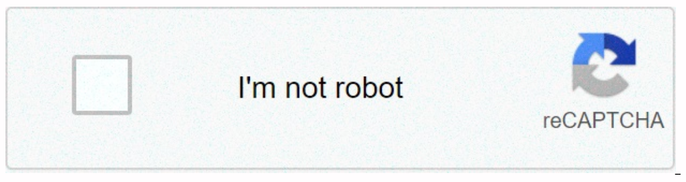

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How to kill kudzu with helium

As promised – some happy news: There's this kid in Valdosta, GA (near Tifton, where I spent several years as an assistant graduate) who was experimenting with ways to kill kudzu. Here's the video. To see that kid working on something like that at such a young age is fantastic and gives me hope for the future. I wish the kid was here to come to the University of Minnesota - I think he has a lot to offer, and he's a little more optimistic for me about where gardening ends up. For those of you who choose not to watch the video, what this child is doing is injecting helium into the soil around the root system of the kudzu plant. After injection, the plant apparently dies. The exact reason why is not known, but one person who was interviewed said they suspected that helium suffocates the plant's roots and thus kills it. I'm a little suspicious about this explanation, and I'm also a little skeptical about how much more economically feasible it would be to use helium instead of more standard herbicides. I am also very interested in other gases that would try to kill kudzu – I wonder, for example, if they tried propane? It might work, but I'd say it was too dangerous. I'm suspicious of helium suffocating the root system of kudzu because kudzu has such an extensive root system and because helium should disperse quite quickly, especially in sandy soils like they have in southern Georgia. It is also very unlikely that helium itself acts as a poison, since helium is an inert gas. It just doesn't respond to anything. What I think is more likely is that by finding a place where kudzu's stem enters the ground, this child has found a weak spot on the kudzu that is prone to damage. Then I think helium acts as a refrigerant when it is released and actually freezes the kudzu stem. However it works though, it's a neat trick! Oh, kudzu. A plant of legends. Gabrielle has it in her yard and wrote to ask how to kill kudzu for good: I'm in northwest central Florida, near Inverness, if it helps, and I have a kudzu problem. It was here when we bought this seized property. Any tips on how to get rid of it forever so I can plant a garden? If you talk to the expansion of agents and commercial alodologists, they will almost always recommend killing kudzu with a herbicide. Personally, I hate the herbicide, and I don't recommend it. The only plant I've ever used herbicide in recent memory is cogongrass – and that's only because I needed to get my nursery open and I couldn't remove it all manually. If you have cogongrass growing on your property, you can't have a plant nursery, so I did what the inspector recommended and RoundUpped things. Kudzu is a different story. Some have reported that it can be removed quite Manually using the hoe tip: During the first half of 2006, some volunteers began using end tips 16 and 26 hand spikes as crown extraction equipment. The spikes are driven under the kudzu crown and the crown is in debt. This is a lot like using a path key, or as using a hammer to remove a nail. This approach is moderately successful. About half the time, the crown is completely separated from the roots and hopefully leaves behind no residual crown tissue that could regenerate into the kudzu plant. The breakthrough came in June 2007, when the Spartan City Youth Corps worked with the coalition to eliminate kudzu. One high school student, Antonio Perkins, liked the handmade pronghoe tool, and decided to use it exclusively. Each worker was asked to calculate how many crowns he had taken from him. When the break came, Antonio announced that he had killed kudza at a rate of 186 crowns per hour. This was amazing news, because the previous record was 120 crowns per hour, and it was achieved under optimal conditions. We praised Antonio for breaking the record and asked him to show off his method. He pulled out the taut vines emanating from the exposed crown and then mown under the crown with the hoe end of the pronghoe, thereby removing the crown in one movement. Antonio's success with this method showed that the slower process of carefully digging the crown of the pronghoe and then cutting off the crown was sometimes unnecessary. You can see the method of cutting kudzu crown eradication here: Since kudzu makes tubers underground, you need to make sure you get root. Just cutting down the vines is not enough - you need to get the root or your kudzu will come back. If you simply cut the kudzu to the ground, then you throw the cardboard over the area and mulch through it, you should be able to remove all the roots. Bill Finch in AL.com has a very entertaining post about kudzu that includes his thoughts on removing it: The young student was recently celebrated across the country because he had, in the words of a story that appeared on CNN and The Washington Post, figured out how to kill kudzu. His solution was to use a specialized tool to insert a huge amount of helium into the soil. I