate "female" flowers occurring on separate plants. Subdioecy the occurrence of monoecious individuals and dioecious individuals within the same population is widespread. Dioecious varieties are also preferred for textile fiber production, whereas monoecious varieties are preferred for pulp and paper production. It has been suggested that the presence of monoecy can be used to differentiate licit crops of monoecious hemp from illicit drug crops. Cannabis flower with visible trichomes Male Cannabis flower buds Sex determination Cannabis has been described as having one of the most complicated mechanisms of sex determination among the dioecious plants. Based on studies of sex reversal in hemp , it was first reported by K. Hirata in that an XY sex-determination system is present. A system was first described in Drosophila spp in A system was in use and that furthermore sex was strongly influenced by environmental conditions. In most cases where the XY system is found it is believed to have evolved recently and independently. Cannabis was one of the first plant species to be karyotyped; however, this was in a period when karyotype preparation was primitive by modern standards see History of Cytogenetics. Heteromorphic sex chromosomes were reported to occur in staminate individuals of dioecious "Kentucky" hemp, but were not found in pistillate individuals of the same variety. Dioecious "Kentucky" hemp was assumed to use an XY mechanism. Heterosomes were not observed in analyzed individuals of monoecious "Kentucky" hemp, nor in an unidentified German cultivar. These varieties were assumed to have sex chromosome composition XX. In dioecious plants where sex chromosomes have not been identified, markers for maleness indicate either the presence of sex chromosomes which have not been distinguished by cytological methods or that the marker is tightly linked to a gene involved in sex determination. Cannabinoids , terpenoids , and other compounds are secreted by glandular trichomes that occur most abundantly on the floral calyxes and bracts of female plants. Root system side view Micrograph C. Cannabis plants produce a unique family of terpeno-phenolic compounds called cannabinoids, some of which produce the "high" which may be experienced from consuming marijuana. There are identifiable chemical constituents known to exist in the cannabis plant, [48] and at least 85 different cannabinoids have been isolated from the plant. When plants of these two chemotypes cross-pollinate, the plants in the first filial F1 generation have an intermediate chemotype and produce intermedite amounts of CBD and THC. Female plants of this chemotype may produce enough THC to be utilized for drug production. This is a contentious issue because there is no universally accepted definition of a species. Linnaeus was familiar with European hemp, which was widely cultivated at the time. In , noted

