Transcript: Growing 10,000 Pounds of Organic Tomatoes in a High Tunnel Greenhouse

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**[00:00:00]** because this is an organic operation we

**[00:00:01]** don't use chemicals in our tunnels and

**[00:00:03]** so maintaining the health of the plants

**[00:00:05]** is going to be your first priority

**[00:00:07]** always so you want to grow healthy

**[00:00:09]** organic tomatoes in your backyard market

**[00:00:12]** garden or hobby farm but you're not sure

**[00:00:14]** where to start well then welcome to the

**[00:00:17]** ultimate guide to growing tomatoes where

**[00:00:20]** we'll teach you how to select and start

**[00:00:22]** seeds

**[00:00:23]** transplant and trellis

**[00:00:25]** prune your plants and harvest a healthy

**[00:00:27]** crop of high quality tomatoes don't

**[00:00:30]** believe us then keep watching to see how

**[00:00:32]** we grew ten thousand pounds of tomatoes

**[00:00:34]** in one season for the past year we've

**[00:00:37]** filmed every step of growing tomatoes

**[00:00:40]** organically here at heifer usa and now

**[00:00:43]** we're showing you the secrets to our

**[00:00:45]** success and stay tuned for a free

**[00:00:47]** resource to guide your growing season

**[00:00:49]** and produce the highest yields possible

**[00:00:53]** all that and more coming up in this

**[00:00:55]** video from heifer usa

**[00:00:58]** before you start planting anything it's

**[00:01:01]** important to choose the right varieties

**[00:01:03]** for your garden heifer usa horticulture

**[00:01:06]** specialist sarah bocker selects the best

**[00:01:08]** varieties for our three and a half acre

**[00:01:10]** market garden in zone 7b

**[00:01:13]** first of all we always try to determine

**[00:01:16]** what types of tomatoes that we do based

**[00:01:18]** on our climate location yields and

**[00:01:21]** disease resistance we usually get most

**[00:01:23]** of our seeds from johnny's as you've

**[00:01:25]** probably seen in some of our past videos

**[00:01:26]** they generally have some really good

**[00:01:28]** quality seeds to choose from for this

**[00:01:30]** year we did end up choosing several

**[00:01:32]** different heirlooms or heirloom type

**[00:01:35]** varieties there's a couple that were

**[00:01:37]** actually hybrid called the gin fizz

**[00:01:39]** variety it's kind of got a yellow

**[00:01:41]** orangey quality to it so it'll be

**[00:01:43]** exciting to see how that one turns out

**[00:01:45]** we did stick with cherokee purple and

**[00:01:46]** then we're also doing some cherry

**[00:01:47]** tomatoes this year so now let's look

**[00:01:49]** into our spacing and the amount of space

**[00:01:52]** that we actually have available so our

**[00:01:54]** high tunnel down in the garden here at

**[00:01:56]** hipfire usa it's actually our brand new

**[00:01:58]** tunnel we're going to put landscape

**[00:02:00]** fabric down over the entire thing which

**[00:02:02]** is going to be really nice for weed

**[00:02:03]** suppression with that landscape fabric

**[00:02:05]** going in we're going to put five beds

**[00:02:07]** into this high tunnel so our high tunnel

**[00:02:09]** is 30 feet by 90 feet we have about five

**[00:02:12]** feet of walkway on either end of the

**[00:02:14]** tunnel which allows plenty of room for

**[00:02:16]** harvesting later on that gives us about

**[00:02:18]** 80 feet for our five rows

**[00:02:20]** for this tunnel we'll be using five foot

**[00:02:22]** centers which is a bit bigger than the

**[00:02:24]** standard four foot centers recommended

**[00:02:26]** for market gardens but having that extra

**[00:02:28]** room really pays off when you're

**[00:02:30]** trellising pruning and harvesting later

**[00:02:32]** on we're going to be looking at about

**[00:02:34]** 260 plants total so just to be safe i

**[00:02:37]** definitely want to seed more than i have

**[00:02:39]** room for just in case something goes

**[00:02:40]** wrong in the germination process or if

**[00:02:43]** later on you know one of the plants

**[00:02:44]** doesn't look great you've got some

**[00:02:45]** extras to work with and then

**[00:02:46]** additionally we can even use them and

**[00:02:48]** pop them up and sell them to people

**[00:02:50]** around here later as well so we're going

**[00:02:52]** to aim for planting 300 plants in our

**[00:02:56]** trays and so this tray that i've got

**[00:02:57]** laid out here in front of us is one of

**[00:02:59]** my starting trays usually for other

**[00:03:01]** types of crops i would use a much more

**[00:03:04]** dense tray but because they are tomatoes

**[00:03:06]** and you do kind of have to baby them in

**[00:03:08]** the beginning of the season i like to

**[00:03:09]** give them a little bit more room in

**[00:03:11]** these smaller cells before they actually

**[00:03:13]** will get transplanted up into our

**[00:03:15]** four-inch pots and put in the field so

**[00:03:17]** within each of these trays it's 5 by 10

**[00:03:20]** so this is a 50 cell flat ideally we'll

**[00:03:23]** have 50 plants in here just to be sure

**[00:03:25]** if our germination rate is a little

**[00:03:26]** wonky you want to try putting two seeds

**[00:03:29]** per cell and then as they grow bigger

**[00:03:31]** you can thin those out to one plant per

**[00:03:34]** cell and that'll definitely help with

**[00:03:36]** any of those germination issues that you

**[00:03:37]** may encounter so let's go ahead and talk

**[00:03:39]** a little bit about the soil that i will

**[00:03:41]** use for these seeds and for tomatoes

**[00:03:44]** specifically so with this soil medium

**[00:03:46]** that we've got right here it is a soil

**[00:03:48]** starting mix which is different than

**[00:03:50]** just a potting soil soil starting mix is

**[00:03:52]** basically just some peat moss and

**[00:03:54]** perlite minerals mostly for drainage

**[00:03:57]** purposes but it's not going to include

**[00:03:58]** any of that good stuff that really help

**[00:04:00]** plants grow with any kind of seed

**[00:04:02]** starting you're going to be looking for

**[00:04:04]** a medium that is going to hold moisture

**[00:04:07]** but not too much moisture still allowing

**[00:04:09]** for that drainage which is very

**[00:04:10]** important particularly for the

**[00:04:12]** germination period to be able to fill

**[00:04:14]** your flats you're going to want to wet

**[00:04:16]** your soil starting medium so we've got a

**[00:04:19]** large trough where we put all of our dry

**[00:04:22]** potting soil and then we will go ahead

**[00:04:24]** and wet that down with a little water

**[00:04:26]** until the consistency itself if you

**[00:04:28]** squeeze it it's not going to be dripping

**[00:04:30]** but you can kind of mold it with your

**[00:04:32]** hand so once you've got it wetted down

**[00:04:34]** enough the best way that i've found to

**[00:04:36]** do it is to actually place the flat

**[00:04:38]** directly on top of the soil and just

**[00:04:41]** start keeping the soil on top of it and

**[00:04:43]** just doing kind of circles along the

**[00:04:45]** entire flat so you want them to be as

**[00:04:48]** evenly filled as possible and as flat as

**[00:04:50]** possible but you also don't want to tamp

**[00:04:52]** it down too much because you do need to

**[00:04:54]** have that air in the soil as well so

**[00:04:56]** that your plants can start developing

**[00:04:57]** their root systems so once you've got

**[00:05:00]** your flat totally full to the top you're

**[00:05:03]** going to want to press some indentions

**[00:05:04]** into your soil and then two seeds per

**[00:05:07]** cell and you just continue down the line

**[00:05:09]** from there so i've got a few little

**[00:05:10]** pieces of equipment here that we use for

**[00:05:13]** a lot of different seed starting

**[00:05:14]** something really basic that you can use

**[00:05:17]** is teaspoons anything that just has an

**[00:05:19]** indention and can hold your seeds so

**[00:05:21]** that's one really really basic option

**[00:05:24]** they also have these fun little guys

**[00:05:26]** that are still very basic so you can

**[00:05:28]** actually place your seeds directly in

**[00:05:31]** the little chamber here then the top

**[00:05:33]** it's got all these numbers that show the

**[00:05:35]** sizing of the holes that are open five

**[00:05:37]** is going to be your biggest zero is

**[00:05:39]** closed so these guys are probably maybe

**[00:05:42]** a one or a two you can tap the top and

**[00:05:44]** it starts to bring down a line of seeds

**[00:05:47]** and then you're able to control more or

**[00:05:49]** less how many you're doing so that's

**[00:05:51]** another option here this is kind of like

**[00:05:53]** one of my favorite toys i really love

**[00:05:54]** these things they call it a vibro hand

**[00:05:56]** seeder it basically is like a pvc pipe

**[00:05:58]** with a battery in it and it vibrates

**[00:06:00]** this little channel here just so that

**[00:06:02]** your seeds will come down in a pretty

**[00:06:04]** even pattern if you don't have either of

**[00:06:06]** these seating tools don't worry seating

**[00:06:08]** works just as well with a teaspoon and a

**[00:06:11]** bit of patience if you would like to

**[00:06:13]** purchase the seating tools trays or

**[00:06:15]** anything else you see in this video

**[00:06:17]** check out the links in the description

**[00:06:19]** for farmer-tested and farmer-approved

**[00:06:21]** products once you've dropped all your

**[00:06:23]** seeds into the tray cover them with a

**[00:06:25]** thin layer of soil this layer should be

**[00:06:27]** roughly equal to the width of the seed

**[00:06:30]** with our seed trays prepared it's time

**[00:06:32]** to start the