applaud his ingenuity, but he, like all of us, has fallen victim to kudzu exaggeration: Kudzu is not particularly difficult to kill. His research would be much better applied to really difficult liqueps, such as cogon grass or privet. Now we hear that the invasive bug began to twitch on the kudzu, and could reduce its growth by a third. Hooray, I think. But if kudzu is a nuisgen, it's mainly because we let him become one. One of the reasons kudzu has never been caught as an agricultural commodity is that it is actually too easy to kill. Kudzu is unusually sensitive to excessive horses, cattle, goats can graze it and remove it in a year or two. You can mimic that by cutting the vines back to the ground, then simply mowing the area every two or three weeks during peak growing season, just like you would lawn. There is a fairly large piece of kudzu in the Mobile Botanical Garden. I've been wondering how to get it under control for several years until I finally got to know what a great resource all that kudzu might be for starting a new garden. I use it for mulching to create my new vegetable garden. If previous analyses show kudzu is a decent source of organic matter, a good source of nitrogen (pound for pound, much better than manure) and even reduces the appearance of some soil pests. In a few minutes, I can harvest enough mulch to make a pile large enough to cover a 40 square foot garden three feet deep. I'm just going to throw it over the area where I want to plant next year, it will overshadow all the pleds beneath it, and the resulting soil is remarkably soft and rich. I'm not in the slightest worried about kudzu infesting my vegetable patch. Kudzu is difficult to make from seeds, and the cut vines will not take root. If any of them did, a quick jerk would remove them. Kudzu has a relatively high nitrogen content because the plant is nitrogenous and well known for its high protein content. Master tomato grower Charles H. Wilber uses kudzu in his compost as part of a recipe for growing his massive fruit, as described in his book. High protein content = high nitrogen content. Finally, if you really have problems with kudzu, why not eat the wasteland? Kudzu can be eaten in many ways. Young leaves can be eaten as green or juiced. They can be dried and made into tea. Shoots can be eaten as asparagus. The flower can be used to make cucumbers or jelly - a taste between apple and peach - and the root is full of edible starch. Older leaves can be fried like potato chips, or used to pack food for storage or cooking. With kudzu you can make a salad, smother the roots, fry the flowers or pickle them or make syrup. Raw roots can be cooked in a fire, roots deprived of external crust can be baked in the oven like any root vegetable; or grated and ground into flour to make a thickener, cream or tofu. Kudzu is used for the production of soaps, lotions, rope, twine, baskets, wall paper, paper, fuel and compost. It can also be packaged as hay with most grazing animals like it, especially goats. Only the seeds are not edible. If I had kudzu growing on my property, I would use it in my great tea recipe. Glue a lot of vines to a barrel, cover with water, let it rot for several weeks, and then use it to water the gardens. Gabrielle, I hope it gave you some good ideas. Thanks for writing. * Image on top of cc license. Photo Credit Nature Serve. Share this post! Home Forum Home > > The Garage > Discussion in 'Garage' started by TNWillie, March 29, 2018. Page 2 of 3 < Prev 1 2 3 Next > Home Forum Home > Gear > Garage > Sixteen-year-old Jacob Schindler was already nursing three patches per acre of kudzu when his mother, Julie, hiked through something big. Jacob, she yells at her son as she bends over to grabb the kudzu root the thickness of a baseball bat that just grabbed her leg. She pulls him and kudzu trembles all around her. After three hours of trying to eradicate the cultivar from the decatur of the backyard, this vine-three inches in diameter-could be the secret to it all. This is a mother plant. Kill him and you'll kill all the smaller vines that separate from it. You didn't even see it. This is a mother's vein! Julie says excitedly. Jacob wipes sweat from under his hairy bangs and adjusts his glasses before trudging down the machete-hacked path to his mother. Today he's been to that root at least a dozen times, walking back and forth to a shadeless, kudzu-covered hillside. Jákob - and his parents - toiled and hacked and drilled on this humid August day, fumiging kudzu roots with heliem. Five years ago, while experimenting for his science project in sixth grade in his hometown of Valdosta, Jacob discovered that inert gas was somehow a poison on the vine-and, in the process, may have stumbled upon a way to rid the South of one of the most hated agricultural scourge from boll weevil.