

Growing Castor Bean Plant



This picture book is about the castor bean plant that grows easily and commonly around the world. The Latin species name *communis* speaks to sociability and relationships. I am fascinated and alarmed by the extremely polarized differences in perceptions and reactions to this specific plant. Many countries within our sophisticated and wealthy military industrial complex spend many millions on ricin bioterrorism threat deterrence and management. Public education has convinced many including me that this plant is incredibly poisonous and deadly. In stark contrast, there are cultures around the world growing this valuable crop plant for seed oil.

Castor bean plant is a clear example of how our cultural background and education define whether a plant is a noxious threat or an agricultural staple. A label as a poisonous plant can trigger strong feelings of fear and anxiety. In recent years I have learned from cultures practicing ancestral traditions that plants are our allies instead of enemies. The word poison can alarm us to such a degree that we lose our sense of reason and stop probing and exploring. My hope is that you will be inspired and curious to research in depth the properties and characteristics of so-called poisonous plants.

This spring after reviewing old photo albums, I decided to grow castor bean plant. I plan to harvest castor beans for making cosmetic oil. My inspiration comes from Haitian guide Estela who I met in March 2019 in a southern frontier region in the Dominican Republic.



In this iPhone image, I am observing Estela gathering castor bean seeds while we hike in the countryside in the border region between Haiti and the Dominican Republic. I recall asking Estela in English what she used the seeds for. She replied that they were for a beauty product that she makes herself. I stated that these seeds have a deadly toxin called ricin and asked if she was aware of that fact. She was puzzled and sought a translation into Spanish and/or Creole from trip leader, Professor Sebastian Velez from Worcester State University (WSU). I was assured by Professor Velez that the seeds are safe and commonly used here. Estela and the professor were confused by my question. I concluded that we have different educational and cultural backgrounds on botany and dropped the conversation.

While on a week-long tour with Estela, I used a lot of sunscreen and moisturizer products that I had brought with me from the USA. I understood firsthand the need for cosmetic skin oil on this Caribbean Island. Much of the terrain is hot and dry. Along with the strong sun, skin needs protection and hydration. Applying castor oil retains skin moisture. Castor oil has a Sun Protection Factor (SPF) rating of 5.7 offering some protection from sunburn according to a 2010 journal article "In vitro sun protection factor determination of herbal oils used in cosmetics.

In the tropics, castor bean plant grows quickly to mature as a small tree. The leafy tree in the image to the right of Estela has been cut to stimulate side branch growth. Stems within arm reach are stripped of seeds. This tree is in an illegal slash and burn garden in Dominican Republic government owned forest land. Rural dwellers grow food in forests by first harvesting trees for charcoal for household cooking. Following complete tree removal, crops such as corn, squash, melons, and herbs are planted. This type of destructive farming in the Caribbean produces two years of crops followed by a desolate landscape of naked rocks and arid depleted soil. Professor Velez told us that the vibrant forest ecosystem becomes very damaged and cannot recover.



The WSU trip provided me with firsthand observations of rural poverty in the Dominican Republic and Haiti. I understand and sympathize knowing that illegal gardens in Dominican Republic government park lands provide much needed charcoal, food crops, and medicinal herbs for populations with very few resources. Before Estela became a tour guide, she cultivated gardens like this to nourish her eight children.

Castor plant has the Latin name Ricinus communis. A search of the genus name Ricinus on online-latin-dictionary.com yields three meanings as seen in this screen capture.

ricinus
masculine noun II declension

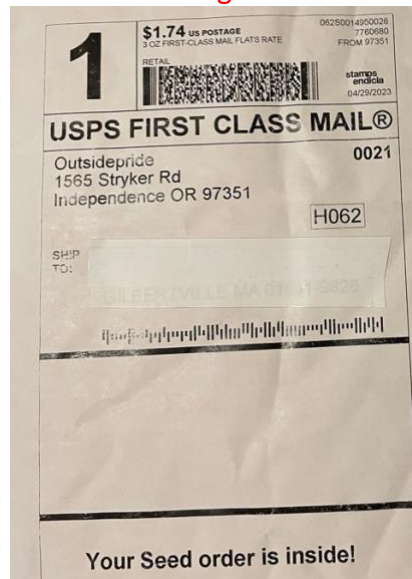
[View the declension of this word](#)

- 1 large kind of vermin that infests sheep, dogs, etc., a tick, tike
- 2 plant, called also [cici] and [croton]
- 3 the germ of the mulberry

The seeds look like the many engorged dog ticks I used to remove often from my Lassie-like long haired collie before the Frontline® and tick repellent shampoo era.



