

**THE
G A R D E N
OF
The Net-work
of the Year, 2020.**

**CLINICAL RESEARCH SEEDS
Ephedra sinica
Nicotiana tabacum**

Thanks for agreeing to join in this year of shared home grown medicine; remote growing towards a communal apothecary garden at The White House in Dagenham, or remotely wherever you are. Through the summer and autumn there will be opportunities to make some medicinal preparations and I very much hope we can find ways to come together to enjoy the medicinal plants and remedies we have grown, either in person at the house, or remotely.

For this first letter, I enclose seeds chosen for their place in the current world of clinical research trials.

Please don't get too disheartened if they don't work, or if they grow in their own time, it's a learning experiment for me too - I will also send easy to grow seeds for some immediate gratification, but these small fussy ones need to get germinated soon and some may take years. I enclose original packaging so you can see the guidelines, and any interesting information. Seeds can be planted wherever you have space- on the kitchen countertop in some soil in an old food container, or in the soil in a garden if you have access to one, or sent to a friend.

Lastly, but importantly, if you have any medicinal plants in particular that interest you, any expertise or ideas please do let me know so we can include it in our garden, and as our seedlings get further along and become plants I'll be back in contact with ways we can share decoctions, teas, recipes, remedies, balms, soaps, syrups and pills according to ancient and modern apothecary and pharmacy recipes.

The information I enclose is an edited selection of my research folders to contextualise the plants as they grow.

Sending my very best wishes,

Rachel Pimm

THE
G A R D E N
OF
C Y R U S.

OR,
The Quincunciall, Lozenge,
or Net-work Plantations
of the Ancients, Artificially
Naturally, Myftically
Considered.

BY
Thomas Brown D. of Physick

Printed in the Year, 1658.

Sent by Rachel Pimm, currently at: 1 The Dovecote, Pitsford, Northamptonshire, NN6 9SB

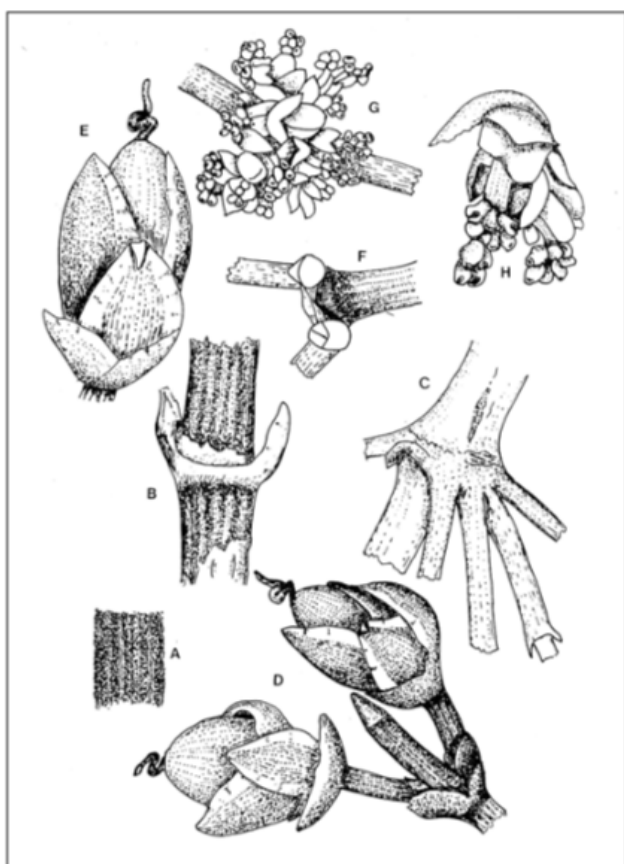
The image for this letterhead is adapted from the illuminated frontispiece of *The Garden of Cyrus*, a 1658 book by Thomas Browne, on ancient and sacred geometries, and patterns of planting networks.

Ephedra sinica is a plant amphetamine which has been used for millennia, though since the 1880s and into the 70s these have been synthesised to make amphetamines including crystal meth, LSD and MDMA, which I learnt about from a visit to the Royal College of Physicians Garden led by Dr Henry Oakley who helped establish the planting of the Garden. Though I don't know much about the chemistry that affects the body, ephedrine as a substance is something I'm really keen to learn more about.

It is also sold dried as a herbal supplement, especially common in Traditional Chinese Medicine, good for the lungs, and has a 5000 year or longer presence in chinese medicine as a stimulant found in ma huang, not dissimilar to the use of digitalis from the foxglove.

