

GROWING TOMATOES

IN THE JEMEZ



GROWING TOMATOES IN THE JEMEZ

A. TYPES

1. DETERMINATES

- compact bush
- in general have the best disease resistance
- fruits ripen at about the same time
- some are suitable for containers (pots)

2. INDETERMINATES

vines

must be trellised

have less disease resistance than determinates

fruits ripen more continuously

should be pruned

C. SOURCES

seed

-advantage---large choice of varieties

-disadvantages---start inside, space, require heat mats and grow lights, timing

plants

-advantages---no heat mats, grow lights, extra space or time required

-disadvantages---less variatal choices and alittle more expensive

grafted plants

-advantages---stronger, more productivity and disease resistance

-disadvantages---much less choices and more \$\$\$

C. WHERE TO PLANT ?

1. Garden

-XXXXXX

2. Raised Beds

-XXXXX

3. Containers---Patio

Yes---small growing determinates

4. Earth Boxes

*2 small determinates or
1 indeterminate*

yes---yes

advantages---great growth, yields, better water control

disadvantage---\$\$\$\$\$

5. Straw Bales

yes---yes---yes---yes---yes!!!!!! "

advantages

much less expence!!

less water use!!

disadvantage

must condition

E. CONDITIONING

organic or inorganic ?

final outcome is the same.

Organic fertilizer

manure---not advised

bagged granular with a nitrogen content of 10% or higher is more convenient.

conditioning time is increased by one to two weeks.

Inorganic fertilizer

use a lawn quick greening with a nitrogen content of 27% or higher. (don't use weed and feed types) *# direct work*

conditioning time is two to three weeks --

GROWING FROM SEED

Growing from seed gives one the advantage of being able to pick from a wide varieties of tomatoes and will enable you to plant early. Planting early gives the plant an extra month of growth and production. "But" only with Walls Of Water---they will protect your plants from temps to the low 20's.

- You will need---
1. A place to do it (I use my laundry room)
 2. A seed tray with lid
 3. Seedling potting mix
 4. Seed heating mat
 5. And a grow lite

Steps: Set your heat mat to 70° to 75° (temps to 90° are tolerated)

Plant seeds $\frac{1}{4}$ " deep. Most seeds will germinate at 6 to 10 days, though some will show as early as 3 days. There will be some laggards up to 14 days. Germination is usually 70% to 80%.

Once the seed have germinated remove the lid and install the grow lite. Give the seedlings 6 hours of lite per day until you have 2 sets of adult leaves. Then give them 18 hours per day. the lite should be set 6" above the plants during this vegetative stage. as it will give fuller, bushier plants. The plants will stay in the vegetative state for 4 to 6 weeks. At this time you may plant them outside if the night time temps stay above 20°.

If weather conditions aren't favorable, the plants may go into the flowering stage. If this happens---raise the light to 16" to 24" as this will reduce "leggyess".

Plant as soon as possible.

At-a-glance Conditioning summary chart

All volumes and quantities are per bale.

3.