germination process

**[00:06:35]** so that is basically that time period

**[00:06:37]** between when a seed is first getting

**[00:06:40]** wetted and is prepping to sprout and

**[00:06:42]** when it actually starts to come above

**[00:06:44]** the soil that is one of the most

**[00:06:46]** critical times in a plant's life and you

**[00:06:48]** want to be able to make sure that you're

**[00:06:50]** nurturing it properly and you're able to

**[00:06:54]** keep control over all of the factors of

**[00:06:56]** that plant's life basically once we've

**[00:06:58]** got our seeded flat here we will give it

**[00:07:00]** a gentle water usually i'll actually

**[00:07:02]** just use a mister on my hose i don't

**[00:07:05]** want to

**[00:07:07]** blast it with water in a way that would

**[00:07:08]** actually disrupt the soil but then for

**[00:07:11]** the rest of that germination period

**[00:07:13]** we're actually going to be doing a

**[00:07:14]** bottom watering so we've got a tray

**[00:07:16]** underneath that we can fill with water

**[00:07:19]** we also here at the ranch have a

**[00:07:21]** germination chamber and that really

**[00:07:23]** helps us to maintain the proper humidity

**[00:07:26]** the proper temperature and darkness

**[00:07:28]** until we don't need darkness anymore so

**[00:07:30]** in our germ chamber it actually does

**[00:07:33]** have a reflective area on the inside

**[00:07:35]** that also keeps in a little heat and

**[00:07:37]** then we have a heated humidifier on the

**[00:07:39]** bottom and it brings up that warm wet

**[00:07:42]** air which are heat loving varieties like

**[00:07:44]** you should probably aim to keep your

**[00:07:47]** germinating plants at about

**[00:07:49]** 60 to 80. the higher the humidity the

**[00:07:52]** better so we do have a temperature gauge

**[00:07:54]** as well as a humidity gauge within our

**[00:07:55]** germ chamber that allows me to

**[00:07:57]** constantly be checking on them and so as

**[00:07:59]** soon as you start seeing those sprouts

**[00:08:00]** coming up they are going to be

**[00:08:02]** immediately looking for some kind of

**[00:08:04]** sunlight in our germination chamber we

**[00:08:06]** do have two rows at the top where we

**[00:08:08]** have lights set up and those lights are

**[00:08:10]** on a timer generally between 12 to 13

**[00:08:13]** hours each day so i'm gonna keep them in

**[00:08:15]** the germination chamber until what will

**[00:08:18]** germinate has already germinated you're

**[00:08:20]** looking at about you know seven to

**[00:08:22]** fourteen days somewhere in there for

**[00:08:23]** germination and once you've got that

**[00:08:25]** sprouting you've got maybe

**[00:08:27]** a week in the germination chamber if you

**[00:08:29]** have lights before you want to move them

**[00:08:31]** into a different environment that

**[00:08:32]** actually has sunlight so as you're

**[00:08:34]** moving from the germ chamber into the

**[00:08:36]** greenhouse that's a really good time to

**[00:08:38]** go through and make sure you only have

**[00:08:40]** one plant per cell you can just pinch

**[00:08:43]** off the plant itself because that will

**[00:08:44]** actually be the least disturbance on the

**[00:08:46]** soil and on the roots of the new plants

**[00:08:49]** so once you've got them in the nursery

**[00:08:50]** you are still going to be maintaining

**[00:08:52]** that temperature also make sure that

**[00:08:54]** they're getting a pretty consistent

**[00:08:55]** water rain but not too much watering so

**[00:08:58]** generally when they're in that stage i

**[00:08:59]** will just do one watering per day and at

**[00:09:02]** this point i'm actually going to be

**[00:09:04]** using my bottom water system i will have

**[00:09:06]** a

**[00:09:07]** non-perforated tray underneath and then

**[00:09:10]** the soil of the plants will actually

**[00:09:12]** just soak up the water as they need it

**[00:09:14]** and it's just a better way to keep the

**[00:09:15]** soil moist and then this is also a way

**[00:09:18]** to keep the plant itself dry tomato

**[00:09:20]** plants don't do as well with being

**[00:09:22]** really moist and so keeping that plant

**[00:09:25]** dry on the top helps to keep them

**[00:09:26]** healthy while they're in the greenhouse

**[00:09:28]** if you've chosen an indeterminate

**[00:09:30]** variety to grow in a high tunnel or

**[00:09:31]** greenhouse there's another important

**[00:09:33]** step during the nursery period called

**[00:09:36]** bifurcation when our indeterminate

**[00:09:38]** seedlings are about six inches tall or

**[00:09:41]** have two sets of true leaves we top the

**[00:09:43]** plants by cutting off the central leader

**[00:09:46]** stem this process encourages the plant

**[00:09:48]** to grow fruit on two liter stems rather

**[00:09:50]** than just one effectively doubling the

**[00:09:53]** plant's yield just remember this process

**[00:09:56]** only works with indeterminate varieties

**[00:09:58]** after six to eight weeks in the nursery

**[00:10:00]** it's time to transplant your tomatoes

**[00:10:02]** from here to here but first make sure

**[00:10:05]** they're prepared for the move in a

**[00:10:07]** process called hardening off for most

**[00:10:10]** crops hardening off involves leaving the

**[00:10:12]** plants outside exposed to the elements

**[00:10:14]** to prevent shock after transplanting but

**[00:10:17]** when growing tomatoes especially for a

**[00:10:19]** high tunnel hardening off may look a

**[00:10:21]** little bit different so for the

**[00:10:23]** hardening off process for tomatoes as

**[00:10:25]** long as you are between you know 65 70

**[00:10:29]** degrees you can harden them off outside

**[00:10:30]** especially if they're going to be

**[00:10:31]** outside for the rest of their lives but

**[00:10:33]** when it comes to ones like these guys

**[00:10:36]** that are going to be going straight into

**[00:10:37]** a high tunnel it's not as necessary we

**[00:10:40]** do want to be able to harden them off in

**[00:10:41]** a way that their root systems are stable

**[00:10:43]** and they have sturdy stems that we can

**[00:10:45]** trellis them but they don't necessarily

**[00:10:47]** have to be sitting outside in the

**[00:10:48]** elements because that's actually not

**[00:10:50]** where they're going to be for the rest

**[00:10:51]** of their lives you can do it inside by

**[00:10:53]** actually just backing off on the

**[00:10:55]** watering and just letting them

**[00:10:56]** experience a little bit more stress than

**[00:10:58]** they have in the past speaking of stress

**[00:11:01]** learning all this valuable information

**[00:11:03]** at once may feel a bit overwhelming we

**[00:11:05]** know but luckily heifer usa has you

**[00:11:08]** covered with the organic tomato growing

**[00:11:10]** guide a multi-page document that

**[00:11:12]** contains calendars worksheets garden

**[00:11:15]** layouts and more to help you increase

**[00:11:17]** your yields and improve your produce

**[00:11:20]** keep watching until the end of this

**[00:11:21]** video to find out how you can receive a

**[00:11:23]** free copy while our plants are hardening

**[00:11:26]** off let's turn our attention to the high

**[00:11:28]** tunnel where our garden staff is working

**[00:11:30]** hard to prepare the soil for our growing

**[00:11:32]** transplants so this is our new high

**[00:11:34]** tunnel we just had this put in a couple

**[00:11:36]** of months ago so our soil here has at

**[00:11:39]** least a good four to five inches of

**[00:11:41]** compost to cover the entire ground in

**[00:11:43]** here because the soil underneath it was

**[00:11:45]** basically just solid clay because of

**[00:11:47]** that we're really having to work this

**[00:11:48]** soil a lot the two main amendments that

**[00:11:50]** we've been doing here we've got azomite

**[00:11:52]** this one's going to actually do a lot of

**[00:11:54]** those trace minerals that we're missing

**[00:11:56]** we've spread just about a cup of that

**[00:11:58]** down each bed we've got feather meal

**[00:12:00]** here which is basically just ground up

**[00:12:03]** remnants of poultry and that's just a

**[00:12:05]** huge nitrogen fix there once we've got

**[00:12:07]** the amendment spread on the beds you're

**[00:12:08]** going to want to actually work it into

**[00:12:10]** the soil a little bit you can use a rake

**[00:12:12]** which is what we did or you can even get

**[00:12:14]** a bcs walk behind tractor or something

**[00:12:15]** like that just to kind of mix it into

**[00:12:17]** the soil so you've got it really good in

**[00:12:19]** your beds we did put down landscape

**[00:12:21]** fabric here and that's not a necessary

**[00:12:23]** step always in the garden and we are

**[00:12:24]** trying to lean away from it in the

**[00:12:26]** future but because this is basically

**[00:12:28]** virgin soil here we really haven't had a

**[00:12:30]** chance to work it the way that we have

**[00:12:32]** in a lot of our other high tunnels and

**[00:12:34]** our blocks hopefully that's going to

**[00:12:35]** save us a lot of time with weed

**[00:12:36]** management here so for our next step for

**[00:12:38]** our landscape fabric is we are going to

**[00:12:40]** actually lay our drip tape and our

**[00:12:42]** irrigation lines over the landscape

**[00:12:44]** fabric we're doing two inch drip tape so

**[00:12:46]** that means every two inches we've got a

**[00:12:48]** hole for water to come through and then

**[00:12:50]** once we get our irrigation lines laid

**[00:12:52]** out that's going to have really straight

**[00:12:54]** lines when we're burning holes through

**[00:12:56]** the landscape fabric and we're going to

**[00:12:57]** do that every 18 inches and that's