The above image shows 50 Castor Bean seeds purchased for \$6.49 from the garden vendor Outsidepride. Upon request, my helpful son used his Amazon Prime account for free and fast shipping. My son expressed wariness of my nefarious schemes and fears that his name might now be in a ricin toxin government database.



On the seed arrival day, I planted some in a tray with premoistened germination mix soil inside my warm house. All seeds germinated six days later. I was thrilled and saw that the positive Amazon vendor reviews were genuine. This is an ornamental variety called Lumina valued for the shiny copper-red decorative foliage and short and bushy stature. These plants will make a bold presence in my flower garden. They are fast growing and need little care.

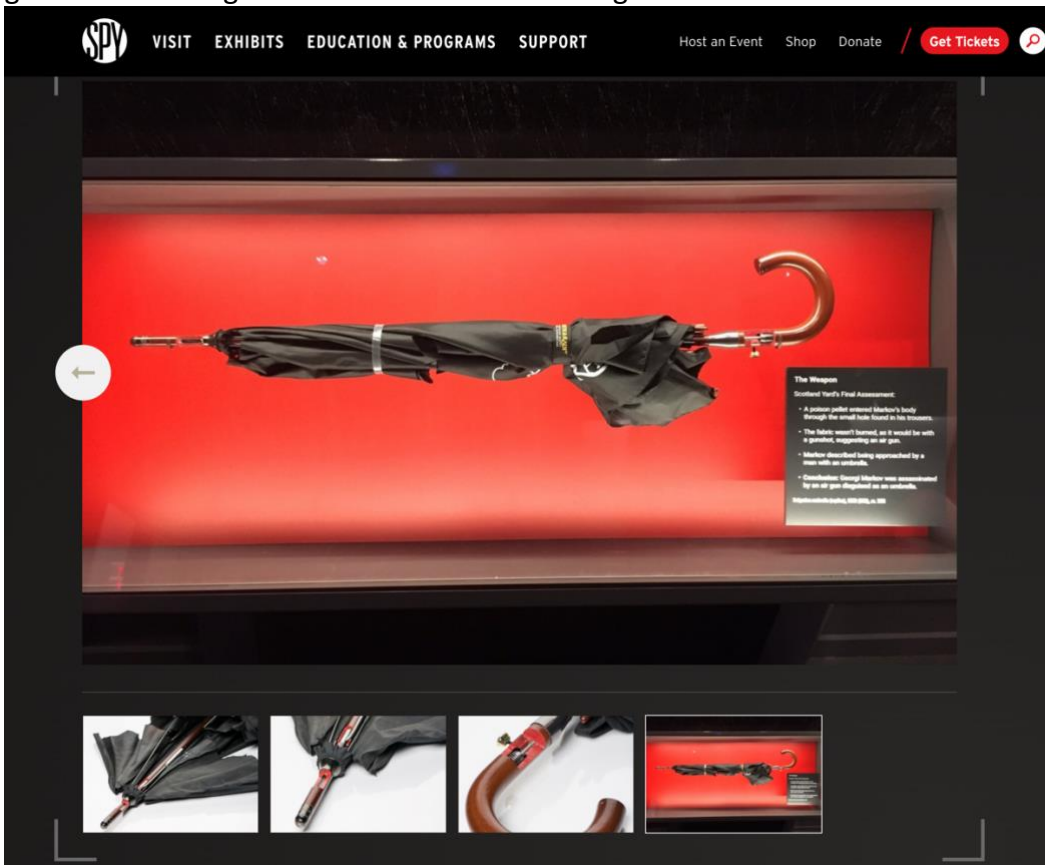


Above image shows castor bean seedlings 13 days after sowing.

Addressing my son's concern, I have no intention of purifying toxin from my plants. However, I wanted to learn and read at selectagents.gov, that ricin is on the United States Department of Health and Human Services (HHS) Select Agents and Toxins list. Besides ricin, HHS lists 35 others including Botulinum neurotoxins, Ebola virus, SARS-CoV/SARS-CoV-2 chimeric viruses, and Staphylococcal enterotoxins.