evolutionary biologist Jean-Baptiste de Lamarck published a description of a second species of Cannabis, which he named Cannabis indica Lam. Additional Cannabis species were proposed in the 19th century, including strains from China and Vietnam Indo-China assigned the names Cannabis chinensis Delile, and Cannabis gigantea Delile ex Vilmorin. In the early 20th century, the single-species concept was still widely accepted, except in the Soviet Union where Cannabis continued to be the subject of active taxonomic study. The name Cannabis indica was listed in various Pharmacopoeias , and was widely used to designate Cannabis suitable for the manufacture of medicinal preparations. Janichevsky concluded that ruderal Cannabis in central Russia is either a variety of C. Serebriakova and Sizov split the two C. However, they did not divide C. Enterprising attorneys for the defense in a few drug busts argued that the seized Cannabis material may not have been C. Attorneys on both sides recruited botanists to provide expert testimony. Among those testifying for the prosecution was Dr. Ernest Small, while Dr. Schultes and others testified for the defense. Within these two subspecies, Small and Cronquist described C. This classification was based on several factors including interfertility, chromosome uniformity, chemotype, and numerical analysis of phenotypic characters. Schultes and coworkers also conducted taxonomic studies of Cannabis in the s, and concluded that stable morphological differences exist that support recognition of at least three species, C. This taxonomic interpretation was embraced by Cannabis aficionados who commonly distinguish narrow-leafed "sativa" strains from wide-leafed "indica" strains. This has resulted in many reclassifications based on evolutionary systematics. Several studies of Random Amplified Polymorphic DNA RAPD and other types of genetic markers have been conducted on drug and fiber strains of Cannabis, primarily for plant breeding and forensic purposes. Hillig, a graduate student in the laboratory of long-time Cannabis researcher Paul G. Mahlberg [77] at Indiana University , conducted a systematic investigation of genetic, morphological, and chemotaxonomic variation among Cannabis accessions of known geographic origin, including fiber, drug, and feral populations. In , Hillig and Mahlberg published a chemotaxonomic analysis of cannabinoid variation in their Cannabis germplasm collection. They used gas chromatography to determine cannabinoid content and to infer allele frequencies of the gene that controls CBD and THC production within the studied populations, and concluded that the patterns of cannabinoid variation support recognition of C. Narrow-leaflet and wide-leaflet drug accessions, southern and eastern Asian hemp accessions, and feral Himalayan populations were assigned to C. In , Hillig published a genetic analysis of the same set of accessions this paper was the first in the series, but was delayed in publication , and proposed a three-species classification, recognizing C. He also concluded there is little support to treat C. In September , New Scientist reported that researchers at the Canberra Institute of Technology had identified a new type of Cannabis based on analysis of mitochondrial and chloroplast DNA. It should also improve classification accuracy for cannabis used recreationally. Legalization coupled with Canadian government Health Canada oversight of production and labelling will likely result in more -- and more accurate -- testing to determine exact strains and content. Cannabis aficionados recognize three distinct types based on such factors as morphology, native range , aroma, and subjective psychoactive characteristics. Sativa is the most widespread variety, which is usually tall, laxly branched, and found in warm lowland regions. Indica designates shorter, bushier plants adapted to cooler climates and highland environments. Ruderalis is the informal name for the short plants that grow wild in Europe and Central Asia. Uses Cannabis is used for a wide variety of purposes. History The use of Cannabis as a mind-altering drug has been documented by archaeological finds in prehistoric societies in Eurasia and Africa. In , cannabis spread to the western hemisphere where Spaniards imported it to Chile for its use as fiber. In North America, cannabis, in the form of hemp, was grown for use in rope, clothing and paper. In the United States alone, it is believed that over million Americans have tried cannabis, with 25 million Americans having used it within the past year. Primary psychoactive effects include a state of relaxation, and to a lesser degree, euphoria from its main psychoactive compound, tetrahydrocannabinol. Secondary psychoactive effects, such as a facility for philosophical thinking, introspection and metacognition have been reported among cases of anxiety and paranoia. Normal cognition is restored after approximately three hours for larger doses via a smoking pipe , bong or vaporizer. After 24 hours to a few days, minuscule psychoactive effects may be felt, depending on dosage, frequency and tolerance to the drug. Commercial cannabis extract Various forms of the drug cannabis

exist, including extracts such as hashish and hash oil [7] which, because of appearance, are more susceptible to adulterants when left unregulated. Cannabidiol CBD , which has no psychotropic effects by itself [50] although sometimes showing a small stimulant effect, similar to caffeine , [94] attenuates, or reduces [95] the higher anxiety levels caused by THC alone. Medical cannabis Medical cannabis or medical marijuana refers to the use of cannabis and its constituent cannabinoids , to treat disease or improve symptoms. Cannabis industrial uses Cannabis sativa stem longitudinal section The term hemp is used to name the durable soft fiber from the Cannabis plant stem stalk. Cannabis sativa cultivars are used for fibers due to their long stems; Sativa varieties may grow more than six metres tall. However, hemp can refer to any industrial or foodstuff product that is not intended for use as a drug. Many countries regulate limits for psychoactive compound THC concentrations in products labeled as hemp. Cannabis for industrial uses is valuable in tens of thousands of commercial products, especially as fibre [] ranging from paper , cordage , construction material and textiles in general, to clothing. Hemp is stronger and longer-lasting than cotton. It also is a useful source of foodstuffs hemp milk, hemp seed, hemp oil and biofuels. Hemp has been used by many civilizations, from China to Europe and later North America during the last 12, years. He is thought to have belonged to the Jushi culture recorded in the area centuries later in the Hanshu , Chap 96B. An international team demonstrated that this material contained tetrahydrocannabinol , the psychoactive component of cannabis. The cannabis was presumably employed by this culture as a medicinal or psychoactive agent, or an aid to divination. This is the oldest documentation of cannabis as a pharmacologically active agent. By the 10th century CE, it has been suggested that it was referred to by some in India as "food of the gods". One of the earliest to use this plant in medical purposes was Korakkar , one of the 18 Siddhas. In ancient Germanic culture , Cannabis was associated with the Norse love goddess, Freya. Rastafarians tend to be among the biggest consumers of modern Cannabis use. Cannabis is frequently used among Sufis [] â€” the mystical interpretation of Islam that exerts strong influence over local Muslim practices in Bangladesh , India , Indonesia , Turkey , and Pakistan. Cannabis preparations are frequently used at Sufi festivals in those countries.