going

**[00:13:00]** to be our spacing for the tomatoes

**[00:13:15]** [Music]

**[00:13:22]** [Music]

**[00:13:24]** today we're putting our tomato plants in

**[00:13:26]** the ground and you may have noticed that

**[00:13:28]** we've got a special guest to demonstrate

**[00:13:30]** our transplanting method sean pasera

**[00:13:33]** former heifer usa horticulture

**[00:13:35]** specialist is back for one segment only

**[00:13:38]** before returning to his full-time work

**[00:13:40]** at mindful farmer arkansas take it away

**[00:13:42]** sean because this was a new tunnel the

**[00:13:44]** ground's a little compacted so we're

**[00:13:46]** using this tree transplanter and it's

**[00:13:47]** nice because it's so narrow it fits

**[00:13:49]** right down into that hole and so i can

**[00:13:50]** just step on it pull the soil back give

**[00:13:52]** it a little twist to loosen it

**[00:13:54]** the next step is to lay out our plants

**[00:13:57]** and i like to lay out the plants by

**[00:13:59]** variety and that way we can harvest

**[00:14:00]** directly into the crates that are go out

**[00:14:02]** for market i lay them on their sides

**[00:14:04]** that way they're not standing up and

**[00:14:06]** kind of flopping over and then you're

**[00:14:08]** just

**[00:14:09]** opening up the soil

**[00:14:11]** putting it as deep as you can

**[00:14:13]** in this in the event of this one with a

**[00:14:16]** single leader

**[00:14:18]** and then pushing the soil up around it

**[00:14:21]** and so

**[00:14:24]** this one actually has a double leader

**[00:14:27]** and so i'm gonna not plant that one as

**[00:14:29]** deep

**[00:14:31]** and then push the soil up around it

**[00:14:34]** and i have my orientation of the leaders

**[00:14:36]** is with the strings that are going to go

**[00:14:38]** up to the pole once you're market

**[00:14:39]** gardening long enough you kind of

**[00:14:41]** stretch out and strengthen certain

**[00:14:42]** muscles and so i actually prefer to like

**[00:14:44]** stand with my legs straight and bend

**[00:14:45]** over and transplant and i can move

**[00:14:46]** pretty quick doing that

**[00:14:48]** [Music]

**[00:15:07]** [Music]

**[00:15:12]** so all the plants are in the ground

**[00:15:13]** we're rolling up the sides because it's

**[00:15:14]** actually going to be a little chilly

**[00:15:16]** keep everything nice and warm we've

**[00:15:17]** kicked on the irrigation to get

**[00:15:18]** everything watered in really well so

**[00:15:20]** later in the video we'll show you how to

**[00:15:22]** trellis and prune and harvest the

**[00:15:23]** tomatoes and get them ready for market

**[00:15:25]** so keep watching to hear more from sean

**[00:15:27]** follow mindful farmer arkansas on

**[00:15:30]** facebook and instagram in the meantime

**[00:15:32]** we've got another important task to tend

**[00:15:35]** to it's been a week since we got our

**[00:15:36]** plants in the ground here in the high

**[00:15:38]** tunnels we're actually going to go ahead

**[00:15:39]** and start trellising trellising is

**[00:15:42]** crucial to growing tomatoes because it

**[00:15:44]** gives the plants structure and support

**[00:15:46]** causing them to grow upward keeping our

**[00:15:48]** tomatoes off the ground makes them less

**[00:15:50]** vulnerable to pests and diseases allows

**[00:15:53]** for better air flow and efficiently

**[00:15:55]** utilizes the space we've allotted for

**[00:15:57]** this crop there are lots of ways to

**[00:15:59]** trellis tomatoes but here's how we do it

**[00:16:01]** here at heifer usa here we've actually

**[00:16:03]** got some conduit that shawn put up

**[00:16:05]** earlier that's gonna line the length of

**[00:16:07]** the tunnel here and then from there

**[00:16:08]** we're able to hang our trellises that

**[00:16:11]** will eventually allow for the plant to

**[00:16:13]** grow upwards towards those conduits on

**[00:16:15]** the ceiling so at each spot along the

**[00:16:18]** conduit you line it up with where the

**[00:16:20]** plant itself is and you can attach your

**[00:16:23]** string

**[00:16:24]** our twine here is a biodegradable cecil

**[00:16:27]** type twine it's a little different than

**[00:16:29]** what we've used in the past so this here

**[00:16:31]** is a regular kind of plastic based

**[00:16:34]** garden twine which works just fine it's

**[00:16:36]** a really sturdy type but you can't

**[00:16:37]** really biodegrade it and so that means

**[00:16:39]** that at the end of the season when

**[00:16:40]** you're pulling all of these plants out

**[00:16:42]** you're gonna have to go through and cut

**[00:16:43]** all of these guys off so the idea is

**[00:16:45]** that with this stuff we can actually

**[00:16:46]** just put toss this back into the compost

**[00:16:48]** with the plants themselves so the same

**[00:16:50]** goes actually for the clips that we'll

**[00:16:52]** be using for our trellising in the past

**[00:16:54]** years we've used these guys here which

**[00:16:57]** are plastic based again the ones that

**[00:16:59]** we're going to try out this year

**[00:17:01]** are these guys which are a cornstarch

**[00:17:03]** biodegradable clip the clips will cost a

**[00:17:06]** little bit more right at first but we've

**[00:17:08]** found that the labor required to remove

**[00:17:10]** them all at the end of the season way

**[00:17:12]** outweighs the cost of them up at front

**[00:17:15]** so when it comes to actually trellising

**[00:17:17]** it's a really basic process and i know

**[00:17:19]** there's a lot of tools and tricks that

**[00:17:22]** everyone has

**[00:17:23]** we use a binder clip it's weirdly

**[00:17:25]** effective you literally just tie a loop

**[00:17:27]** attach your binder clip and toss it

**[00:17:30]** catch it when it comes down and then you

**[00:17:32]** just cut it at the right length i

**[00:17:33]** usually do about chest height you can

**[00:17:35]** stick it right through once you've cut

**[00:17:36]** it and then just pull it tight what i'm

**[00:17:38]** wearing is actually from johnny's it's

**[00:17:40]** super helpful i can keep all of my twine

**[00:17:43]** right here in my basket and i even can

**[00:17:45]** keep my clips

**[00:17:46]** right in the bucket next to me which

**[00:17:48]** makes it super easy and a lot of time is

**[00:17:50]** saved that way so now that we've got

**[00:17:52]** some of our trellising lines up we will

**[00:17:54]** actually be attaching the leaders of our

**[00:17:56]** plants we topped our tomatoes so there

**[00:17:59]** will be two

**[00:18:00]** sides to each one of these plants and

**[00:18:02]** it's going to actually have two sides to

**[00:18:04]** each row so for this first one

**[00:18:07]** just to make sure that we're holding the

**[00:18:09]** plant without it splitting at that point

**[00:18:11]** there we're going to clip them both

**[00:18:12]** together

**[00:18:13]** and then as the leaders branch apart the

**[00:18:16]** trellising will also branch apart and

**[00:18:18]** we'll start clipping to each individual

**[00:18:20]** leader so when your plants are pretty

**[00:18:22]** small like this it's not as important

**[00:18:24]** where they go just yet i try to do it

**[00:18:27]** between leaves so i'm not smashing

**[00:18:29]** anything you want to make sure that the

**[00:18:30]** clip itself is not around any fruit

**[00:18:32]** clusters where it's going to constrain

**[00:18:34]** any growth that it's nice and loose

**[00:18:36]** around the plant itself but that it's

**[00:18:38]** still holding it we'll do that again on

**[00:18:40]** this side here twine goes right in there

**[00:18:43]** clip it around and then you'll continue

**[00:18:45]** up the plant once you actually get a

**[00:18:47]** larger plant and it's trailing up these

**[00:18:50]** lines you're probably going to be about

**[00:18:51]** a foot apart on each of these clips so

**[00:18:53]** that's how you do it with each

**[00:18:55]** individual plant and again there will be

**[00:18:57]** two of those trellises per plant so

**[00:18:59]** you'll have those two liters going up on

**[00:19:00]** each side once we get that done we'll

**[00:19:03]** finish the entire high tunnel here with

**[00:19:06]** the same trellising technique and then

**[00:19:08]** we'll actually get into the pruning but

**[00:19:10]** first let's see that sweet sweet

**[00:19:12]** trellising time lapse

**[00:19:18]** [Music]

**[00:19:29]** [Music]

**[00:19:32]** it's been about three weeks and as you

**[00:19:34]** can see our plants are a little bit

**[00:19:36]** bigger and i mean a lot bigger because

**[00:19:38]** we are in full growth mode we've got

**[00:19:40]** higher temperatures now we've also got a

**[00:19:42]** lot longer daytime hours and the plants

**[00:19:45]** are loving it which means that they are

**[00:19:46]** in total growth mode so we are also in

**[00:19:49]** pruning mode one sometimes two times a

**[00:19:51]** week we are going through and pruning

**[00:19:53]** all of our plants because with a tunnel

**[00:19:55]** this large it is a lot of work to keep

**[00:19:58]** up with these indeterminate plants so

**[00:20:00]** let's go ahead and talk about the tools

**[00:20:01]** and equipment that come along with

**[00:20:03]** pruning it's pretty basic and a lot of

**[00:20:05]** times people will actually just use

**[00:20:06]** their fingers themselves for the pruning

**[00:20:09]** i like to use a knife it's a lot more

**[00:20:10]** precise and it also makes it to where i

**[00:20:12]** can clean it after every use so if

**[00:20:14]** there's any diseases in the plants i can

**[00:20:16]** actually clean that off so i'm not

**[00:20:18]** spreading it to other plants in my high

**[00:20:20]** tunnel and then i like to actually