The word ricin is mentioned 168 times in the text of a 1997 book titled, "Medical Aspects of Chemical and Biological Warfare. The preface states, "This volume was prepared for military medical educational use. The focus of the information is to foster discussion that may form the basis of doctrine and policy." The book cites a 1918 technical report: "These experiments show two important points: (1) easily prepared preparations of ricin can be made to adhere to shrapnel bullets, (2) there is no loss in toxicity of firing and even with the crudest method of coating the bullets, not a very considerable loss of the material itself." This statement resulted in widespread media coverage. "The first conviction under the Biological Weapons Anti-Terrorism Act of 1989 occurred in 1995, when a U.S. citizen was sentenced to 33 months in prison for possession of 0.7g of ricin." I still remember this remarkable news story from 28 years ago.

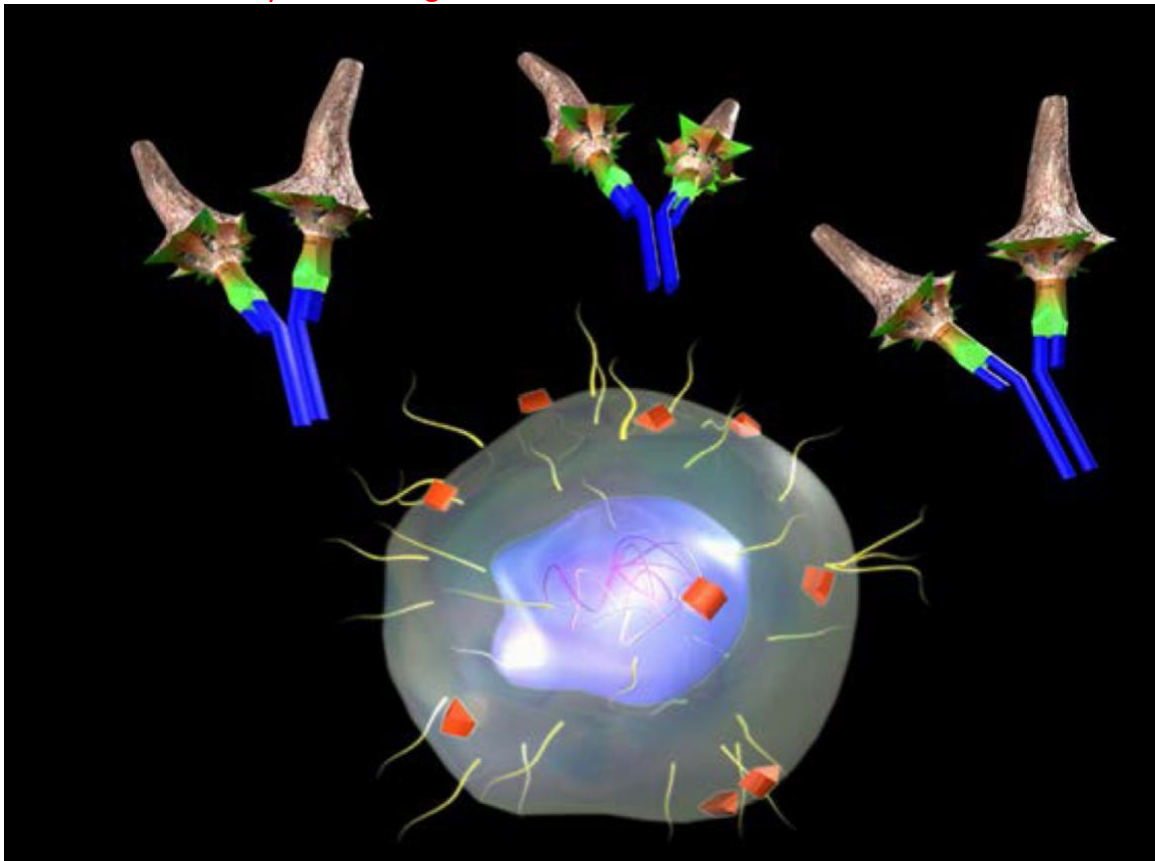
A projectile bullet like lethal delivery system for ricin is described with diagrams in the text. A platinum-iridium pellet, the size of a pin head, has a small cavity for ricin. In 1978, a gun concealed within an umbrella, delivered the ricin containing pellet through clothing into the leg of a Bulgarian exile Georgi Markov while he was waiting for a bus. Markov died a few days later.