>> Video: See Jacob in actionJacob soles his gun-19.2-volt cordless drill with patent-up three-foot steel bit-up to the maternal root. He's checking it, and he's wiping more sweat off his forehead. This is his first paid concert using technology; Decatur the homeowner, who discovered Jacob while surfing the internet for ways to kill kudzu, is watching. Today wasn't easy. After he and his parents took a four-hour drive from Valdosta, Jacob realized he had brought the wrong size hose to mount his helium drill. They ran to Home Depot, got another hose, and wrapped the connection with electrical tape. On the third application, the driller came across something solid – stone or perhaps buried concrete paint – that prevented the drill from drilling deep enough to get the hole of the shaft where the gas seeps into the soil, underground. Jacob's father, Eric, tore off a drill near the drill and hit the steel shaft with a hammer. The piece came out bent. We can straighten it out, Eric assured his son. Jacob shook his head miserably in a moment of teenage anxiety: No. We can't do that. But now, with the sine-root of his parents in his hand, Jacob's happiness seems to have changed. Until the drill batteries have run out. And the handle of the helium flow control valve into the bit shaft falls into his hand. (Obviously, it's not made in America, he notes scabies, tapping the pockets of his baggy blue for adjustable key.) Then it takes ten minutes to find a flexible place for a bit to descend into topsoal. Kudzu surrounds him. Bring it, boy, he seems to be saying it. I'm not going anywhere. Jacob loves the universe. He once built a miniature satellite probe with a realistic-looking radar antenna from Lego that now shares living room shelves with other Lego creations and several of his awards from the FFA (formerly Future Farmers of America and now known simply by the old acronym). A 1950s-style Silver Comet rocket hangs from the ceiling in his bedroom; There's a Star Wars poster hanging on his wall. So when it came time to create a sixth-grade science fair project, he told his mother, I want to get Mars back. In other words, find something that would grow there. In later years, Julie would become very supportive of Jacob's science efforts, but initially, she was skeptical. Jacob, are you crazy? she asked. And how, please say, do you want to get Mars back? I want to plant a kudza. Okay, Julie said. What is kudzu? The only thing he knew about kudzu at the time was that people hated him because he was growing up like crazy -- up to half a meter a day in the summer -- and that's why he seemed to be a good candidate for terraforming Mars. His mother drew his gaze back to terra firma, and Jákob tried a different angle: What about using kudzu to reclaim deserts? For the six-year-old in Valdosta, the desert is only slightly more accessible than the red planet. These ideas, Jacob wrote in his science fair that year, were not reasonable... because the places were neither close nor reproducible. He felt that he should focus first on the virulence of the plant. If it's not as powerful as people think, then it may not be strong enough to survive one of these extreme environments. So the project turned into this: What effects do concentrated gases have on kudza? Kudzu may never make it to Mars or the Sahara, but in Georgia he's everywhere, tangled in pine trees, climbing telephone poles, hitting the roads. The roots as it grows create new crowns from which more vineyards will spread like a rash through farmland and waterfront. It climbs anything vertical, enveloping entire tree stands, until they become leaf-covered animals of all shapes – dogs, octopuses, T-rex – and eventually blocks sunlight and does not kill the vegetation beneath them. This plant is part of what makes the south South.At at least now it is. Kudzu is originally from Southeast Asia, not North America. It came to the United States in 1876 as an exhibit at the Philadelphia Centennial Exposition, brought from Japan as a beautiful vine that sprouted purple flowers clumps in late summer. He appeared in New Orleans a decade later in another exhibition. In the following decades, the vines proved to be nutritious forage for livestock. Farmers loved it, no one more than Kudzu Kid, Channing Cope, who wrote a daily farm column in the 1940s for the Atlanta Institute. He used his column and his book Front Porch Farmer to advocate kudza. He organized a fan club with 20,000 Georgians. He used it as feed on his farm southeast of town. And he wasn't the only one. In 1943, the US Department of Agriculture published the Kudzu brochure as an agricultural crop. By 1945, kudzu covered half a million southern acres. It really seemed to be how Cope fought it, the miracle of the vine. Kudzu has also proven great for preventing erosion. Anyone who has a bare slope or an open area of dry flatland knows that when there is no vegetation, the soil goes where the wind rains or blows. Overuse of agricultural land also degrades the quality of the soil, sometimes to the point where nothing grows anymore. This deterioration created Providence Canyon, a 1,100-acre, 150-foot-deep chasm in clay and limestone south of Columbus that didn't exist before the early 