Chapter 3 : Lamiaceae: Mint Family (Labiatae). Identify plants and flowers.

Knowing which Family a plant belongs to can tell you what the seedling looks like. Seeds of all the Monocot families (such as Liliaceae, Iridaceae, other bulbs, grasses and palms) will come up with only one seed leaf.

Studying plants is all about looking for patterns. What each page explains General Information: A quick overview of why this plant family is important including how many species they represent and where they might be found. The technical information used to identify this plant family. Common or Important Species: Thumbnails of some of the more common or representative plants of the family. Pictures and Video from Representative Plants: Certain plant families will have pictures or video from plants in that taxa. When available we have lists compiled from reputable sources on the current genera. However, care should be taken as taxa change all the time and not all botanists agree on the proper classification. We give the sources we collected our data from when we post them. Where do I start? Learn what scientific names mean: Learn the big picture: Why have botanists grouped similar plants? In reality todays plants represent the end result of a long evolutionary history. Scientists have tried to reconstruct when certain groups of plants diverged from each other. Flowering plants can be divided into two basic groups - monocots and dicots. Its one of the easiest ways to classify flowering plants and the characters that each have can easily be learned on day one. Quickly get familiar with the names of common plant parts. Do you know what the petals, sepals, stamen, and pistils are? Learn your first 5 plant families: You should start with a few that can be easily identified and spotted almost anywhere you are. We recommend the following 5 families. Your first 5 plant families! Sunflowers, Daisies, Dandilions and 20, other plants make up this huge family. But did you know that most things people think are one flower are really a large group of flowers. Watch the video on the Asteraceae page Fabaceae: Most are nitrogen fixers and have been very important for agriculture for hundreds of years. Carrots are roots of a plant in this family. Its also easy to recognize with a distinctive "umbel"-like flower stalk. There are over 30, species in the world and many more cultivated varieties. Lilies are another monocot that are easy to identify. Easter lilies, Tiger lilies, and daffodils are all important members in this family. After learning those plant families start by learning others:

Chapter 4 : Learning Plant Families: Plant Family Web

Learn your first 5 plant families: You're now ready to start learning a few basic plant families. You should start with a few that can be easily identified and spotted almost anywhere you are. You should start with a few that can be easily identified and spotted almost anywhere you are.