On my bucket list is to visit The International Spy Museum and view this ricin weapon.

According to the military text, ricin represents an ideal biological warfare agent being that it is widely available in nature and the process of isolating the toxin is straightforward. A scenario is described where a small sugar like packet of ricin could poison 150 pounds of meat. The text states, “The threat is real. And the knowledge required is not esoteric: To engage in bioterrorism requires only the type of knowledge that Kateuas found in his herbals—that is, a sophisticated understanding of the properties of various edible plants, medicinal herbs, toxins and venoms, and infectious and pharmaceutical agents.” Kateuas, also known as Crateuas, was a Greek physician, living 111 to 64 BCE, who wrote influential manuscripts on the medicinal properties of plants. In summary, ricin is viewed as a major international threat to homeland security.

In preparation for a bioterrorism crisis, Canada and the USA have invested in many years of expensive research and development with designing and testing drugs for treating ricin victims. Some drugs involve the use of precision engineered antibodies that bind to and neutralize the toxin within the body. In the image below ricin is shown as the brown thorn-like structure.



The image, from a 2015 poster published by the Defence Research and Development Canada (DRDC), shows three Y-shaped antibodies each binding a ricin molecule. The binding prevents the toxin from interfering with a cell’s metabolic protein processes. These antibodies could be administered intravenously emergency rooms and successfully treat ricin poisoned patients quickly and effectively. For snakebites, similar treatments have been used for decades and are known as antivenoms. This medical intervention is incredibly costly. From a 2022 North Carolina news article where ER treatment for snake bites is not uncommon, the total charge for the antivenom administration can range from \$76,000 to \$115,000.

As a responsible, civic minded grandmother, I am obligated to share the CDC's frightening and scary public health information concerning ricin poisoning potential from castor bean seeds.

[Español](#) | [Other Languages](#)



The National Institute for Occupational Safety and Health (NIOSH)

[The National Institute for Occupational Safety and Health \(NIOSH\) Home](#)



Ricin: Biotoxin

CAS #:

9009-86-3

Common Names:

- Ricine
- Ricins

RTECS #: VJ2625000

UN #: 3462 (Guide 153)

Agent Characteristics

APPEARANCE ∨

White powder. Can be prepared in liquid or crystalline form.

DESCRIPTION ∧

Ricin is an extremely toxic plant protein derived from the seeds of the castor bean plant (*Ricinus communis*). It is easily extracted from the castor bean meal that remains as a by-product of castor oil production. Ricin causes toxicity by inhibiting the formation (synthesis) of proteins in the cells of the exposed individual. Ricin may cause severe allergic reactions. Exposure to even a small amount of ricin may be fatal.

METHODS OF DISSEMINATION ∧

- Indoor Air: Ricin can be released into indoor air as fine particles (aerosol).
- Water: Ricin can be used to contaminate water.
- Food: Ricin can be used to contaminate food.
- Outdoor Air: Ricin can be released into outdoor air as fine particles (aerosol).
- Agricultural: If ricin is released into the air as fine particles (aerosol), it has the potential to contaminate agricultural products.

My conversation with Estela from Haiti four years ago was insightful and powerful.

Lessons to share here:

1. **Do not be afraid of plants.**
2. **Get to know plants by careful observation and by growing and using them.**
3. **Learn about traditional plant uses in cultures around the world.**
4. **Be consciously aware of your intent. Are you being malicious or caregiving?**
5. **Is there a need to assassinate political foe or improve your hair and skin health?**

Many of us in the USA live in a culture of fear and have abundant resources. We are stressed and worry a lot. In general, Haitians survive with very little. My trip experience was seeing many people of all ages filled with joy and happiness with few material possessions. When I reflect on my conversation with Estela I see her as the wise and resourceful woman and me as the timid and entitled fool.

At the International Herbs Symposium at Wheaton College in June, I attended an interesting class taught by 25-year-old Herbalist Brandon Ruiz with Puerto Rican heritage. His social media posts are quite compelling such as his comment on castor bean plant.