Seed packet/ growing notes below

Image from Botanic Gardens Edinburgh



Hardy Shrub

Sow indoors or under glass: **Feb-May**

Sow outdoors: **May-Jun**

Height: **45cm** Spread: **20cm**

Sow under glass in spring, sow directly after last frost. Indoors, surface sow onto a moist, well-drained, sandy compost. Place in a propagator. Ideal temp. 22-25°C. Germination takes 1-2 weeks approx. Transplant seedlings when large enough to handle to individual pots and grow on. Acclimatise and plant out after danger of frost has passed. Directly, simply rake seed into prepared soil and keep moist, but not wet until germination occurs.

EARLY HISTORY

Ephedra (*ma-huang*) is a Chinese shrub that has been known for at least 5,000 years. The Chinese emperor Shen Nung, around 2,700 BC, catalogued 365 herbs in terms of their bitterness, the main groups being strong, medium and mild. *Ma-huang*, whose literal translation means 'hemp yellow', was placed in the medium group.

In the latter part of the sixteenth century, Li Shih-Chen produced a famous dispensatory, the *Pents'ao Kang Mu*, in which the shrub is clearly described.^{1,2} *Ephedra* was said to be useful as a circulatory stimulant, a diaphoretic and an antipyretic. It was also believed to be useful in the treatment of cough and as a result the stem became an important ingredient of many antitussive preparations. At the end of the sixteenth century the dried stems were exported to Japan, a trade which was to play an important part in stimulating the interest of Japanese physicians and chemists in the plant some three hundred years later.

Ephedrine and methamphetamine

In the past two decades, a final twist has emerged in the long saga of *Ephedra* and ephedrine. The drug has recently been used in the illicit manufacture of the powerful stimulant methamphetamine (crystal meth).²⁵ Methamphetamine can be synthesised in a simple one-step procedure by a chemical reduction of ephedrine or pseudoephedrine (Figure 3G and 3H). The ingredients are widely available in the Americas, over the counter, as imports of the *Ephedra* plant from China and India. This has led to the growth of two sorts of laboratory in Canada, Mexico and the US: small 'mom and pop' laboratories and large criminal 'super labs', often located in Mexico and the west coast of the US.

These factors have led to an 'epidemic' of addiction to crystal meth in certain regions of the US and Canada, which has resulted in many cases of acute psychosis together with extensive damage to the nervous system. In addition, large numbers of people have been admitted to hospital with burns sustained in making crystal meth in a confined space.²⁵

Unlike cocaine, methamphetamine does not have to be transported long distances from Bolivia and Columbia



Nicotiana tabacum is, as it sounds, tobacco. It's both ancient and super new. It is a regulated substance, taxed by HMRC if you intend to grow it for profit and even for personal quantities replacing buying cigarettes to smoke, on any real scale. I'm mainly interested, though because nicotine plants were the earliest GM plant models (c.1983) for research in biochemistry and molecular biology- they are used to grow hybrid genetics for vaccines. PubMed research says that there are over 3500 papers published in this field to develop vaccines for SARS, malaria and more.

It's also grown decoratively, but its long link to medicine past and present makes it the most potentially interesting. My extended family have also farmed tobacco. While I'm not about to start farming myself, the licences are ridiculous- growing them dispersed to get to know them as plants as opposed to producers is something I'd like to try. I have a year old plant from seedling but I'd like to start from seed.



Seed packet/ growing notes

Tobacco information and growing instructions

Tobacco is a tropical plant. It is native to South America, Mexico and the West Indies.

Tobacco is a tall leafy annual plant that belongs to the Solanaceae or Nightshade family, which is generally considered a conditions tolerant plant. Tobacco includes numerous varieties which are grown throughout the world. Most soils will suit your plants, with the exception of heavy clay which needs breaking up with peat. Plenty of water must be made available as Tobacco plants are a thirsty crop. Young Tobacco plants are grown in planting trays before being transplanted into the ground. Seed will retain viability over several years if kept under cool and dry conditions.

Sowing:

Sow during March in well-drained compost with a soil temperature of between 18-23°C (65-75°F). Sprinkle the seed on the soil surface (approx. 4 seeds/square inch), then firm the soil surface to insure good seed to soil contact.

Note Tobacco seeds need light to germinate so do NOT cover them with soil ! Water daily this best done by watering from the bottom and allowing the water to soak up to the seeds do not allow the soil to dry out, but avoid excessive watering, TIP cover seeds with a piece of Clingfilm until they sprout, Keep out of direct sun until germination (anything from 6-21 days dependent on variety, Then place in a light and warm place.