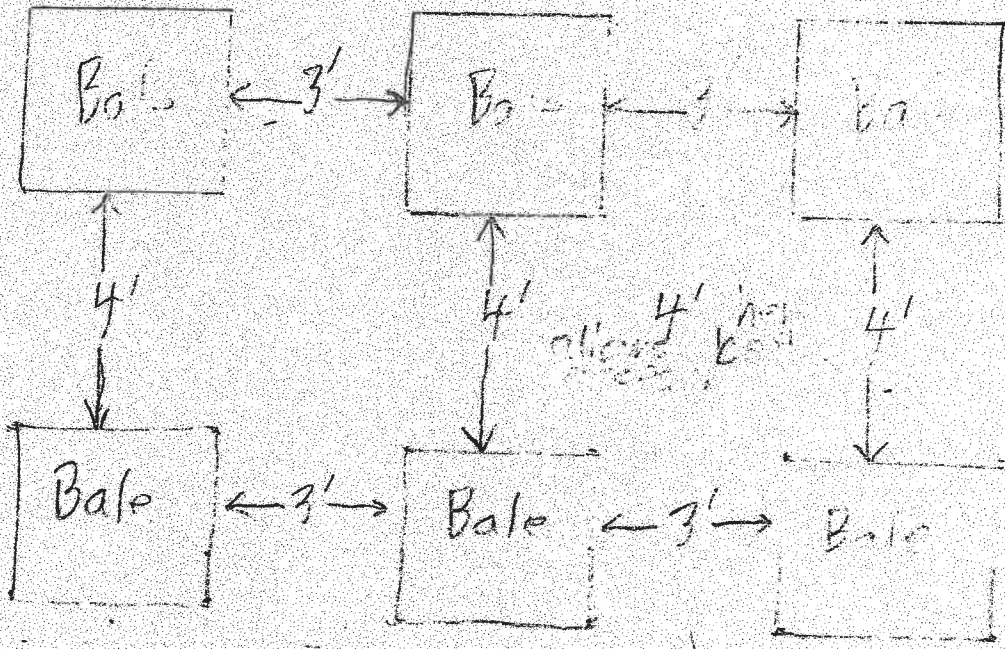
DAY IN PROCESS	TRADITIONAL FERTILIZER	ORGANIC FERTILIZER	WATER
Day 1	1/2 cup	3 cups	Water to saturation
Day 2	Skip	Skip	Water to saturation
Day 3	1/2 cup	3 cups	Water to wash in fertilizer
Day 4	Skip	Skip	Water to saturation
Day 5	1/2 cup	3 cups	Water, warm is best
Day 6	Skip	Skip	Water, warm is best
Day 7	1/2 cup	1 1/2 cups	Water, warm is best
Day 8	1/2 cup	1 1/2 cups	Water, warm is best
Day 9	1/2 cup	1 1/2 cups	Water, warm is best
Day 10	1 cup 10-10-10	3 cups with P and K	Water, warm is best
Day 12	Skip	Skip	Water to wash in fertilizer
Day 13	1 cup gypsum & 1 Tbles MgSo4 per bale		Water

- Day 14---Scatter 2 cups of seed starter mix on top of each bale ✓ and water in. Use a starting mix that contains Mycorrhize.
- Day 15---water only.
- Day 16---Plant any time now when the internal bale temperature is 70° or higher. Continue to water daily. Don't fertilize for 5 days. *Revitalize - ~~seed~~ for chanel post just before planting*

BALE SET UP

In order to reduce disease spread, I've found it necessary to spread out the bales. I recommend spacing them 3 to 4 feet.

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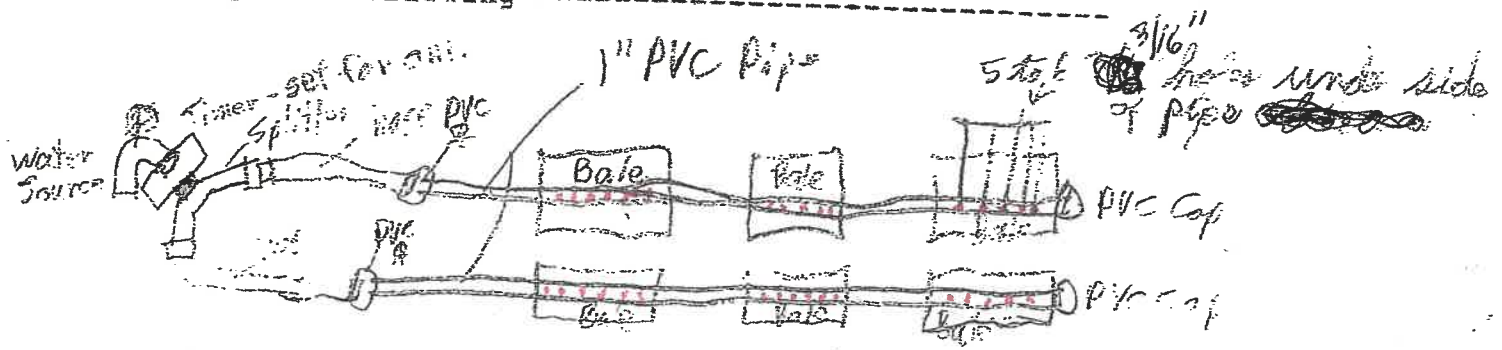
PLANTING