carry

**[00:20:22]** around a fanny pack it's really fancy

**[00:20:24]** super high tech but you've got all your

**[00:20:26]** clips and equipment right here on your

**[00:20:27]** belt so i'm now in one of the rows that

**[00:20:30]** we have not had a chance to really go

**[00:20:31]** through and prune yet this week so you

**[00:20:33]** can already see the difference remember

**[00:20:35]** anytime you can not really see through

**[00:20:37]** an aisle like this you know that that

**[00:20:39]** means that there's a lot less air

**[00:20:40]** getting through as well and there is

**[00:20:42]** such a high possibility of transfer of

**[00:20:44]** disease between plants between workers

**[00:20:47]** between foliage when you're pruning so

**[00:20:49]** we like to try and pick up all of our

**[00:20:51]** foliage after we've pruned it and get it

**[00:20:53]** out of the high tunnel just in case

**[00:20:54]** there's any chance that there's a

**[00:20:56]** disease or a fungus or even pests in the

**[00:20:58]** foliage itself if you leave it on the

**[00:21:00]** ground it could be used as a type of a

**[00:21:03]** compost but more likely it's going to be

**[00:21:04]** a disease vector we have more advice on

**[00:21:07]** disease prevention coming up but first

**[00:21:09]** let's learn the basics of pruning

**[00:21:11]** starting with a quick plant anatomy

**[00:21:13]** lesson for the majority of plants you're

**[00:21:15]** going to find a couple of leaves

**[00:21:18]** so right above our leaves in the little

**[00:21:21]** armpit kind of you've got some plants

**[00:21:24]** growing out here so these are what we

**[00:21:26]** call suckers and these are what we are

**[00:21:28]** going to try and remove so a lot of

**[00:21:30]** times if they're smaller like this i can

**[00:21:32]** just pinch it off with my fingers now

**[00:21:34]** sometimes you're going to end up with

**[00:21:35]** really large ones if you aren't able to

**[00:21:37]** keep up with the pruning as often as

**[00:21:38]** you'd like and with those larger ones i

**[00:21:41]** do recommend using some kind of a sharp

**[00:21:43]** instrument just to make sure you're not

**[00:21:44]** damaging the plant and then from there

**[00:21:46]** you're going to go back up you've got

**[00:21:48]** two more leaves here leaf leaf sucker

**[00:21:50]** sucker and then

**[00:21:51]** we've got our next fruit cluster so just

**[00:21:54]** being able to identify those parts of

**[00:21:56]** the plant is very helpful once we've

**[00:21:58]** started to actually develop the fruits

**[00:22:00]** on our fruit clusters you can remove the

**[00:22:02]** leaves down below those so here is a

**[00:22:05]** plant that we have not yet pruned the

**[00:22:06]** leaves on so as you can see we've got

**[00:22:08]** our fruit cluster here but we also have

**[00:22:11]** leaves below the fruit cluster so these

**[00:22:13]** leaves are basically extra foliage at

**[00:22:15]** this point they are not serving the

**[00:22:17]** fruit they are just going to become

**[00:22:19]** little disease vectors so using a sharp

**[00:22:21]** instrument you've got clippers you can

**[00:22:23]** use a knife

**[00:22:24]** i would always recommend actually using

**[00:22:26]** an equipment for this because they are

**[00:22:28]** not they're going to be a lot tougher

**[00:22:30]** they can't be pinched off like suckers

**[00:22:32]** so getting kind of as close to the stem

**[00:22:34]** without hurting the stem itself you can

**[00:22:36]** just make a clean cut

**[00:22:38]** remove the leaf and then collect that

**[00:22:40]** later and take it out of the tunnel so

**[00:22:42]** let's just do a real quick recap on our

**[00:22:44]** pruning and our trellising so we're

**[00:22:46]** going to remove any of that foliage

**[00:22:48]** below our fruit clusters you're going to

**[00:22:49]** want to get all your suckers out

**[00:22:51]** maintain that airflow and then continue

**[00:22:53]** to keep training your plants right up

**[00:22:55]** that main leader there okay so let's

**[00:22:57]** talk a little bit about disease

**[00:22:59]** prevention in your plants because this

**[00:23:01]** is an organic operation we don't use

**[00:23:03]** chemicals in our tunnels and so

**[00:23:05]** maintaining the health of the plants is

**[00:23:07]** going to be your first priority always

**[00:23:09]** so the healthier the plant the fewer

**[00:23:11]** diseases the fewer pathogens the fewer

**[00:23:13]** pests are going to be dealing with a lot

**[00:23:15]** of that has to come from maintaining

**[00:23:17]** that airflow which is huge making sure

**[00:23:20]** your plants get enough water making sure

**[00:23:22]** they have enough light making sure it's

**[00:23:23]** not too hot or too cold just simple

**[00:23:26]** stuff like that is huge if you're having

**[00:23:29]** like major issues with aphids a lot of

**[00:23:31]** times that's an airflow issue and a lot

**[00:23:33]** of times it's just an issue with the

**[00:23:35]** plants being unhealthy and attracting

**[00:23:37]** those insects in if you see diseased

**[00:23:39]** plants remove them as soon as you

**[00:23:41]** physically can wash your hands clean

**[00:23:43]** your tools between uses go for a drip

**[00:23:46]** irrigation or some type of irrigation

**[00:23:48]** that's not going to be affecting the

**[00:23:49]** foliage of the plants themselves

**[00:23:51]** maintaining dry plants as much as

**[00:23:53]** possible even out in the field as for

**[00:23:55]** irrigation right now i've got it hooked

**[00:23:58]** up on a daily watering system i've got

**[00:24:00]** it set to where it waters for 45 minutes

**[00:24:03]** every single morning later in the season

**[00:24:05]** we'll probably lower that amount the

**[00:24:07]** fruits themselves can always let you

**[00:24:09]** know where you're at from an irrigation

**[00:24:11]** standpoint so it is early june it's not

**[00:24:13]** officially summer but we've got really

**[00:24:15]** high temperatures coming through so we

**[00:24:17]** actually use a shade cloth over the

**[00:24:19]** entirety of the tunnel this particular

**[00:24:21]** shade cloth here is a 30 shade so that

**[00:24:24]** means that it is blocking 30 percent of

**[00:24:26]** that sunlight that comes through and

**[00:24:28]** it's good for your plants so you don't

**[00:24:29]** have such a huge bloom and growth that

**[00:24:32]** you can't take care of that many plants

**[00:24:34]** at once it's also good for you and your

**[00:24:36]** workers and anyone else that's coming

**[00:24:38]** through that tunnel because you just

**[00:24:39]** can't physically be in that kind of a

**[00:24:40]** condition it's way too hot so at this

**[00:24:42]** point in the year again it's really hot

**[00:24:45]** and so we want to make sure we're

**[00:24:46]** maintaining airflow and we're making

**[00:24:48]** sure that we're not just trapping in all

**[00:24:49]** of that heat and cooking the plants so

**[00:24:51]** we've basically started just leaving our

**[00:24:53]** sides down all the time now it's it's

**[00:24:55]** warm enough at night nothing's going to

**[00:24:57]** freeze and it's it's hot enough during

**[00:24:58]** the day that we just need to maintain

**[00:25:00]** that airflow so go ahead and stay tuned

**[00:25:02]** for the rest of the video and you'll get

**[00:25:04]** to see how we harvest how we pack and

**[00:25:06]** how we store our tomatoes we're almost

**[00:25:08]** to the big reveal of our ten thousand

**[00:25:10]** pound tomato harvest but first we're

**[00:25:13]** giving you the tools to increase your

**[00:25:15]** own harvest whether you're a total

**[00:25:16]** beginner or a seasoned tomato grower we

**[00:25:19]** know you'll find immense value in our

**[00:25:21]** organic tomato growing guide

**[00:25:24]** complete with variety selection charts

**[00:25:26]** soil amendment recommendations

**[00:25:29]** garden layouts growing schedules useful

**[00:25:32]** terminology and more this step-by-step

**[00:25:35]** guide contains even more valuable

**[00:25:37]** resources than we could fit into this

**[00:25:39]** video and even better this ultimate

**[00:25:42]** guide to tomato growing is just a click

**[00:25:44]** away grab your free copy at the link in

**[00:25:47]** the description of this video and start

**[00:25:48]** planning for your biggest yields yet now

**[00:25:51]** back to the show welcome back it's been

**[00:25:54]** about three weeks so as you can see

**[00:25:55]** behind me here we have been keeping up

**[00:25:57]** with pruning in that entire three week

**[00:25:59]** period and so we're making sure that the

**[00:26:01]** plants are healthy happy and we've got

**[00:26:03]** the fruits of our laborers that are

**[00:26:04]** coming out really nicely we do try to

**[00:26:07]** harvest three times a week generally and

**[00:26:09]** we'll be doing that every other day so

**[00:26:10]** on monday mornings wednesdays and

**[00:26:12]** fridays we start out here at 7 00 a.m we

**[00:26:15]** grab all of our totes that we use then

**[00:26:17]** you can actually pull your harvest totes

**[00:26:20]** along using our little harvest cart and

**[00:26:22]** so as you're dragging those carts along

**[00:26:23]** we'll be looking through and trying to

**[00:26:25]** find any tomatoes that have any

**[00:26:27]** coloration on them so because we do grow

**[00:26:30]** heirloom tomatoes in here we do have a

**[00:26:31]** variety of different colors we've got

**[00:26:33]** some yellow colors in our gin fizz

**[00:26:35]** variety but then we've also got our

**[00:26:37]** cherokee carbon which is a variation on

**[00:26:40]** the cherokee purple which is a very

**[00:26:41]** common heirloom any of those