1800s. During the Great Depression, a new soil protection service encouraged kudzu to stop this type of erosion. In 2005, when Jacob first visited kudzu standing around Valdosta, watering small samples of plants in resealable vine containers has been out of control around the South for decades. Using buried IV pipes, he experimented with gassing roots with nitrous oxide, oxygen, carbon dioxide and heliem. All the plants eventually died, but the fumigated heliem died almost immediately, after a single treatment. Other projects led by the Lowndes County FFA chapter and Jacob's FFA adviser James Corbett followed. Georgia is really at the cutting edge of agricultural education in the nation, says Corbett. In fact, Georgia ranks third among the states with the highest FFA membership, around 30,000 members. Agriculture is a particularly big problem in farming communities like Valdosta, a Lowndes County seat; only two national agroscience students of the year who came from Georgia came from the Lowndes FFA. It was a good project, Corbett says of Jacob's first experiment. It was very deep, very well done. Corbett suggested Jacob try out a simulated live growth experiment for his seventh-grade project. Jacob planted sixteen loblolly pine trees in containers with two kudzu plants on the tree. He gassed them with carbon dioxide, oxygen and heliem. This time, only helium completely killed kudza. In addition, pines exposed to heliem showed accelerated growth, even if kudzu died. Jacob's third project in 2008 wiped out several kudzu stalls around the Valdosta area using helium to kill; kudzu never grew. For his fourth year of the project, he designed a drill shaft and in 2009 used it to destroy kudzu at several other locations around Valdosta. Yet killed nothing but kudzu, and it worked almost flawlessly every time. Jacob doesn't think much about the universe anymore; From the first kudzu experiment, the plant took over his life, just as it takes over everything else. While all this kudzu killing has brought a lot of attention to Jacob-newspaper articles in the Valdosta Daily Times, radio interviews on the Georgia News Network, a web video on the Georgia Farm Monitor ([Attention is] much easier than the work itself, he says)-he's really just a teenager who likes science. Sure, there are stereotypes about kids excelling in the subject (his mother gleefully shares that Jacob's favorite sitcom is The Big Bang Theory because it's about nerds!). And it's true that he likes to throw away little things about Archimed, war inventions and feng shui over dinner. But he also plays Call of Duty: Modern Warfare on his computer and listens to Coldplay on his iPod. In summer, he hangs out with friends on the River Withlacoochee. He was 17 years old in December, and a 1995 Ford F-150 is waiting for him to get his driver's license next month. (His parents bought it so he could pull helium tanks.) But kudzu pushed him in a certain direction, and he's still on that overgrown road. In high school, he went to agricultural science eight times and wrote his own curriculum after his fourth year. As a freshman, he took environmental science with most juniors and seniors. And even though he's good at science, he struggles with math. That hollow steel piece with a pinhole and gas valve won him first place in georgia's senior engineering division Agriscience Fair last April and took Jacob to Indianapolis to compete in the national convention in October. It was his second appearance at the national convention with a kudzu-themed project. Although he didn't sit on nationals this time (he was second in 2008), his mother contacted a patent attorney. I did it because I saw the potential for him to actually do something that is feasible-that could be sold, marketed, used, says Julie. He hopes to be able to get a scholarship from his research; As an osteopath, she is still repaying her own medical school loans and fears she and Eric may just help Jacob out a little on his own. We wanted it to be protected. I told him he wasn't going to a science fair without a patent. This patent could mean big money if the portable process continues. The annual cost of controlling invasive species in U.S.-Japanese climbing ferns, Chinese tallow, Chinese privet, cogon grasses, and the most invasive plant species of all, Japanese wintering plant (which we only call wintering pot)-is around $120 billion. Still, kudzu is a poster child for