Atabey Choreto Medicinals

May 14, 2019 · 🌐



Castor/Higuereta/Palma Christi/Maskreti/Eranda among many other names. This medicine comes from Africa and is now all over the world.

Higuereta is one of those plants the world likes to gawk at and say "Poison!" "So dangerous!" Etc etc, think literally any plant humans can't eat. Google castor plant and find the magical healing properties of its oil, and then an article on how many seeds it takes to kill someone. We like to live a life centered around the world serving us so it's no wonder when something has potential to harm we like to inflate the possibilities and create a false narrative. Poor datura, foxglove, belladonna, carrasco get this all too often.

Are we not poison ourselves? As castor can heal pains, external wounds and much more, we can heal ourselves, others, our environment and beyond through our power. And as castor can take life so can we, if not on an even bigger scale if we're talking literally.

So maybe it's something about poisonous plants that remind us of ourselves, of our potential to destroy, and in denial and fear, we denounce and run from these allies just like we run from the confrontations necessary to face ourselves and see our own poisons.

Maybe.



Well worth watching a six-minute YouTube video, “HOME MADE CASTOR OIL prepared by GRANDMA”. This is a fascinating and detailed view of a centuries old traditional method for preparing a body oil for Hindu festival events such as Diwali. The Diwali festival represents a spiritual victory of light over darkness, good over evil, and knowledge over ignorance. <https://www.youtube.com/watch?v=5vXTGVM4rlo>

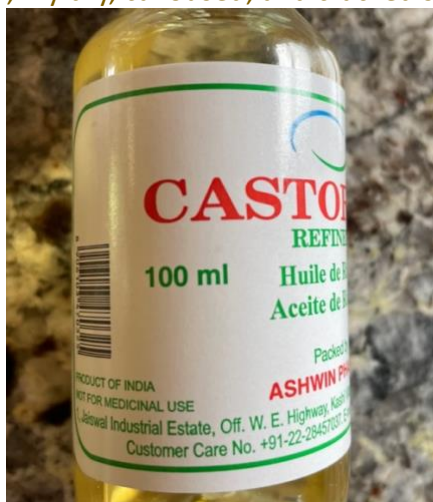


Along with planting seeds, I bought castor oil products for my hair and skin care.



The shampoo is thick and creamy. I use it after swimming in a salt chlorinated pool. The shampoo does not produce many suds when rubbed into my scalp. I notice that my hair is soft and shiny. There is less tangling and flyaway annoyance and my hair look neater.

The Haitian sourced oil has a charcoal smell suggesting a small scale non-industrial type of preparation. The oil feels quite viscous and sticky. I am reluctant to apply this oil on sensitive skin such as my face. However, my dry, calloused, and cracked soles of my feet beg for this oil.



Refined castor oil from Shiva's Super Bazaar in Acton, MA for \$1.99 has the same thick consistency of the Haitian oil and is odorless. The label states the following:
"Product description: Ashwin Castor Oil is an Indian product which contains oil extracted from pure and naturally grown Castor Seeds. It is one of the Major Castor Oil Suppliers of the world due to its pure Castor Oil and low acid value and high iodine value. It is colorless, odorless and tasteless Castor Oil. Benefits of Ashwin Castor Oil: Skin health: Castor Oil is a very effective oil for moisturization and nourishment of skin and hairs. Protection against infection: It is an antimicrobial oil, which provides protection against infections. It treats fungal infections and small cuts or scratches. With this, it has also pain-relieving properties. Decreasing stagnation:

According to science and old Ayurveda, Castor Oil is considered as very effective in decreasing the stagnation of excess Bodily fluids. Remedy for Constipation: Castor Oil treats constipation.”

Anyang Best Complete Machinery Engineering Co., Ltd has a fascinating website at abcmach.com/oil-pressing/castor-oil-manufacturing-plant.html titled ULTIMATE GUIDE TO CASTOR OIL MANUFACTURING PLANT

⚙️ **Castor Oil Refinery Machine**



Worldwide castor bean oil production from abcmach.com:

Strong export demand internationally lifted castor future and made as one of the high demand cash crops in recent years. According to the statistics, there are currently 3 million hectares of land for planting castor in the world, with 1.5 million tons of castor nuts harvested annually. Castor plant is native to Egypt, Ethiopia and India. It is one of the world's TOP 10 oil crops. It is therophyte in variable zone and perennial in torrid zone, featured of well-adapted, drought-resistant and easy planting techniques. The major producers of castor seeds are India, Brazil, China, Thailand, the Philippines, Pakistan and the former Soviet Union. The production of these countries account for more than 96.2% of total global production.