colorations

**[00:26:44]** once you start seeing those on the

**[00:26:45]** tomato they are ready to come out

**[00:26:46]** tomatoes will continue ripening once

**[00:26:48]** they're off the plant you don't have to

**[00:26:50]** leave them on the plant to ripen but we

**[00:26:52]** do try to harvest them before they're

**[00:26:54]** fully ripe because everyone loves a

**[00:26:56]** super ripe tomato so you're going to end

**[00:26:58]** up with a lot of caterpillars you're

**[00:26:59]** going to have birds in there we try to

**[00:27:01]** reduce that pest pressure and then we

**[00:27:03]** also are going to be transporting them

**[00:27:05]** and if they're not fully ripe they're a

**[00:27:07]** lot easier to transport as well going

**[00:27:09]** into the harvesting of the actual tomato

**[00:27:11]** it is pretty easy if they are starting

**[00:27:14]** to blush it's ready to come off so when

**[00:27:16]** you grab that tomato and pull it's going

**[00:27:18]** to start coming very easily sometimes it

**[00:27:20]** will come off with the top still

**[00:27:22]** attached go ahead and just remove that

**[00:27:24]** top because when you've got them

**[00:27:25]** packaged up it can actually puncture

**[00:27:28]** other plants and this also allows for it

**[00:27:30]** to ripen a little quicker as well so now

**[00:27:32]** you've got this open area here and that

**[00:27:34]** is from where the plant will be ripening

**[00:27:37]** so generally when we're storing them in

**[00:27:39]** commercial agriculture generally you're

**[00:27:40]** going to be storing them shoulders down

**[00:27:42]** a lot of times on a fruit the shoulders

**[00:27:44]** are going to be one of the toughest

**[00:27:46]** parts of the fruit itself also it's not

**[00:27:48]** going to roll as easily so when you've

**[00:27:50]** got them in the flats they're just a lot

**[00:27:52]** easier to handle for some reason this

**[00:27:53]** year we've been finding that our

**[00:27:55]** shoulders on the varieties that we're

**[00:27:56]** growing are a lot less strong than they

**[00:27:59]** have been in the past and so we've

**[00:28:00]** actually been storing them bottoms down

**[00:28:03]** we definitely try to make sure that our

**[00:28:04]** totes are always full so that when we're

**[00:28:06]** transporting them they're not going to

**[00:28:07]** be rolling around and bruising each

**[00:28:09]** other in the tote itself as you are

**[00:28:11]** harvesting and as you are packing you

**[00:28:13]** want to make sure that there's always

**[00:28:14]** just a single layer of tomatoes they are

**[00:28:17]** easy to bruise and they can cause damage

**[00:28:20]** to themselves if you're trying to stack

**[00:28:21]** them on top of each other so now that we

**[00:28:24]** have harvested our fruits we've got a

**[00:28:26]** tote of them and so we're going to talk

**[00:28:28]** a little bit about storage of our fruits

**[00:28:30]** so what i've done is put a bunch of

**[00:28:31]** shelving in a separate room of our

**[00:28:33]** office and in that office space it is

**[00:28:36]** set at 63 degrees which is really cold

**[00:28:39]** during the heat of the summer but it's

**[00:28:40]** perfect for just slowly lowering that

**[00:28:42]** temperature of the tomatoes but not so

**[00:28:44]** much that they will not continue to

**[00:28:46]** ripen and we always try to sort them by

**[00:28:49]** ripeness all of your tomatoes that are

**[00:28:51]** pretty green like this guy are going to

**[00:28:53]** be all together so obviously they're not

**[00:28:54]** going to be fully green they're going to

**[00:28:55]** have a little color but they're going to

**[00:28:57]** be very not ripe so you've got your knot

**[00:28:59]** right box and then you'll have kind of a

**[00:29:01]** medium ripeness where they're starting

**[00:29:02]** to ripen but they have not fully ripened

**[00:29:04]** yet and then once you get to that next

**[00:29:07]** level that's going to be your fully ripe

**[00:29:08]** those are the ones that we are going to

**[00:29:10]** be sending out for sale for once we get

**[00:29:13]** to that point in the ripening process we

**[00:29:14]** actually move them into a cooler set at

**[00:29:17]** 55 degrees it's still cool enough where

**[00:29:20]** it's slowing down that ripening process

**[00:29:22]** but it's also going to continue to have

**[00:29:24]** that fresh right from the vine taste so

**[00:29:26]** from the time you harvest that tomato

**[00:29:28]** you have about a week until i really

**[00:29:30]** want to have that tomato in the hands of

**[00:29:32]** a customer i like to also sort between a

**[00:29:35]** grids b grades sometimes people will

**[00:29:37]** call them seconds those are going to be

**[00:29:39]** tomatoes that are still edible but they

**[00:29:41]** might have some imperfections so you

**[00:29:43]** want to always send out what you would

**[00:29:45]** personally feel good buying you

**[00:29:46]** definitely want to be getting your

**[00:29:48]** customers the ripest tomatoes that you

**[00:29:50]** have available if you're going directly

**[00:29:52]** to your customers they like to be able

**[00:29:54]** to see exactly what that tomato looks

**[00:29:56]** like and they want to be able to eat it

**[00:29:58]** as soon as they get home but if you're

**[00:29:59]** selling for wholesale you can kind of

**[00:30:01]** cut back a little bit on that ripeness

**[00:30:02]** because it allows for that retailer to

**[00:30:05]** hold onto that tomato a little bit

**[00:30:06]** longer so once they are fully ripe we

**[00:30:08]** have tomato boxes that are exactly the

**[00:30:11]** right size for 10 pounds of tomatoes in

**[00:30:14]** those cardboard boxes that go out to the

**[00:30:15]** customer you want to pack them however

**[00:30:17]** they're going to be safest for transport

**[00:30:19]** so what we'll usually do is we'll

**[00:30:21]** actually weigh them out and stack them

**[00:30:23]** up in the cooler the night before and

**[00:30:24]** then they are completely ready to just

**[00:30:26]** throw out in the van and take them out

**[00:30:28]** to the customer the next day

**[00:30:32]** [Music]

**[00:30:42]** do

**[00:30:46]** [Music]

**[00:31:00]** thank you so much for watching our video

**[00:31:02]** on how to grow ten thousand pounds of

**[00:31:04]** tomatoes all in one high tunnel if you

**[00:31:06]** found value in this video please like

**[00:31:09]** and subscribe so you can see more of

**[00:31:11]** this garden content here on our channel

**[00:31:13]** keep learning about market gardening

**[00:31:15]** with heifer usa check out this video to

**[00:31:18]** improve your irrigation or this one to

**[00:31:20]** learn about building your very own high

**[00:31:22]** tunnel and don't forget to snag your

**[00:31:24]** free copy of the organic tomato growing

**[00:31:27]** guide at the link in the description

# Full Text (without timestamps)

because this is an organic operation we don't use chemicals in our tunnels and so maintaining the health of the plants is going to be your first priority always so you want to grow healthy organic tomatoes in your backyard market garden or hobby farm but you're not sure where to start well then welcome to the ultimate guide to growing tomatoes where we'll teach you how to select and start seeds transplant and trellis prune your plants and harvest a healthy crop of high quality tomatoes don't believe us then keep watching to see how we grew ten thousand pounds of tomatoes in one season for the past year we've filmed every step of growing tomatoes organically here at heifer usa and now we're showing you the secrets to our success and stay tuned for a free resource to guide your growing season and produce the highest yields possible all that and more coming up in this video from heifer usa before you start planting anything it's important to choose the right varieties for your garden heifer usa horticulture specialist sarah bocker selects the best varieties for our three and a half acre market garden in zone 7b first of all we always try to determine what types of tomatoes that we do based on our climate location yields and disease resistance we usually get most of our seeds from johnny's as you've probably seen in some of our past videos they generally have some really good quality seeds to choose from for this year we did end up choosing several different heirlooms or heirloom type varieties there's a couple that were actually hybrid called the gin fizz variety it's kind of got a yellow orangey quality to it so it'll be exciting to see how that one turns out we did stick with cherokee purple and then we're also doing some cherry tomatoes this year so now let's look into our spacing and the amount of space that we actually have available so our high tunnel down in the garden here at hipfire usa it's actually our brand new tunnel we're going to put landscape fabric down over the entire thing which is going to be really nice for weed suppression with that landscape fabric going in we're going to put five beds into this high tunnel so our high tunnel is 30 feet by 90 feet we have about five feet of walkway on either end of the tunnel which allows plenty of room for harvesting later on that gives us about 80 feet for our five rows for this tunnel we'll be using five foot centers which is a bit bigger than the standard four foot centers recommended for market gardens but having that extra room really pays off when you're trellising pruning and harvesting later on we're going to be looking at about 260 plants total so just to be safe i definitely want to seed more than i have room for just in case something goes wrong in the germination process or if later on you know one of the plants doesn't look great you've got some extras to work with and then additionally