Vascular anatomy[edit] Cross-section of a stem of the angiosperm flax: Sclerenchyma bast fibre , 6. Epidermis The amount and complexity of tissue-formation in flowering plants exceeds that of gymnosperms. The vascular bundles of the stem are arranged such that the xylem and phloem form concentric rings. In the dicotyledons , the bundles in the very young stem are arranged in an open ring, separating a central pith from an outer cortex. In each bundle, separating the xylem and phloem, is a layer of meristem or active formative tissue known as cambium. By the formation of a layer of cambium between the bundles interfascicular cambium , a complete ring is formed, and a regular periodical increase in thickness results from the development of xylem on the inside and phloem on the outside. The soft phloem becomes crushed, but the hard wood persists and forms the bulk of the stem and branches of the woody perennial. Owing to differences in the character of the elements produced at the beginning and end of the season, the wood is marked out in transverse section into concentric rings, one for each season of growth, called annual rings. Among the monocotyledons , the bundles are more numerous in the young stem and are scattered through the ground tissue. They contain no cambium and once formed the stem increases in diameter only in exceptional cases. Flower and Plant reproductive morphology A collection of flowers forming an inflorescence. The characteristic feature of angiosperms is the flower. Flowers show remarkable variation in form and elaboration, and provide the most trustworthy external characteristics for establishing relationships among angiosperm species. The function of the flower is to ensure fertilization of the ovule and development of fruit containing seeds. The floral apparatus may arise terminally on a shoot or from the axil of a leaf where the petiole attaches to the stem. Occasionally, as in violets , a flower arises singly in the axil of an ordinary foliage-leaf. More typically, the flower-bearing portion of the plant is sharply distinguished from the foliage-bearing or vegetative portion, and forms a more or less elaborate branch-system called an inflorescence. There are two kinds of reproductive cells produced by flowers. Microspores , which will divide to become pollen grains , are the "male" cells and are borne in the stamens or microsporophylls. The "female" cells called megaspores , which will divide to become the egg cell megagametogenesis , are contained in the ovule and enclosed in the carpel or megasporophyll. The flower may consist only of these parts, as in willow , where each flower comprises only a few stamens or two carpels. Usually, other structures are present and serve to protect the sporophylls and to form an envelope attractive to pollinators. The individual members of these surrounding structures are known as sepals and petals or tepals in flowers such as Magnolia where sepals and petals are not distinguishable from each other. The outer series calyx of sepals is usually green and leaf-like, and functions to protect the rest of the flower, especially the bud. The inner series corolla of petals is, in general, white or brightly colored, and is more delicate in structure. It functions to attract insect or bird pollinators. Attraction is effected by color, scent , and nectar , which may be secreted in some part of the flower. The characteristics that attract pollinators account for the popularity of flowers and flowering plants among humans. While the majority of flowers are perfect or hermaphrodite having both pollen and ovule producing parts in the same flower structure , flowering plants have developed numerous morphological and physiological mechanisms to reduce or prevent self-fertilization. Heteromorphic flowers have short carpels and long stamens, or vice versa, so animal pollinators cannot easily transfer pollen to the pistil receptive part of the carpel. Homomorphic flowers may employ a biochemical physiological mechanism called self-incompatibility to discriminate between self and non-self pollen grains. In other species, the male and female parts are morphologically separated, developing on different flowers. This included flowering plants possessing seeds enclosed in capsules, distinguished from his Gymnospermae, or flowering plants with achenial or schizo-carpic fruits, the whole fruit or each of its pieces being here regarded as a seed and naked. The term and its antonym were maintained by Carl Linnaeus with the same sense, but with restricted