Country	Production (Tonnes)
India	830000
China	210000
Brazil	91510
Ethiopia	15000
Paraguay	12000
Thailand	11052
Vietnam	5000
South Africa	4900
Philippines	4500
Angola	3500
World	1209756

Castor bean is high oil content oilseed. It has a worldwide demand that is rising 3%~5% per annum. The major castor importing markets are the European Union, the United States, Japan, Thailand and China.

ABOUT CASTOR SEED: The castor seed is obtained from castor plantations but can also be harvested from wild plants such as 'Ricinus communis'. Castor plant is easy to grow and is resistant to drought, which makes it an ideal crop for the extensive semi-arid regions globally. Castor oil is an all purpose oil which is extracted from the seeds of castor plant. It has various uses including manufacturing of brake fluids, adhesives, paints and pigments. It is also used for making soaps, inks, washing powders and textiles. It is also used for flavoring food in the food industry. Castor oil is extracted from castor oil seeds by either mechanical pressing or solvent extraction.

[Comment on abcmach.com about castor bean toxin:](#)


Application of Castor Oil Cake in Feed Processing Industry

The oil cake or meal is the main by-product of vegetable seed oil production. Castor seed oil cake contain small content of poisonous substance such as ricinine, ricin and idiotoxin CB-1A. So detoxification is needed before apply these oil cakes in feed production. Detoxified castor seed oil cake can also be used in a variety of feed formulations. In duck, pig and fish feed production, the dosage of castor oil cakes can be 15%~20%, and the feeding effect is very good.

[abcmach.com Q&A reply mentions biting seeds to access oil quality:](#)

 I own a castor oil plant in India. I need your help!

How to identify the quality of castor bean easily when purchasing castor seeds? And what do I need to pay attention to in seed storage?

 Look at the appearance: good castor seeds are featured of full, smooth and shiny. Bite the seeds, you can hear crispy sound and the kernel is white. Low quality seeds are generally dark, yellow or have spot, some even smells like rotten oil. Grasp tightly, if there is no cracking sound, it indicates that the castor bean is full with no empty grain.

Searching with Google AI Bots produces hits with strong confirmation bias. If I believe that castor bean plant is very toxic, results reinforce this thinking. If I search the health benefits of castor oil, one will retrieve Google hits with hardly any warnings of precautions.

On July 2nd I was excited to see castor bean plants in two plots at the Montreal Botanical Garden. One was the Garden for Useful Plants featuring oil crops. The second was the Toxic Plants Garden. As context, castor bean plant was showcased with rhubarb, potato, privet, pokeweed, lily of the valley, nettle, poison ivy, poison sumac, and poison hemlock.

Rhubarbe des jardins
Garden rhubarb

Limbe de la feuille
La rhubarbe est cultivée pour le pétiole de sa feuille que l'on consomme pour son goût acidulé. Par contre, le limbe (partie large de la feuille), cru ou cuit, a déjà provoqué des intoxications graves lorsque consommé en quantité importante.
La plante contient des oxalates et des anthraquinones qui seraient responsables des décès rapportés dans le passé. L'ingestion du limbe engendre une sensation de brûlure dans la bouche et dans la gorge et peut causer des troubles gastro-intestinaux sévères.
Nord-est de l'Asie

Leaf blade
Rhubarb is widely cultivated for its edible petioles (leaf stalks), which are known for their acidic taste. However, severe cases of poisoning have been reported when large quantities of raw or cooked leaf blades (the large part of the leaves) were ingested.
The plant contains oxalates and anthraquinones, which are thought to be responsible for several deaths in the past. Eating the leaf blades causes a burning sensation in the mouth and throat, and can lead to severe gastrointestinal problems.
Northeast Asia