Dig a 6" by 6" hole in the bale for 2" to 3" pots.
 (Larger for larger pots and plants). A coping or
 Sawsall and a large pair of pliers helps a lot. Plant
 small seedlings leaving 2 to 3 pares of adult leaves above the
 soil level, larger plants ---leave 3 sets of adult leaves
 above the soil level. Grafts---keep the graft above the soil
 level. Fill a seedling potting mix around the seedling---
 Be sure the mix contains Micoriza which establishes a healthy
 environment. Sprinkle 1 Tbl spoon of MgSo4 (epsom salt) and
 water in **REVITALIZE** which will reduce disease. If planting
 earlier than May 5th.---erect a Wall Of Water around the plants.
 Keep these on until night time temps stay above 40

*Also add
 # 1 tablesp
 of Epsom
 salt to prevent
 blossom end rot*

WATERING

Large plants will require 2 to 3 gallons of water a day.
 Drip hoses become impractical. So either hand water or
 Try the following-----



Cut water on to where it is dripping well---then time how long
 it takes to saturate the bale. Then set the timer.



Red Mulch
 Agricultural plastics technology has been brought to a new level by the US Department of Agriculture and Clemson University with the development of a reflecting red mulch film called Selective Reflecting Mulch or SRM-Red. This material, a thin plastic film, performs like black mulch, warming the soil and retaining moisture, but there is one important difference. When used with tomato crops, SRM-Red has been shown in USDA tests to increase production from 12-20% of first quality early tomatoes when compared to black mulch. This dramatic increase results from the film reflecting far-red light up into the plant.



Mushrooms (non eatable) and grass will often sprout. This is good news as it indicates that the bales are well conditioned. If they bother you, just pull them, or paint the grass with vinegar (don't get any on the tomatoes!) You can also use Red Mulch. This also helps with weed control and works as a mini green house to keep the bales warm on cold nights. #Red Mulch helps ripening. Better yet, for those freshly cut bales with a lot of oat seeds --- 3 weeks before you condition them, sprinkle 1/2 cup over each bale. Then water to saturation and wrap them in black plastic. The heat (up to 115°) and lack of sun will kill the seeds. Take the plastic off and start conditioning them,

Favorite Determinates

1.



Warrior 5443 Hybrid VFFFAST YLCV. 71 days. The *Spring 2017 'Free Seed Offer'* is resistant to nearly everything, including Yellow Leaf Curl, but not Blight. Huge, 12 to 14-oz., deep red, slightly ribbed fruits with fabulous flavor. Well adapted to virtually any climate, including the Northern Tier states. Determinate. #920. Packet (8 to 10 seeds)

2.



Mountain Merit Hybrid VFFFN TSWV EB LB. 75 days. 2014 AAS Winner. A praise-worthy variety offering multiple resistances not typically combined in most varieties. Deep red, 8 to 10 oz. fruits are firm, oblate to flattened, with generally smooth blossom end scars – makes the perfect slicing tomato. A fresh market variety with excellent resistance to cracking. Determinate.

3.



Charger Hybrid VFFFAST YLCV. 76 days. This excellent variety takes charge of disease resistance. Features strong resistance to the dreaded Yellow Leaf Curl Virus, as well as others. Brilliant red, oblate, 8 to 10 oz. fruits are very firm and smooth shouldered with good flavor. A high yielding salad variety. Perfect home garden variety. Widely adaptable. Plants grow to 24" and spread to 36". Crack resistant. Determinate.

4.




Celebrity Hybrid VFFNTAST. 70 days. This 1984 AAS Winner established a new standard for main-crop hybrids requiring multiple disease resistance. Highly adaptable from Canada to the South. Medium-sized, globe-shaped fruits are crack resistant and average 7 oz. Semi-determinate.

GIRL TAD

Favorite Indeterminants




GOLIATH™ ORIGINAL

Goliath™ Original Hybrid VFFNTAST 
 65 days. *Variety Pio.* Every inch a king, from its beautiful, smooth, bright-red, deep oblate fruits averaging 10 to 15 oz., to a sweet, luscious flavor that lives up to its virtually blemish-free exterior. Tall, vigorous plants produce yield after yield, and modern disease resistance makes it widely adaptable in the North, South and just about anywhere in between. Order early and you'll be rewarded with the biggest and the best! Indeterminate.