Transplantation

After about 4 weeks the plants should have a height of approximately 2 inches 4-6 leaves.

Transplant the seedlings into small pots and keep them indoors at this stage.

Outside Planting

Transplanting outside is best done during May , When the threat of frost is past and yet the weather has not become too hot and dry, The spacing between plants is about 15 inches (Orientals) and 24 inches (Virginia, Burley). To avoid temperature shocks put the plants into a cooler place for 5-7 days before planting out but bring them in at night.

Water the plants immediately after transplanting outside.

Fertilization and Tilling

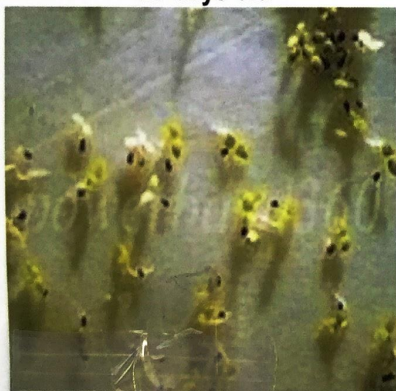
Nitrogen, phosphorus and potassium are the nutrients needed by Tobacco plants.

Stable manure or compost is the best fertilizer when digging up the beds in autumn , Also mineral or bio fertilizers are suitable, preferably in several doses starting in the middle of May, Avoid chlorine fertilizer, the potassium should be in a sulphate form, The Tobacco beds must be hoed thoroughly , particularly after strong rainfalls.

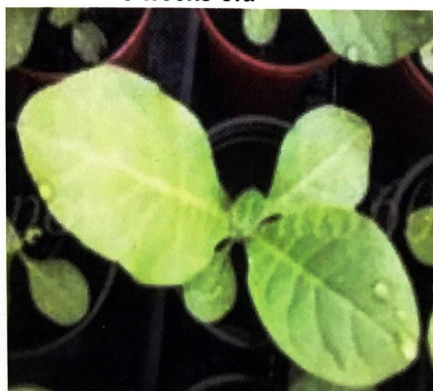
A visit to our website will provide more information, links, videos, forums, and much more besides. <http://www.uktobaccoseeds.co.uk>

From all of us at UK TOBACCO SEEDS happy growing

20 days old



5 weeks old



Full grown flowering Tobacco



Excerpt from Culpeper's Herbal, 1653

TOBACCO.—(*Nicotiana Tabacum*.)

Descrip.—It rises from a long fibrous root; the stem is robust, round and hairy, branched, and two or three feet high; the leaves are large, numerous, of an oblong form, pointed at the end, entire in the sides, of a dusky green colour, and clammy to the touch. The flowers are numerous, large, of a reddish colour; they terminate the stem and branches, and make a pretty appearance at a distance. The seeds are numerous, round, and small.

Place.—A native of the West Indies, but grows in gardens.

Time.—When sown in a hot-bed in spring, it arrives at a tolerable degree of perfection in summer.

Government and Virtues.—It is a hot martial plant. A slight infusion of the fresh gathered leaves vomits roughly; is a good medicine for rheumatic pains; an ointment made of them, with hog's-lard, is good for painful and inflamed piles. The distilled oil dropped on cotton cures the tooth-ache, if applied. The powdered leaves, or a decoction of them, kill lice, and other vermin. The smoke of Tobacco injected in the manner of a clyster, is of efficacy in stoppages of the bowels, for destroying small worms, and for the recovery of persons apparently drowned.



Excerpts from Gerard's Herbal, 1597

CHAP. 68.

Of Tobacco, or Henbane of Peru.

¶ The Kindes.

Here be two sorts or kinds of Tobacco; one greater, the other lesser: the greater was brought into Europe out of the prouinces of America, which we call the West Indies; the other from Trinidada, an Island neere vnto the continent of the same Indies. Some haue added a third sort: and others make the yellow Henbane a kinde thereof.

¶ 1 *Hyoisyanus Peruvianus*.
Tobacco or Henbane of Peru.



¶ 2 *Sana Sancta Indorum*.
Tobacco of Trinidada.



¶ The Description.