Jardin des plantes toxiques
Toxic Plants Garden

Pomme de terre
Potato

Toutes les parties vertes de la plante
La pomme de terre contient des alcaloïdes toxiques en concentration suffisamment élevée dans les feuilles, les tiges, les baies et les fleurs pour causer des empoisonnements.
Même les tubercules peuvent être toxiques. L'exposition à la lumière ou un mauvais entreposage peuvent provoquer l'augmentation des concentrations d'alcaloïdes dans la peau et la chair des tubercules. Des tubercules immatures, verts, altérés ou ayant germé ne devraient pas être consommés, car les alcaloïdes toxiques ne sont pas éliminés par la cuisson.
Amérique du Sud

All green parts of the plant
Potatoes actually contain toxic alkaloids, which are found in high concentrations in the leaves, stems, fruit and flowers. Even the tubers can be poisonous under some conditions. Exposure to sunlight or improper storage can increase the concentration of alkaloids in the skin and flesh of the tubers. And since the toxic alkaloids are not eliminated by cooking, immature, green, spoiled or sprouted tubers should never be eaten.
South America

Jardin des plantes toxiques
Toxic Plants Garden

Ricinus communis • Euphorbiaceae
Ricin
Castor bean plant

Plante entière, particulièrement les graines
Le ricin est employé comme annuelle ornementale et cultivé pour l'huile qui est extraite de ses graines. Les graines marbrées et luisantes contiennent de la ricine, une substance excessivement toxique.
L'ingestion des graines peut provoquer des intoxications graves si elles sont mastiquées. L'ingestion d'une à trois graines seulement peut être mortelle pour un enfant. Les feuilles sont également toxiques et peuvent causer des dermatites.
Nord-est de l'Afrique tropicale

Entire plant, mainly the seeds
Castor bean is grown as an ornamental annual and also commercially for the oil extracted from its seeds. The shiny, marbled seeds contain ricin, an extremely toxic substance.
The seeds can cause acute poisoning if chewed. Eating just one to three seeds can be fatal to a child. The leaves are also toxic and may cause dermatitis.
Northeastern tropical Africa

Jardin des plantes toxiques
Toxic Plants Garden

Conium maculatum • Apiaceae
Ciguë maculée
Poison-hemlock

Toute la plante
Toutes les parties de cette plante bisannuelle renferment des alcaloïdes neurotoxiques. Les jeunes plants peuvent être confondus avec la carotte, le céleri, le persil et le cerfeuil, et les graines avec l'anis ou le carvi commun.
Les symptômes d'intoxication apparaissent généralement quelques heures après l'ingestion : vomissements, manque de coordination, convulsions, rythme cardiaque irrégulier et paralysie respiratoire. Cette plante est peu fréquente au Québec.
Europe, nord de l'Afrique et centre de l'Asie
Naturalisée en Amérique du Nord

Entire plant
Every part of this biennial plant contains neurotoxic alkaloids. The young plants can be mistaken for carrots, celery, parsley or chervil, and the seeds for anise or caraway.
Symptoms of poisoning generally appear a few hours after ingestion and include vomiting, lack of coordination, convulsions, irregular heart rate and respiratory paralysis. This plant is not commonly found in Québec.
Europe, northern Africa and central Asia
Naturalized in North America

Jardin des plantes toxiques
Toxic Plants Garden

The Montreal Botanical Garden teaches us that some food plants have poisonous properties such as potatoes exposed to light for long period. Plants such like poison hemlock are dangerous as mimics of edible plants. Frankly, after years of research my fear level for poison hemlock remains high. Only with absolute certainty of identification, will I gather chervil and anise seeds and harvest chervil and Queen Anne's Lace flowers for eating. Consuming even a small amount of poison-hemlock is deadly. Compared to castor bean plant, I am very cautious with avoiding skin contact with poison ivy and poison sumac. A skin rash from poison sumac can send me to urgent care. The Montreal Botanical Garden display shows castor bean plant as an unremarkable member of a group of several poisonous plants.

Understanding the nuances of the poisonous properties of castor bean plant can ease anxiety and encourage admiration for its beauty while growing from seed to a mature plant.