Buffalosun

BUFFALOSUN 
 (F1) 80-85 days. Come for the heirloom looks, stay for the exceptional performance and quality, Old German-like fruit! A beefy, beautiful, big, 4 inch, pleated tomato with sunset-colored skin and flesh. Buffalosun has a sweet flavor and smooth texture. Healthy, indeterminate vines are very productive and continue well after many others have succumbed, thanks to its late blight resistance.
 -R: F1-3. V: R: LB. T: S: 1

Itz a Keeper Hybrid Tomato VFFNTTyc.
 (Variety 'SV7846TH') 76 days. *Our incredibly popular experimental 2020 Free Seed giveaway is back!* It's no wonder why some gardeners deem this to be "the perfect tomato"! With a disease resistance package covering almost every letter of the alphabet, we would conclude this "experiment" passed the test! Results provide abundant yields of exquisite, 6 to 8-oz., perfectly round, bright red fruits with the old-timey flavor any tomato lover will appreciate! Indeterminate. #850. Packet (12 to 15 seeds) priced on p. 87. PakPlus (50 seeds) \$7.35; ProPak (100 seeds) \$12.95.



Itz a Keeper Tomato

PESTS



- Cut Worms--- Diatomaceous Earth
- Beetle Grubs--- Nematode culture
- Grasshoppers--- bacterial bait
- Snails--- diatomaceous earth, coffee grounds egg shells & beer saucers
- Bugs in general--- cayenne & pepper spray
- Marigold Companion Planting--- thwarts many insects
- Hornworms--- Doc's Green Martini, also plant basil with T,s:
- Neem oil spray--- insects and fungal

DISEASES

HR	indicates high resistance
R	indicates intermediate resistance
AB	Early (Alternaria) Blight
B	Bacterial Wilt
F	Fusarium Wilt
FOR	Fusarium Crown and Root Rot
L	Gray Leaf Spot
LB	Late Blight
LM	Leaf Mold
N	Roundworm Nematode
PL	Corky Root Rot
PM	Powdery Mildew
PST	Bacterial Speck
RK	Root Knot
TMV	Tobacco Mosaic Virus
ToMV	Tomato Mosaic Virus
TSWV	Tomato Spotted Wilt Virus
TYLCV	Tomato Yellow Leaf Curl Virus
V	Verticillium Wilt
* Numbers indicate specific disease race.	

Underlined & starred are most common & fatal here!

PREVENTION

1. Use Revitalize to plant plants

	<input checked="" type="checkbox"/> <u>Alternaria</u> <input checked="" type="checkbox"/> Anthracnose <input checked="" type="checkbox"/> Bacterial Leaf Blight Bacterial - Erwinia Bacterial - Pseudomonas Bacterial - Xanthomonas Bacterial Speck <input checked="" type="checkbox"/> Bacterial Spot	<input checked="" type="checkbox"/> Bacterial Wilt Black Spot of Roses Black Mold Brown Spot <input checked="" type="checkbox"/> Black Crown Rot Botrytis Blight Botrytis Fruit Rot <input checked="" type="checkbox"/> Botrytis Species	Crown Spots <input checked="" type="checkbox"/> Downy Mildew Species <input checked="" type="checkbox"/> Early Blight Fire Blight Fruit Rot Grape Powdery Mildew <input checked="" type="checkbox"/> Gray Mold <input checked="" type="checkbox"/> Leaf Blight	<input checked="" type="checkbox"/> <u>Late Blight</u> <input checked="" type="checkbox"/> Leaf Spots Species Onion Powdery Mildew Pin Rot Potato Blight <input checked="" type="checkbox"/> Powdery Mildew Species Scab Stem Spot
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2. Rotate crops yearly
3. Don't plant tomatoes with potatoes---same diseases
4. Plant only disease resistant varieties
5. Utilize grafted plants
6. Distance plants from each other

TREATMENT

Removal of infected plants and potting medium is best. Sulphur and copper sprays have shown some success.

BLOSSOM END ROT



Besides diseases blossom end rot has been my major problem. The picture above shows the condition in it's worst form. Though, $\frac{1}{4}$ " brown-black spots can extend into the core, ruining most of the tomato.