we can even use them and pop them up and sell them to people around here later as well so we're going to aim for planting 300 plants in our trays and so this tray that i've got laid out here in front of us is one of my starting trays usually for other types of crops i would use a much more dense tray but because they are tomatoes and you do kind of have to baby them in the beginning of the season i like to give them a little bit more room in these smaller cells before they actually will get transplanted up into our four-inch pots and put in the field so within each of these trays it's 5 by 10 so this is a 50 cell flat ideally we'll have 50 plants in here just to be sure if our germination rate is a little wonky you want to try putting two seeds per cell and then as they grow bigger you can thin those out to one plant per cell and that'll definitely help with any of those germination issues that you may encounter so let's go ahead and talk a little bit about the soil that i will use for these seeds and for tomatoes specifically so with this soil medium that we've got right here it is a soil starting mix which is different than just a potting soil soil starting mix is basically just some peat moss and perlite minerals mostly for drainage purposes but it's not going to include any of that good stuff that really help plants grow with any kind of seed starting you're going to be looking for a medium that is going to hold moisture but not too much moisture still allowing for that drainage which is very important particularly for the germination period to be able to fill your flats you're going to want to wet your soil starting medium so we've got a large trough where we put all of our dry potting soil and then we will go ahead and wet that down with a little water until the consistency itself if you squeeze it it's not going to be dripping but you can kind of mold it with your hand so once you've got it wetted down enough the best way that i've found to do it is to actually place the flat directly on top of the soil and just start keeping the soil on top of it and just doing kind of circles along the entire flat so you want them to be as evenly filled as possible and as flat as possible but you also don't want to tamp it down too much because you do need to have that air in the soil as well so that your plants can start developing their root systems so once you've got your flat totally full to the top you're going to want to press some indentions into your soil and then two seeds per cell and you just continue down the line from there so i've got a few little pieces of equipment here that we use for a lot of different seed starting something really basic that you can use is teaspoons anything that just has an indention and can hold your seeds so that's one really really basic option they also have these fun little guys that are still very basic so you can actually place your seeds directly in the little chamber here then the top it's got all these numbers that show the sizing of the holes that are open five is going to be your biggest zero is closed so these guys are probably maybe a one or a two you can tap the top and it starts to bring down a line of seeds and then you're able to control more or less how many you're doing so that's another option here this is kind of like one of my favorite toys i really love these things they call it a vibro hand seeder it basically is like a pvc pipe with a battery in it and it vibrates this little channel here just so that your seeds will come down in a pretty even pattern if you don't have either of these seating tools don't worry seating works just as well with a teaspoon and a bit of patience if you would like to purchase the seating tools trays or anything else you see in this video check out the links in the description for farmer-tested and farmer-approved products once you've dropped all your seeds into the tray cover them with a thin layer of soil this layer should be roughly equal to the width of the seed with our seed trays prepared it's time to start the germination process so that is basically that time period between when a seed is first getting wetted and is prepping to sprout and when it actually starts to come above the soil that is one of the most critical times in a plant's life and you want to be able to make sure that you're nurturing it properly and you're able to keep control over all of the factors of that plant's life basically once we've got our seeded flat here we will give it a gentle water usually i'll actually just use a mister on my hose i don't want to blast it with water in a way that would actually disrupt the soil but then for the rest of that germination period we're actually going to be doing a bottom watering so we've got a tray underneath that we can fill with water we also here at the ranch have a germination chamber and that really helps us to maintain the proper humidity the proper temperature and darkness until we don't need darkness anymore so in our germ chamber it actually does have a reflective area on the inside that also keeps in a little heat and then we have a heated humidifier on the bottom and it brings up that warm wet air which are heat loving varieties like you should probably aim to keep your germinating plants at about 60 to 80. the higher the humidity the better so we do have a temperature gauge as well as a humidity gauge within our germ chamber that allows me to constantly be checking on them and so as soon as you start seeing those sprouts coming up they are going to be immediately looking for some kind of sunlight in our germination chamber we do have two rows at the top where we have lights set up and those lights are on a timer generally between 12 to 13 hours each day so i'm gonna keep them in the germination chamber until what will germinate has already germinated you're looking at about you know seven to fourteen days somewhere in there for germination and once you've got that sprouting you've got maybe a week in the germination chamber if you have lights before you want to move them into a different environment that actually has sunlight so as you're moving from the germ chamber into the greenhouse that's a really good time to go through and make sure you only have one plant per cell you can just pinch off the plant itself because that will actually be the least disturbance on the soil and on the roots of the new plants so once you've got them in the nursery you are still going to be maintaining that temperature also make sure that they're getting a pretty consistent water rain but not too much watering so generally when they're in that stage i will just do one watering per day and at this point i'm actually going to be using my bottom water system i will have a non-perforated tray underneath and then the soil of the plants will actually just soak up the water as they need it and it's just a better way to keep the soil moist and then this is also a way to keep the plant itself dry tomato plants don't do as well with being really moist and so keeping that plant dry on the top helps to keep them healthy while they're in the greenhouse if you've chosen an indeterminate variety to grow in a high tunnel or greenhouse there's another important step during the nursery period called bifurcation when our indeterminate seedlings are about six inches tall or have two sets of true leaves we top the plants by cutting off the central leader stem this process encourages the plant to grow fruit on two liter stems rather than just one effectively doubling the plant's yield just remember this process only works with indeterminate varieties after six to eight weeks in the nursery it's time to transplant your tomatoes from here to here but first make sure they're prepared for the move in a process called hardening off for most crops hardening off involves leaving the plants outside exposed to the elements to prevent shock after transplanting but when growing tomatoes especially for a high tunnel hardening off may look a little bit different so for the hardening off process for tomatoes as long as you are between you know 65 70 degrees you can harden them off outside especially if they're going to be outside for the rest of their lives but when it comes to ones like these guys that are going to be going straight into a high tunnel it's not as necessary we do want to be able to harden them off in a way that their root systems are stable and they have sturdy stems that we can trellis them but they don't necessarily have to be sitting outside in the elements because that's actually not where they're going to be for the rest of their lives you can do it inside by actually just backing off on the watering and just letting them experience a little bit more stress than they have in the past speaking of stress learning all this valuable information at once may feel a bit overwhelming we know but luckily heifer usa has you covered with the organic tomato growing guide a multi-page document that contains calendars worksheets garden layouts and more to help you increase your yields and improve your produce keep watching until the end of this video to find out how you can receive a free copy while our plants are hardening off let's turn our attention to the high tunnel where our garden staff is working hard to prepare the soil for our growing transplants so this is our new high tunnel we just had this put in a couple of months ago so our soil here has at least a good four to five inches of compost to cover the entire ground in here because the soil underneath it was basically just solid clay because of that we're really having to work this soil a lot the two main amendments that we've been doing here we've got azomite this one's going to actually do a lot of those trace minerals that we're missing we've spread just about a cup of that down each bed we've got feather meal here which is basically just ground up remnants of poultry and that's just a huge nitrogen fix there once we've got the amendment spread on the beds