creeping, annoying plants, Dr. David Moorhead, co-director of the Center for Invasive Species and Ecosystem Health at the University of Georgia. Those thick kudzu mats just suffocate the other plants out, he says. In his office in Tilton Moorhead, he stuffed digital images of the Kudzu attack in Georgia, Mississippi and Alabama. The vine now covers about 7 million acres in the south. Here, it doesn't have some of the natural predators [like insects] and pressures [like the weather] that it might have in its native range, explains Moorhead. Recent droughts aside, our traditionally long and wet summers promote aggressive growth. Short, mild temperatures keep podsoil from freezing and killing root crowns. The roots store enough starch to keep the plant alive just below the surface, so that when spring strikes, new vineyards will burst out of the crowns exactly where last season's growth ended. Miracle vines? More like an evil ecversy. As devastating as kudzu can be, it also has benefits-in some places. It will grow in poor quality soils, moorhead says, which is why it was planted so widely in the south in the 1930s and 1940s. Look at some of the early plantings in highly eroded places, how many leaves are recycled each year as mulch. It's part of the land-building process. Moorhead clicks on a picture on his monitor, an aerial shot of the Mississippi infestation. The green kudzu carpet covers about a dozen acres by the roadside. The afternoon shadows reveal a deep, venous pattern of a huge gathering break, perhaps a small Providence Canyon that once threatened to wash away the earth until kudzu came to stop it. In some places, Moorhead notes, kudzu is literally the only thing holding the world together. Decatur's murder didn't work very well. In October, the only obvious dead kudzu on a machete-hacked road, although Julie was convinced that the killing worked on the bottom layer of the plant. Not only that, but two weeks before this paying Decatur concert, Jacob treated large patches kudzu some railway lines in Valdosta. After about 20 minutes of slicing through the vines with a machete and a small axe, he found his parents' thick root, drilled one hole and emptied a small tank of helium into it. Six days later, his mother sent photos of an auto-sized patch of brown, dried vines where kudzu had shrunk and died, just as it was for all projects of the Javan Science Fair. But in October, Jacob said it too, growing back. I have no idea how helium really affects kudza, Jacob admits freely. Nor does he know why adjacent plant growth seems to be accelerating, at least in his controlled experiments. Now that he's familiar with the scientific method, he has hypotheses. Valdosta sits atop georgia's sandy coastal plains, but The Atlantic soil of Piedmont is rich in thick red clay that may have limited helium through the soil. August is the peak of the growing season for kudzu; All successful eradication in Valdosta occurred in early autumn when kudzu begins to recede and send all its nutrients and starches down to the roots in preparation for winter hibernation, Jacob says. Maybe that's when kudzu is most vulnerable. Decatur's work has raised some questions, but the method still shows the potential of Dr. Stephen Enloe, assistant professor of agronomy and soil at the University of Auburn. He heard about Jacob's research through internet chatter and helps Jacob apply for research grants from the Weed Science Society of America and the Alabama Invasive Plant Council. Enloe calls Jacob's scientific research results impressive. Of the latest results, he says: It's very fascinating to see differences like this. One thing we know is that not all kudzu patches are created equal. Ikob's theories about soil density and the temporal sensitivity of killing are good, but Enloe says the age of the kudzu stand could be a factor; Older patches can have much larger and deeper root tubers that could be more resistant to the helium method. Helium is biologically inactive, Enloe explains, which means it does not usually bind to other elements to create new substances. My hypothesis is that helium cleanses other gases [such as oxygen and carbon dioxide] from the system. Enloe discussed the process and Jacob's research with colleagues at Auburn, including soil chemist and soil physicist, and hopes he can use some of Auburn's resources for Jacob in addition to what teens might get from research grants. Often you can do quite a bit when you're resourceful with a little money, says Enloe. Jacob returned to Decatur in early October to hit the stubborn patch once more. Based on his theory of dense soil, this time Jacob pierced the ground through twenty holes using a steel piece. Instead of using a drill to disperse the gas, he used two irrigation hoses from his third-year project, each with ten shorter branches, to flood the bedrock with helium from two large reservoirs, each costing about $100. A week later there is a total loss of kudzu, with some leaves looking slightly yellowish. But cooler temperatures have thrown away summer growth everywhere. What happened where it counts, down under the soil? If spring postpones another southern winter and april rains give birth to a biological awakening to those starch-filled roots, what will kudzu do? Jacob can only wait. He's looking at his data, collecting reinforcements with the help of Auburn, charging those drill batteries, and preparing for the next battle. Kudzu's waiting, too. Bring it, boy, he seems to be saying it. I'm not going anywhere. Photo by Michael Cogliantry / Design by Eric Capossela Capossela

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