BER is caused by a calcium deficiency. Though we have a lot of calculi, this type of calcium is hard for the plant to utilize. I have found the following to drastically reduce the problem.

Has been a minor problem---

1. Add Gypsum when you plant---This (alone) may fix the problem.
2. If gypsum doesn't do the job--try one cup of old milk to the soil once weekly.

Still a problem? Major problem

1. gypsum
2. Also spray once every two weeks with Foli-Cal



Foli-Cal. with 10% calcium, prevents and corrects:

- Blossom end rot in tomatoes, peppers, eggplants, citrus and melons
- Bitter pit and cracking in apples and other tree fruit
- Cavity spot on carrots
- internal browning in potatoes, Brussels sprouts, other vegetables and grapes

P.S. Unfortunately I don't get a kick back!!

9.

DOC'S GREEN MARTINI HORNWORM FORMULA

1. One Fifth Grey Goose Vodka poured into a mason jar
2. Add hornworms---look for striped leaves & droppings on leaves below.
3. Incubate for 10 to 14 days
4. Strain
5. Add 1 jigger of vermouth (I like mine dirty so I substitute with 1 jigger of olive juice) and 4 jiggers of the specially treated Grey Goose.
6. Pour over ice---"shake (Don't Stir)"---
Relax and don't worry about those *****hornworms!!

STRAW BALES TOO MUCH TROUBLE?

Try TOMATO BAGS and Walls of Water



These are ideal for determinates and can be used for 3 to 4 years.

GRAFTING TOMATOES

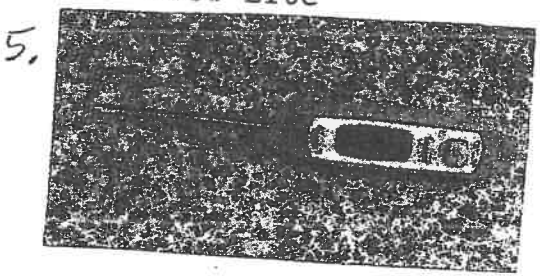
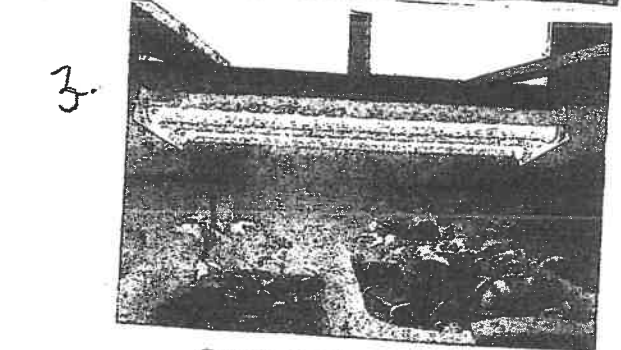
WARNING!!! If you are easily disappointed or frustrated, then grafting isn't for you!! But, if you like a challenge (once you get the hang of it) the result can be very rewarding.

WHY?

The graft root stock has the ability to pass on more disease resistance, better harvests, and longer production time to the variety grafted. This is called the "Scion". This allows us to raise heirlooms which are very susceptible and give added resistance to those that already have a good package. I.e: Warrior is resistant to everything except early and late blight. By using the root stock Submarine you fill this deficiency as it imparts this resistance.

What You Will Need

1. Ability to grow from seeds
2. A seed heating mat.
3. A grow lite
4. A healing chamber
5. A digital thermometer
6. A warm room with dim light
a bathroom is usually ideal
7. Root stock & scion seeds
8. Seedling potting mix
9. Grafting clips
10. Single-edge Razor Blade
11. Angle guide (For cutting)



Healing Chamber

Grow Lite

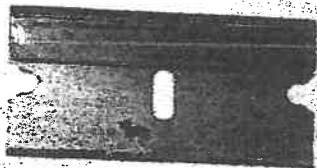
Thermometer

7. **SUBMARINE** .AB, F1, FOR, LB, N, PL, TMV, V.

Empower Hybrid Rootstock VFFNTTmvTswv.