you're going to want to actually work it into the soil a little bit you can use a rake which is what we did or you can even get a bcs walk behind tractor or something like that just to kind of mix it into the soil so you've got it really good in your beds we did put down landscape fabric here and that's not a necessary step always in the garden and we are trying to lean away from it in the future but because this is basically virgin soil here we really haven't had a chance to work it the way that we have in a lot of our other high tunnels and our blocks hopefully that's going to save us a lot of time with weed management here so for our next step for our landscape fabric is we are going to actually lay our drip tape and our irrigation lines over the landscape fabric we're doing two inch drip tape so that means every two inches we've got a hole for water to come through and then once we get our irrigation lines laid out that's going to have really straight lines when we're burning holes through the landscape fabric and we're going to do that every 18 inches and that's going to be our spacing for the tomatoes [Music] [Music] today we're putting our tomato plants in the ground and you may have noticed that we've got a special guest to demonstrate our transplanting method sean pasera former heifer usa horticulture specialist is back for one segment only before returning to his full-time work at mindful farmer arkansas take it away sean because this was a new tunnel the ground's a little compacted so we're using this tree transplanter and it's nice because it's so narrow it fits right down into that hole and so i can just step on it pull the soil back give it a little twist to loosen it the next step is to lay out our plants and i like to lay out the plants by variety and that way we can harvest directly into the crates that are go out for market i lay them on their sides that way they're not standing up and kind of flopping over and then you're just opening up the soil putting it as deep as you can in this in the event of this one with a single leader and then pushing the soil up around it and so this one actually has a double leader and so i'm gonna not plant that one as deep and then push the soil up around it and i have my orientation of the leaders is with the strings that are going to go up to the pole once you're market gardening long enough you kind of stretch out and strengthen certain muscles and so i actually prefer to like stand with my legs straight and bend over and transplant and i can move pretty quick doing that [Music] [Music] so all the plants are in the ground we're rolling up the sides because it's actually going to be a little chilly keep everything nice and warm we've kicked on the irrigation to get everything watered in really well so later in the video we'll show you how to trellis and prune and harvest the tomatoes and get them ready for market so keep watching to hear more from sean follow mindful farmer arkansas on facebook and instagram in the meantime we've got another important task to tend to it's been a week since we got our plants in the ground here in the high tunnels we're actually going to go ahead and start trellising trellising is crucial to growing tomatoes because it gives the plants structure and support causing them to grow upward keeping our tomatoes off the ground makes them less vulnerable to pests and diseases allows for better air flow and efficiently utilizes the space we've allotted for this crop there are lots of ways to trellis tomatoes but here's how we do it here at heifer usa here we've actually got some conduit that shawn put up earlier that's gonna line the length of the tunnel here and then from there we're able to hang our trellises that will eventually allow for the plant to grow upwards towards those conduits on the ceiling so at each spot along the conduit you line it up with where the plant itself is and you can attach your string our twine here is a biodegradable cecil type twine it's a little different than what we've used in the past so this here is a regular kind of plastic based garden twine which works just fine it's a really sturdy type but you can't really biodegrade it and so that means that at the end of the season when you're pulling all of these plants out you're gonna have to go through and cut all of these guys off so the idea is that with this stuff we can actually just put toss this back into the compost with the plants themselves so the same goes actually for the clips that we'll be using for our trellising in the past years we've used these guys here which are plastic based again the ones that we're going to try out this year are these guys which are a cornstarch biodegradable clip the clips will cost a little bit more right at first but we've found that the labor required to remove them all at the end of the season way outweighs the cost of them up at front so when it comes to actually trellising it's a really basic process and i know there's a lot of tools and tricks that everyone has we use a binder clip it's weirdly effective you literally just tie a loop attach your binder clip and toss it catch it when it comes down and then you just cut it at the right length i usually do about chest height you can stick it right through once you've cut it and then just pull it tight what i'm wearing is actually from johnny's it's super helpful i can keep all of my twine right here in my basket and i even can keep my clips right in the bucket next to me which makes it super easy and a lot of time is saved that way so now that we've got some of our trellising lines up we will actually be attaching the leaders of our plants we topped our tomatoes so there will be two sides to each one of these plants and it's going to actually have two sides to each row so for this first one just to make sure that we're holding the plant without it splitting at that point there we're going to clip them both together and then as the leaders branch apart the trellising will also branch apart and we'll start clipping to each individual leader so when your plants are pretty small like this it's not as important where they go just yet i try to do it between leaves so i'm not smashing anything you want to make sure that the clip itself is not around any fruit clusters where it's going to constrain any growth that it's nice and loose around the plant itself but that it's still holding it we'll do that again on this side here twine goes right in there clip it around and then you'll continue up the plant once you actually get a larger plant and it's trailing up these lines you're probably going to be about a foot apart on each of these clips so that's how you do it with each individual plant and again there will be two of those trellises per plant so you'll have those two liters going up on each side once we get that done we'll finish the entire high tunnel here with the same trellising technique and then we'll actually get into the pruning but first let's see that sweet sweet trellising time lapse [Music] [Music] it's been about three weeks and as you can see our plants are a little bit bigger and i mean a lot bigger because we are in full growth mode we've got higher temperatures now we've also got a lot longer daytime hours and the plants are loving it which means that they are in total growth mode so we are also in pruning mode one sometimes two times a week we are going through and pruning all of our plants because with a tunnel this large it is a lot of work to keep up with these indeterminate plants so let's go ahead and talk about the tools and equipment that come along with pruning it's pretty basic and a lot of times people will actually just use their fingers themselves for the pruning i like to use a knife it's a lot more precise and it also makes it to where i can clean it after every use so if there's any diseases in the plants i can actually clean that off so i'm not spreading it to other plants in my high tunnel and then i like to actually carry around a fanny pack it's really fancy super high tech but you've got all your clips and equipment right here on your belt so i'm now in one of the rows that we have not had a chance to really go through and prune yet this week so you can already see the difference remember anytime you can not really see through an aisle like this you know that that means that there's a lot less air getting through as well and there is such a high possibility of transfer of disease between plants between workers between foliage when you're pruning so we like to try and pick up all of our foliage after we've pruned it and get it out of the high tunnel just in case there's any chance that there's a disease or a fungus or even pests in the foliage itself if you leave it on the ground it could be used as a type of a compost but more likely it's going to be a disease vector we have more advice on disease prevention coming up but first let's learn the basics of pruning starting with a quick plant anatomy lesson for the majority of plants you're going to find a couple of leaves so right above our leaves in the little armpit kind of you've got some plants growing out here so these are what we call suckers and these are what we are going to try and remove so a lot of times if they're smaller like this i can just pinch it off with my fingers now sometimes you're going to end up with really large ones if you aren't able to keep up with the pruning as often as you'd like and with those larger ones i do recommend using some kind of a sharp instrument just to make sure you're not damaging the plant and then from there you're going to go back up you've got two more leaves here leaf leaf sucker sucker and then we've got our next fruit cluster so just being able to identify those parts of the plant is very helpful once we've started to actually develop the fruits on our fruit clusters you can remove the leaves down below those so here is a plant that we have not yet pruned the leaves on so as you can see we've got our fruit