application, in the names of the orders of his class Didynamia. Its use with any approach to its modern scope became possible only after , when Robert Brown established the existence of truly naked ovules in the Cycadeae and Coniferae , [11] and applied to them the name Gymnosperms. An auxanometer , a device for measuring increase or rate of growth in plants In , Hofmeister discovered the changes occurring in the embryo-sac of flowering plants, and determined the correct relationships of these to the Cryptogamia. This fixed the position of Gymnosperms as a class distinct from Dicotyledons, and the term Angiosperm then gradually came to be accepted as the suitable designation for the whole of the flowering plants other than Gymnosperms, including the classes of Dicotyledons and Monocotyledons. This is the sense in which the term is used today. In most taxonomies, the flowering plants are treated as a coherent group. The most popular descriptive name has been Angiospermae Angiosperms , with Anthophyta "flowering plants" a second choice. These names are not linked to any rank. The Wettstein system and the Engler system use the name Angiospermae, at the assigned rank of subdivision. Jensen ex Reveal, Phytologia The Takhtajan system and Cronquist system treat this group at the rank of division , leading to the name Magnoliophyta from the family name Magnoliaceae. The Dahlgren system and Thorne system treat this group at the rank of class, leading to the name Magnoliopsida. The APG system of , and the later [12] and [13] revisions, treat the flowering plants as a clade called angiosperms without a formal botanical name. However, a formal classification was published alongside the revision in which the flowering plants form the Subclass Magnoliidae. The Cronquist system , proposed by Arthur Cronquist in and published in its full form in , is still widely used but is no longer believed to accurately reflect phylogeny. A consensus about how the flowering plants should be arranged has recently begun to emerge through the work of the Angiosperm Phylogeny Group APG , which published an influential reclassification of the angiosperms in Traditionally, the flowering plants are divided into two groups, Monocotyledoneae or Liliopsida which in the Cronquist system are called Magnoliopsida at the rank of class, formed from the family name Magnoliaceae and Liliopsida at the rank of class, formed from the family name Liliaceae. Other descriptive names allowed by Article 16 of the ICBN include Dicotyledones or Dicotyledoneae, and Monocotyledones or Monocotyledoneae, which have a long history of use. In English a member of either group may be called a dicotyledon plural dicotyledons and monocotyledon plural monocotyledons , or abbreviated, as dicot plural dicots and monocot plural monocots. These names derive from the observation that the dicots most often have two cotyledons , or embryonic leaves, within each seed. The monocots usually have only one, but the rule is not absolute either way. From a broad diagnostic point of view, the number of cotyledons is neither a particularly handy nor a reliable character. Recent studies, as by the APG, show that the monocots form a monophyletic group clade but that the dicots do not they are paraphyletic. Nevertheless, the majority of dicot species do form a monophyletic group, called the eudicots or tricolpates. Of the remaining dicot species, most belong to a third major clade known as the magnoliids , containing about 9, species. The rest include a paraphyletic grouping of early branching taxa known collectively as the basal angiosperms , plus the families Ceratophyllaceae and Chloranthaceae. Monocot left and dicot seedlings There are eight groups of living angiosperms: The exact relationship between these eight groups is not yet clear, although there is agreement that the first three groups to diverge from the ancestral angiosperm were Amborellales , Nymphaeales , and Austrobaileyales. Among the remaining five groups core angiosperms , the relationship between the three broadest of these groups magnoliids, monocots, and eudicots remains unclear. Zeng and colleagues Fig. Some analyses make the magnoliids the first to diverge, others the monocots.

Chapter 5 : All families â€" The Plant List

The Plant List contains a working list of plants of the world. The species included are grouped into genera, families and 4 major groups. The species included are grouped into genera, families and 4 major groups.

Plants of the Mint Family also known as Labiatae If you pick a plant with a distinctly square stalk and simple, opposite leaves, then it is very likely a member of the Mint family. Be sure to smell it too, since many species of the family are loaded with aromatic volatile oils. The rich, spicy quality of these plants makes them useful in cooking, and nearly half the spices in your kitchen come from this one family, including basil, rosemary, lavender, marjoram, germander, thyme, savory, horehound, plus culinary sage but not sagebrush! For the beginning botanist, that is all you really need to remember: Worldwide there are about genera in the Mint Family representing some species. Approximately 50 genera are found in North America. Medicinally this family is rich in volatile oils, especially menthol, often used as the penetrating vapors in cough drops. These spicy oils are stimulating and warming, causing the body to open up and sweat; so most of these plants are listed as diaphoretic in herbal books. This property can help you break a fever. Using a diaphoretic herb can help raise a mild fever just high enough to "cook" a virus, thus "breaking" or ending the fever. Volatile oils are also highly lethal to microorganisms. On camping trips I often use aromatic Mints to help purify questionable water. You can safely sample any member of the Mint family. Some species like the Coleus, a house plant with red and green leaves, have no aroma at all, while a patch of the more potent Agastache may bring tears to your eyes just passing through. Note that there are a handful of other plants with square stems and opposite leaves, which may be confused with the Mints. Those plants are found in the Loosestrife, Verbena and Stinging Nettle families, but none of them smell minty. As you become proficient at identifying members of the Mint family by their square stalks, opposite leaves, and spicy aroma, you should also familiarize yourself with the flowers. Notice in the illustration that there are 5 sepals, all fused together so that only the tips are separate. The 5 petals are also fused together, but note how asymmetrical or "irregular" the flowers are, compared to the more symmetrical or "regular" Mustard flowers. Some Mint flowers are much more irregular than others, but if you study them closely you will see that they typically have 2 petal lobes up and 3 petal lobes down. Inside the flower there are 4 stamens, with one pair longer than the other. As you learn these patterns of the Mint family you will be able to recognize and use them anywhere in the world. Square stalks and opposite leaves, often aromatic. Please e-mail Thomas J. Elpel to report mistakes or to inquire about purchasing high resolution photos of these plants. Giant hyssop after the petals have fallen. Photographed near Kettle Falls, Washington.