1 Tobacco, or Henbane of Peru hath very great stalkes of the bignesse of a childes arme, growing in fertile and well dunged ground of seuen or eight foot high, diuiding it selfe into sundry branches of great length; whereon are placed in molt comely order very faire long leaues, broad, smooth, and sharpe pointed, soft, and of a light Greene colour, so fastened about the stalk, that they seeme to embrace and compass it about. The flowers grow at the top of the stalkes, in shape like a bell-floure, somewhat long and cornered, hollow within, of a light carnation colour, tending to whiteneffe toward the brimmes. The seed is contained in long sharpe pointed coods or seed-vesells like vnto the seed of yellow Henbane, but somewhat smaller and browner of colour. The root is great, thicke, and of a woody substance, with some thredde frings annexed thereunto.

2 Trinidada Tobacco hath a thicke tough and fibrous root, from which immediately rise vp long broad leaues and smooth, of a greenish colour, lesser than those of Peru: among which riseth vp a stalk diuiding it selfe at the ground into diuers branches, whereon are set confusedly the like leaues, but lesser: at the top of the stalks stand vp long necked hollow floures of a pale purple tending to a bluish colour: after which succeed the coods or seed-vesells, including many small seeds like vnto the seed of Marjorome. The whole plant perisheth at the first approach of Winter.

¶ 3 *Tabacum minimum*.
Dwarfie Tobacco.



¶ 3 This third is an herbe some spanne or better long, not in face vnlike the precedent, neither defeciu in the hot and burning taste. The floures are much lesse than those of the yellow Henbane, & of a greenish yellow. The leaues are small, and narrower those of Sage of Ierusalem. The root is small and fibrous.

¶ The Place.

These were first brought into Europe out of America, which is called the West Indies, in which is the prouince or countrey of Peru: but being now planted in the gardens of Europe it prospereth very well, and commeth from seed in one yeare to beare both floures and feed. The which I take to be better for the constitution of our bodies than that which is brought from India; and that growing in the Indies better for the people of the same Countrey: notwithstanding it is not so thought, nor receiued of our Tobaccoists; for according to the English Proverbe, Far fetcht and deare bought is best for Ladies.

¶ The Time.

Tobacco must be sown in the most fruitful ground that may be found, carelesly cast abroad in the sowing, without raking it into the ground or any such paine or industrie taken as is requisite in the sowing of other feeds, as my self haue found by prooffe, who haue experimented euery way to cause it quickly to grow: for I haue committed some to the earth in the end of March, some in April, and some in the beginning of May, because I durst not haue sard all my seed at one time, lest some vnkindly blast should happen after the sowing, which might be a great enemy thereto.

¶ The Names.

The people of America call it *Petun*: Some, as *Lobel* and *Pena*, haue giuen it these Latine names, *Sacra herba*, *Sancta herba*, and *Sana sancta Indorum*: and other, as *Dodonaeus*, call it *Hyoisyanus Peruvianus*, or Henbane of Peru: *Nicolaus Monardus* names it *Tabacum*. That it is *Hyoisyanus speciosus*, or a kind of Henbane, not onely the forme being like to yellow Henbane, but the qualitie also doth declare; for it bringeth drowynesse, troubleth the senses, and maketh a man as it were drunke by taking of the fume onely; as *Andrew Thevet* testifieth, (and common experience sheweth:) of some it is called *Nicotiana*: the which I refer to the yellow Henbane, for distinctions sake.

¶ The Temperature.

It is hot and dry, and that in the second degree, as *Monardus* thinketh, and is withall of power to diffusit or resolu, and to cleanse away filthy humors, hauing also a small astriction, and a stupefying or benumbing qualitie, and it purgeth by the stooles: and *Monardus* writeth that it hath a certaine power to resist poison. And to proue it to be of an hot temperature, the biting qualitie of the leaues doth shew, which is easly perceiued by taste: also the Greene leaues laid vpon vellers in sinewie parts may serue for a prooffe of heate in this plant; because they do draw out filth and corrupted matter, which a cold Simple would neuer do. The leaues likewise being chewed draw forth flegme and water, as doth also the fume taken when the leaues are dried: which things declare that this is not a little hot; for what things fouer, that being chewed or held in the mouth bring forth flegme and water, the same be all accounted hot; as the root of Pellitorie of Spaine, of Saxifrage, and other things of like power. Moreover, the benumbing qualitie hereof is not hard to be perceiued, for vpon the taking of the fume at the mouth there followeth an infirmite like vnto drunkenesse, and many times sleepe; as after the taking of *Opium*: which also sheweth in the taste a biting qualitie, and therefore is not without heate; which when it is chewed and