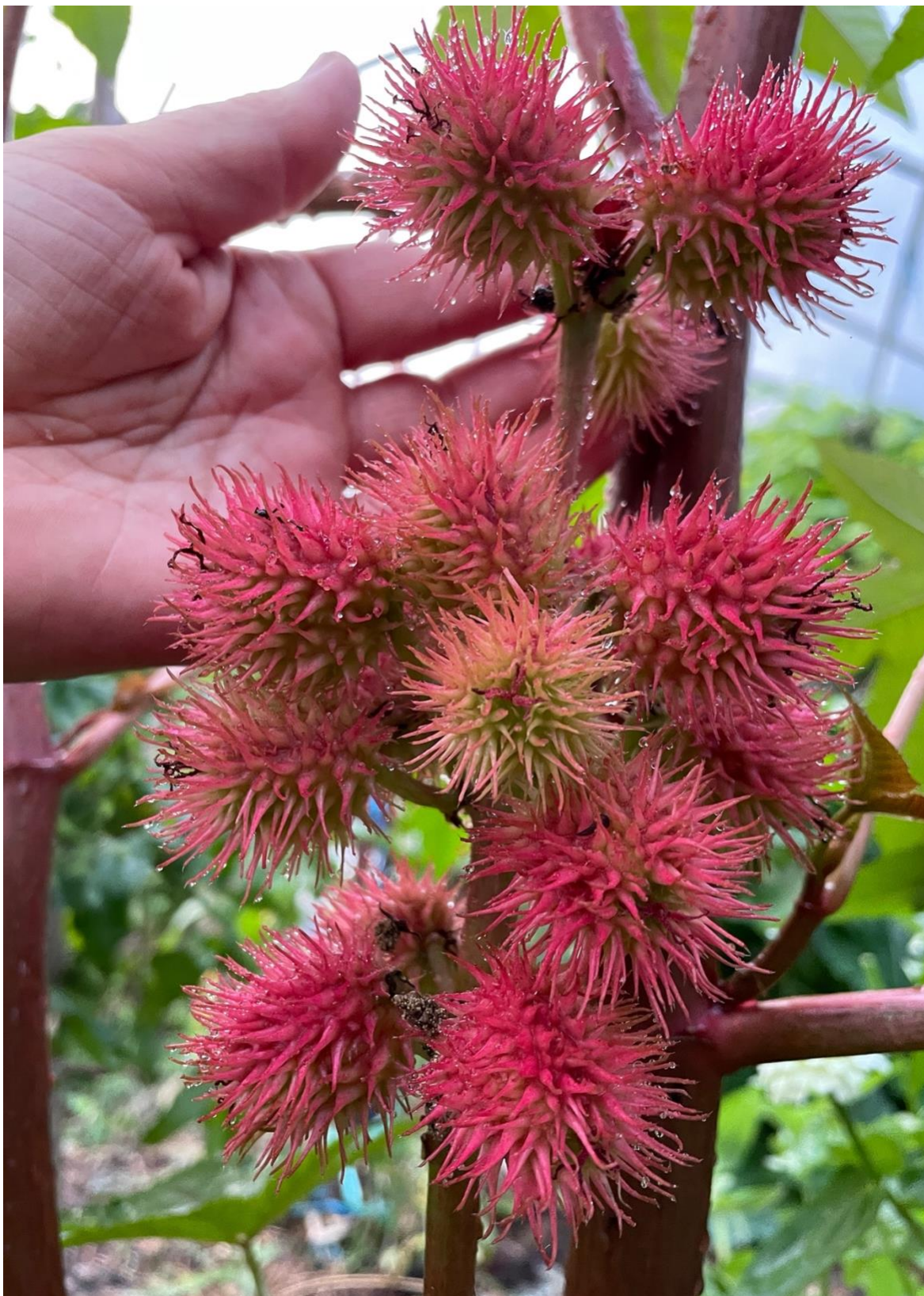
Enchanting flowers June 24th, day 54 after sowing
My son remarks that this is cool and is less annoyed with my plea to use his Amazon account for the seed purchase.



Very active content carpenter ant community on *R. communis*



Beautiful castor bean seeds developing day 66 after sowing



Husked castor bean seeds day 77 after sowing

I fantasize Estela visiting me in Hardwick this fall. I think she would be thrilled to see my healthy and productive castor bean plants. Together we could harvest seeds. Estela can use charcoal that my son has made from our woodlands to show me how to make cosmetic oil from castor bean seeds.

I hope that you as a reader will pause when you see or hear mention of a poisonous plant. Do not be afraid to ask questions and do your own research. If castor bean plant still frightens you after reading this picture book, perhaps you can simply enjoy its photogenic beauty on these pages.