Chapter 6 : Know Your Family â€" Your Plant Family

Getting to know plant families, Rutaceae Phebalium squamulosum - Harold Reid Reserve, Middle Cove, Sydney Another significant plant family in Australia and around Sydney is Rutaceae.

It may look harmless and pretty, but it can be fatal if ingested by a pet. The sap from the plant can also cause tissue damage in humans, so leave these plants found in Nova Scotia and Manitoba in the wild, and pick some dandelions instead. But since finding its way into British Columbia, Ontario, Quebec and parts of the Maritimes, Canadians need to be aware that its nectar can cause blisters and bad skin reactions. Shutterstock American Pokeweed Native to Quebec and Ontario, American pokeweed is a tall perennial up to three metres that produces berries enjoyed by some birds. And people can also eat them when cooked -- but steer clear of the roots leaves and stems, which can lead to vomiting, seizures and convulsions if ingested. Side effects if ingested include tremors, sweating, dizziness, stomach pain and diarrhea. This relative to parsley grows all around Canada and is one of the most poisonous plants in North America. So take a good look at its small white flowers and sharp-toothed leaves and hope you never have to deal with its effects. Shutterstock Black Nightshade This berry-producing plant can be found in much of southern Canada. Its unripe berries the green ones are the most dangerous, having claimed the lives of children in the past, while the ripe versions the black ones are likely to result in abdominal pain, vomiting or diarrhea. Shutterstock The Daffodil Pretty? But the daffodil, which can be found in B. Its above-ground parts have been known to irritate the flesh of those with sensitive skin, and its bulbs, which can be mistaken for onions, can poison people, pets or even livestock. The fruit on these creepers can be toxic if eaten. Convulsions, seizures and, in extreme cases, death. A word to the wise: Shutterstock Thunderwood Also known as poison sumac, this shrub has long branches with two leaves on each side every few inches. If you or a family member comes into contact the plant, the reaction will be similar to poison ivy as it shares the same nasty oils: That includes death camas, which grow in western Canadian provinces. These flowers sprout from the ground with tough, waxy leaves; look out for the small white flowers that blossom in the springtime.

Chapter 7 : Getting to know plant families, Rutaceae â€“ Photographs, plants and other pursuits

The third plant to review in the nettle family is clearweed (Pilea pumila) â€” also found in eastern North America. I have read that it is edible and people have foraged and eaten this plant â€” mistakenly thinking they were harvesting stinging nettle.

Correa alba at Bronte Sydney So, It is one to learn. You can see the oil glands in many of the photos on this page. Citrus aurantifolia, Limes â€” note the oild glands in the leaves Flowers are key to understanding and recognising plants. They are incredible organs, highly variable between families but often within families they are pretty consistent. If you can learn to recognise one flower in a family, you can recognise others. They contain functioning male stamens and female carpels parts. As well, in Rutaceae they are arranged in a whorl. Crowea saligna â€” common in Sydney bushland The flower parts from outside to inside are Sepals â€” the leaf like protective bits that cover the growing bud. Petals â€” the colourful bits sit above the sepals. In Rutaceae there are just about always 4 or 5 petals. These are radially symmetrical which is known as actinomorphic. In Rutaceae there are either the same amount as petals or double. So if I see 4, 8, 5 or 10 stamens in flowers that are perfectly symmetrical I start thinking thinking Rutaceae. Of course, there are exceptions. Carpels â€” the female part which contains the stigma which is adapted to accept only compatible pollen and is joined to the ovary by the style. The Correa alba photo above is the best for highlighting the carpel. Zieria smithii â€” note the oil glands Once you recognise the family then you can think about relationships between genera. How, for example, are Crowea, Boronia and Phebalium related to other Gondwanan genera like the South African genus Diosma pictured below or Calodendrum. Calodendrum a genus which means beautiful tree contains the gorgeous Cape Chestnut. The Melbourne Botanic Gardens are using Rainforest and Sclerophyllous Rutaceae species in Australia and New Caledonia also Gondwanan to uncover relationships and clues to geological histories. And of course, it can keep you thinking about the Citrus family which is thought to have its origins in China and has been cultivated for the past years. Eriostemon australasius, near Wooli, Yuraygir National Park.