cluster here but we also have leaves below the fruit cluster so these leaves are basically extra foliage at this point they are not serving the fruit they are just going to become little disease vectors so using a sharp instrument you've got clippers you can use a knife i would always recommend actually using an equipment for this because they are not they're going to be a lot tougher they can't be pinched off like suckers so getting kind of as close to the stem without hurting the stem itself you can just make a clean cut remove the leaf and then collect that later and take it out of the tunnel so let's just do a real quick recap on our pruning and our trellising so we're going to remove any of that foliage below our fruit clusters you're going to want to get all your suckers out maintain that airflow and then continue to keep training your plants right up that main leader there okay so let's talk a little bit about disease prevention in your plants because this is an organic operation we don't use chemicals in our tunnels and so maintaining the health of the plants is going to be your first priority always so the healthier the plant the fewer diseases the fewer pathogens the fewer pests are going to be dealing with a lot of that has to come from maintaining that airflow which is huge making sure your plants get enough water making sure they have enough light making sure it's not too hot or too cold just simple stuff like that is huge if you're having like major issues with aphids a lot of times that's an airflow issue and a lot of times it's just an issue with the plants being unhealthy and attracting those insects in if you see diseased plants remove them as soon as you physically can wash your hands clean your tools between uses go for a drip irrigation or some type of irrigation that's not going to be affecting the foliage of the plants themselves maintaining dry plants as much as possible even out in the field as for irrigation right now i've got it hooked up on a daily watering system i've got it set to where it waters for 45 minutes every single morning later in the season we'll probably lower that amount the fruits themselves can always let you know where you're at from an irrigation standpoint so it is early june it's not officially summer but we've got really high temperatures coming through so we actually use a shade cloth over the entirety of the tunnel this particular shade cloth here is a 30 shade so that means that it is blocking 30 percent of that sunlight that comes through and it's good for your plants so you don't have such a huge bloom and growth that you can't take care of that many plants at once it's also good for you and your workers and anyone else that's coming through that tunnel because you just can't physically be in that kind of a condition it's way too hot so at this point in the year again it's really hot and so we want to make sure we're maintaining airflow and we're making sure that we're not just trapping in all of that heat and cooking the plants so we've basically started just leaving our sides down all the time now it's it's warm enough at night nothing's going to freeze and it's it's hot enough during the day that we just need to maintain that airflow so go ahead and stay tuned for the rest of the video and you'll get to see how we harvest how we pack and how we store our tomatoes we're almost to the big reveal of our ten thousand pound tomato harvest but first we're giving you the tools to increase your own harvest whether you're a total beginner or a seasoned tomato grower we know you'll find immense value in our organic tomato growing guide complete with variety selection charts soil amendment recommendations garden layouts growing schedules useful terminology and more this step-by-step guide contains even more valuable resources than we could fit into this video and even better this ultimate guide to tomato growing is just a click away grab your free copy at the link in the description of this video and start planning for your biggest yields yet now back to the show welcome back it's been about three weeks so as you can see behind me here we have been keeping up with pruning in that entire three week period and so we're making sure that the plants are healthy happy and we've got the fruits of our laborers that are coming out really nicely we do try to harvest three times a week generally and we'll be doing that every other day so on monday mornings wednesdays and fridays we start out here at 7 00 a.m we grab all of our totes that we use then you can actually pull your harvest totes along using our little harvest cart and so as you're dragging those carts along we'll be looking through and trying to find any tomatoes that have any coloration on them so because we do grow heirloom tomatoes in here we do have a variety of different colors we've got some yellow colors in our gin fizz variety but then we've also got our cherokee carbon which is a variation on the cherokee purple which is a very common heirloom any of those colorations once you start seeing those on the tomato they are ready to come out tomatoes will continue ripening once they're off the plant you don't have to leave them on the plant to ripen but we do try to harvest them before they're fully ripe because everyone loves a super ripe tomato so you're going to end up with a lot of caterpillars you're going to have birds in there we try to reduce that pest pressure and then we also are going to be transporting them and if they're not fully ripe they're a lot easier to transport as well going into the harvesting of the actual tomato it is pretty easy if they are starting to blush it's ready to come off so when you grab that tomato and pull it's going to start coming very easily sometimes it will come off with the top still attached go ahead and just remove that top because when you've got them packaged up it can actually puncture other plants and this also allows for it to ripen a little quicker as well so now you've got this open area here and that is from where the plant will be ripening so generally when we're storing them in commercial agriculture generally you're going to be storing them shoulders down a lot of times on a fruit the shoulders are going to be one of the toughest parts of the fruit itself also it's not going to roll as easily so when you've got them in the flats they're just a lot easier to handle for some reason this year we've been finding that our shoulders on the varieties that we're growing are a lot less strong than they have been in the past and so we've actually been storing them bottoms down we definitely try to make sure that our totes are always full so that when we're transporting them they're not going to be rolling around and bruising each other in the tote itself as you are harvesting and as you are packing you want to make sure that there's always just a single layer of tomatoes they are easy to bruise and they can cause damage to themselves if you're trying to stack them on top of each other so now that we have harvested our fruits we've got a tote of them and so we're going to talk a little bit about storage of our fruits so what i've done is put a bunch of shelving in a separate room of our office and in that office space it is set at 63 degrees which is really cold during the heat of the summer but it's perfect for just slowly lowering that temperature of the tomatoes but not so much that they will not continue to ripen and we always try to sort them by ripeness all of your tomatoes that are pretty green like this guy are going to be all together so obviously they're not going to be fully green they're going to have a little color but they're going to be very not ripe so you've got your knot right box and then you'll have kind of a medium ripeness where they're starting to ripen but they have not fully ripened yet and then once you get to that next level that's going to be your fully ripe those are the ones that we are going to be sending out for sale for once we get to that point in the ripening process we actually move them into a cooler set at 55 degrees it's still cool enough where it's slowing down that ripening process but it's also going to continue to have that fresh right from the vine taste so from the time you harvest that tomato you have about a week until i really want to have that tomato in the hands of a customer i like to also sort between a grids b grades sometimes people will call them seconds those are going to be tomatoes that are still edible but they might have some imperfections so you want to always send out what you would personally feel good buying you definitely want to be getting your customers the ripest tomatoes that you have available if you're going directly to your customers they like to be able to see exactly what that tomato looks like and they want to be able to eat it as soon as they get home but if you're selling for wholesale you can kind of cut back a little bit on that ripeness because it allows for that retailer to hold onto that tomato a little bit longer so once they are fully ripe we have tomato boxes that are exactly the right size for 10 pounds of tomatoes in those cardboard boxes that go out to the customer you want to pack them however they're going to be safest for transport so what we'll usually do is we'll actually weigh them out and stack them up in the cooler the night before and then they are completely ready to just throw out in the van and take them out to the customer the next day [Music] do [Music] thank you so much for watching our video on how to grow ten thousand pounds of tomatoes all in one high tunnel if you found value in this video please like and subscribe so you can see more of this garden content here on our channel keep learning about market gardening with heifer usa check out this video to improve your irrigation or this one to learn about building your very own high tunnel and don't forget to snag your free copy of the organic tomato growing guide at the link in the description