Chapter 8 : Welcome to the PLANTS Database | USDA PLANTS

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Are you still thumbing through hundreds of pictures to identify wildflowers? Plants that are related to each other have similar characteristics for identification. Botanists have simply looked for patterns in plants and created groups called "families" according to those patterns. In the northern latitudes where there are hard freezes during winter, there are only about broad patterns representing tens of thousands of plant species. Once you identify the family your wild flower belongs to then you can still use your color picture book to identify the species, but now you only have to look through a few pictures to find a match, not hundreds. Learn how right here: Learning to Identify Plants by Families It will forever change the way you look at plants Grandma Josie always loved to walk her dogs down in the meadows, following cow trails through the thickets of willow and juniper along the creek. I loved to walk with her, and together we collected wild herbs for teas, such as yarrow, blue violets, peppermint, red clover and strawberry leaves. We drank herbal tea every day. When I was sick she gave me yarrow tea with honey in it, plus she buried cloves of garlic in cheese to help me get them down. Grandma kindled my love for plants. She taught me the plants she knew. Then I wanted to learn about all the rest. We collected unfamiliar flowers on our walks, and paged through books of color pictures to identify them. It was not a fast process, but I was a kid and had the luxury of time. If I could not find the name of a specimen in our books, then I brought it into the herbarium at the university and asked for help. They keyed out the plant and gave me the Latin name for it. At home I researched the name through all of my books to learn anything I could about the uses for that species. In this way I learned most of significant plants of southwest Montana before I was out of high school, or so I thought. I thought I "knew" most of the plants discussed in the class, but Robyn, the herbalist, used an approach I had never seen before. We happened across several members of the Rose family, and Robyn pointed out the patterns-- that the flowers had five petals and typically numerous stamens, plus each of them contained tannic acid and were useful as astringents to help tighten up tissues. An astringent herb, she told us, would help close a wound, tighten up inflammations, dry up digestive secretions an aid for diarrhea and about twenty other things. In a few short words she outlined the identification and uses for the majority of plants in this one family. Some of my books listed the family names of the plants, but never suggested how that information could be useful. I realized that while I knew many plants by name, I never actually stopped to look at any of them! This may sound alarming, but it is surprisingly easy to match a plant to a picture without studying it to count the flower parts or notice how they are positioned in relation to each other. From there I had to relearn all the plants in a whole new way. I set out to study the patterns among related species, learning to identify plants and their uses together as groups and families. My quest turned into a book Botany in a Day , to share with other people this "patterns method" of learning plants. I tell my students it is okay if they do not know the name of a single plant at the end of the walk, but I expect them to recognize family characteristics and be able to make logical guesses as to how those plants might be used. There are about families of plants across the frost-belt of the continent, with at least 30 additional families occurring farther south where it never freezes. Through this article I will introduce you to seven of the largest and easiest-to-recognize families of plants, which are found worldwide. In the next hour or two you will learn the basic patterns of identification and many of the uses for more than 45, species of plants worldwide. Take a little bit of time to practice these patterns where ever you go-- in gardens or weed patches, botanical gardens, the nursery, the florist, or the wild. When you learn to instantly recognize these and other family patterns, the world of plants will never look quite the same again. The following pages are meant to be read in order, as new ideas are introduced on each page to prepare you for the following page. Some of these pages include lots of pictures and may take a while to load.

Chapter 9 : 3 Easy Ways to Identify Poison Sumac (with Pictures)

Lamiaceae Plants of the Mint Family(also known as Labiatae). If you pick a plant with a distinctly square stalk and simple, opposite leaves, then it is very likely a member of the Mint family.

Thanks to historical documents and archeological findings, we can decipher when and how cannabis was introduced to specific areas of the world and for what purpose. When it comes to the evolutionary origins of the plant, however, things become murkier. Currently, we have no fossil record of the earliest cannabis plants. This lack of concrete evidence has forced scientists and researchers to use deductive reasoning and knowledge of related plant families to form a viable theory as to its true origins. When determining the likely evolutionary origins of cannabis, our first order of business is understanding its ecological requirements, such as the ideal temperature, soil conditions, and amounts of sunlight and moisture needed for it to thrive. We know that cannabis plants are heliotropic sun-loving and thermophilic warmth-loving. Although they are tolerant of shaded environments, they produce far less seed and pollen when deprived of direct sunlight. This means we can safely assume that cannabis evolved in an open environment lacking concentrations of taller plant species. We also know that cannabis responds to changes in photoperiod, exhibiting vigorous vegetative growth during the longer days of spring and summer, and not flowering until the nightly period of darkness reaches 10 to 12 hours. Additionally, cannabis is not tolerant of cold conditions, but can survive extreme heat with sufficient water and nutrients. While cannabis is highly adaptable to various levels of moisture, it does not produce well in drought conditions. Conversely, cannabis is very susceptible to fungi and other pathogens when excess moisture is present in the root zone, so it requires well-drained soil to thrive. When we take all these factors into consideration, we get a good idea of the type of environment the cannabis plant evolved in: When Did Cannabis Evolve? Given the lack of fossil evidence, we must examine our knowledge of plants that are closely related. Even here, we find some controversy: In , Austrian botanist Stephan Endlicher gave cannabis and its sister plant, humulus, their own family, Cannabaceae, under the no longer existing order Urticales. Other botanists later placed cannabis in the Urticaceae nettle family then Moraceae fig family , before a molecular phylogenetic study determined that the Cannabaceae was a distinct family that also included those species classified under the genus Celtis formerly known as the Celtidaceae, or hackberry family. A article exploring the relationship between parasites and plants by Drs. John McPartland and Judith Nicholson for the New Zealand Journal of Botany noted that cannabis hosts seven parasites that are also found on plants in the Urticaceae and none that are hosted by the Moraceae. The earliest convincing fossil records indicate that Urticaceae emerged during the Oligocene epoch, which began about 34 million years ago. Humulus lupulus hops , the closest relative of the cannabis plant, was fully speciated by 6. Therefore, the cannabis plant evolved sometime between 34 million years ago and 6. Where Did Cannabis Originate? Next we look to historical and archeological evidence of the earliest uses of cannabis by humans to provide clues as where cannabis originated. A Neolithic site dating back 12, years recently uncovered on the island of Taiwan produced pottery shards with impressions of hemp rope on them. In , the year-old tomb of a mummified shaman was discovered in northwest Xinjiang, China, and was found to contain fragments of cannabis leaves and seeds. Cannabis use is well-documented in the sacred Hindu texts known as the Atharva Veda , which are thought to have been compiled years BCE. There is evidence that the ancient Yamnaya culture of what is now Northern Europe used cannabis both for cordage and for its psychoactive properties, perhaps as early as the third millennia BCE. While there is some evidence that hemp was utilized by ancient Egyptians as early as BCE , cannabis was introduced to the rest of Africa at a much later date. Cannabis was not present in the New World until it was introduced by European colonists. All of these findings indicate that cannabis is indigenous to the Eurasian land mass. Furthermore, the early development of two distinct varieties of cannabis, the low THC hemp type in Europe and the more psychoactive drug variety in southern and eastern Asia, suggests that the plant first emerged somewhere in Central Asia and diverged from there. The natural range of cannabis would have changed repeatedly since it first evolved due to climatic fluctuation and encroaching glaciers, so pinpointing the exact area in which it evolved is difficult. Some theories posit that the upland valleys of the

Tian Shan or Altai Mountains, with their frequent landslides and rich alluvial soil, could have been the specific locus of origin. Given what we know about the age and ecological requirements of cannabis, along with the earliest known distribution patterns of the plant, Central Asia certainly offers the most plausible, if not overly specific, area of origin. From there it would have been spread by early humans, who possibly first encountered cannabis as early as , ago after they migrated out of Africa. The rest, as they say, is history.