9. clip



10. Blade

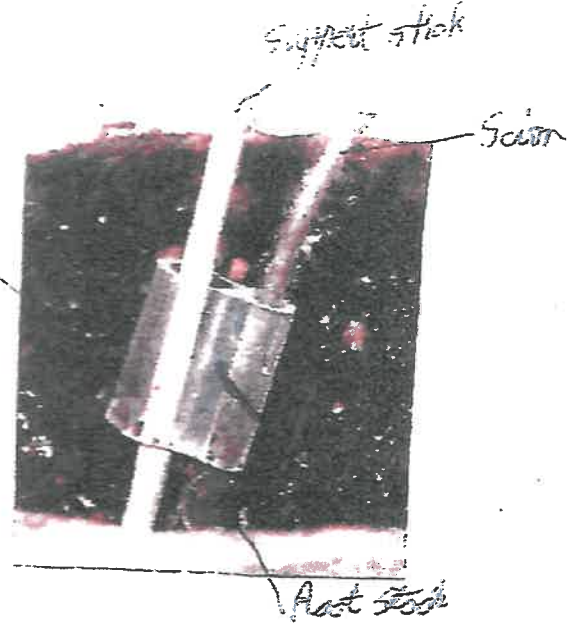
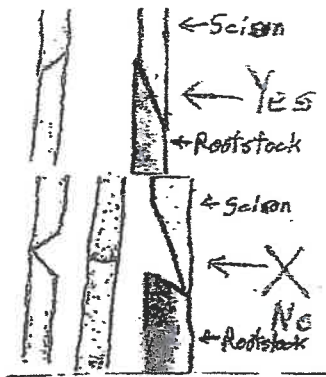


11. Angle Cutting Guide

PROCEDURE

For grafting success the diameter of the rootstock and scion must match as closely as possible. A 1/8" to 3.2 mm diameter fit the grafting clip the best. Unfortunately, not all scions and rootstock germinate and grow at the same rate. So run a test planting and determine when your rootstock and scions reach grafting size. It may be necessary to do a staggered planting. The ones I've used have averaged 19 to 23 days to reach the size.

Step. 1: Cut the rootstock and scion on an angle. Then squeeze the round end of the graft clip and mount it first on the rootstock and then the scion.



Step 2 : Place plants in a heating chamber that has been pre heated and has 1/4" water in it. Mist the plants and put on the lid. Keep the chamber in dim light. & temperatures of 72 to 75 degrees.

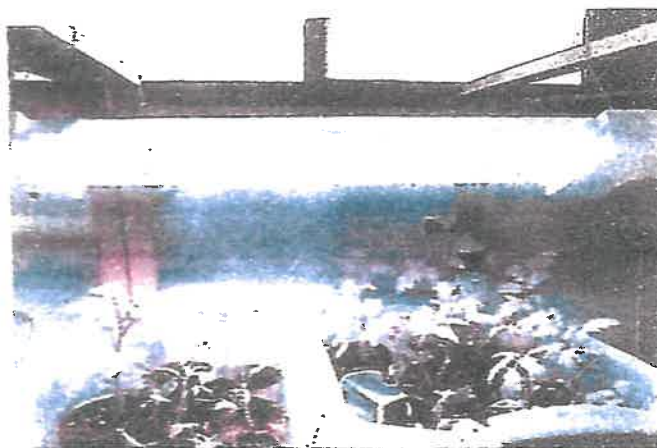


Step 3. Leave the chamber like this for 48 hours.

Step 4. ^{De}creasing the Humidity---THIS is the most critical step!!!---- page 13.

Step 4. Cont. Starting day 4 lift the lid about an inch. Check plants frequently for wilting. If they show wilting (and they will). Mist them and replace the lid until they revive. Then lift the lid again. Continue this routine all day. On day 5 lift the lid several inches and repeat as in day 4. Each following day lift the lid more and more while continuing to mist and cover until the plants no longer wilt. Now remove the lid. In most cases you can remove the lid by the 5th. or 6 th. day.

Step 5. Increasing The Light (Initiating Photosynthesis)
Start increasing the light on day 4. I open the shades on the east window for about 6. hours. The same on day 5. Leave them open all day on days 6 and 7. On days 8 and 9 put the plants under a Grow Lite for 6 hours. Starting day 10 go to 12 hours a day.
make sure the plants are slightly watered and there is a small amount of water in the bottom of the healing chamber daily.



Step 6. The plants should be ready to plant outside in 3 to 4 weeks.

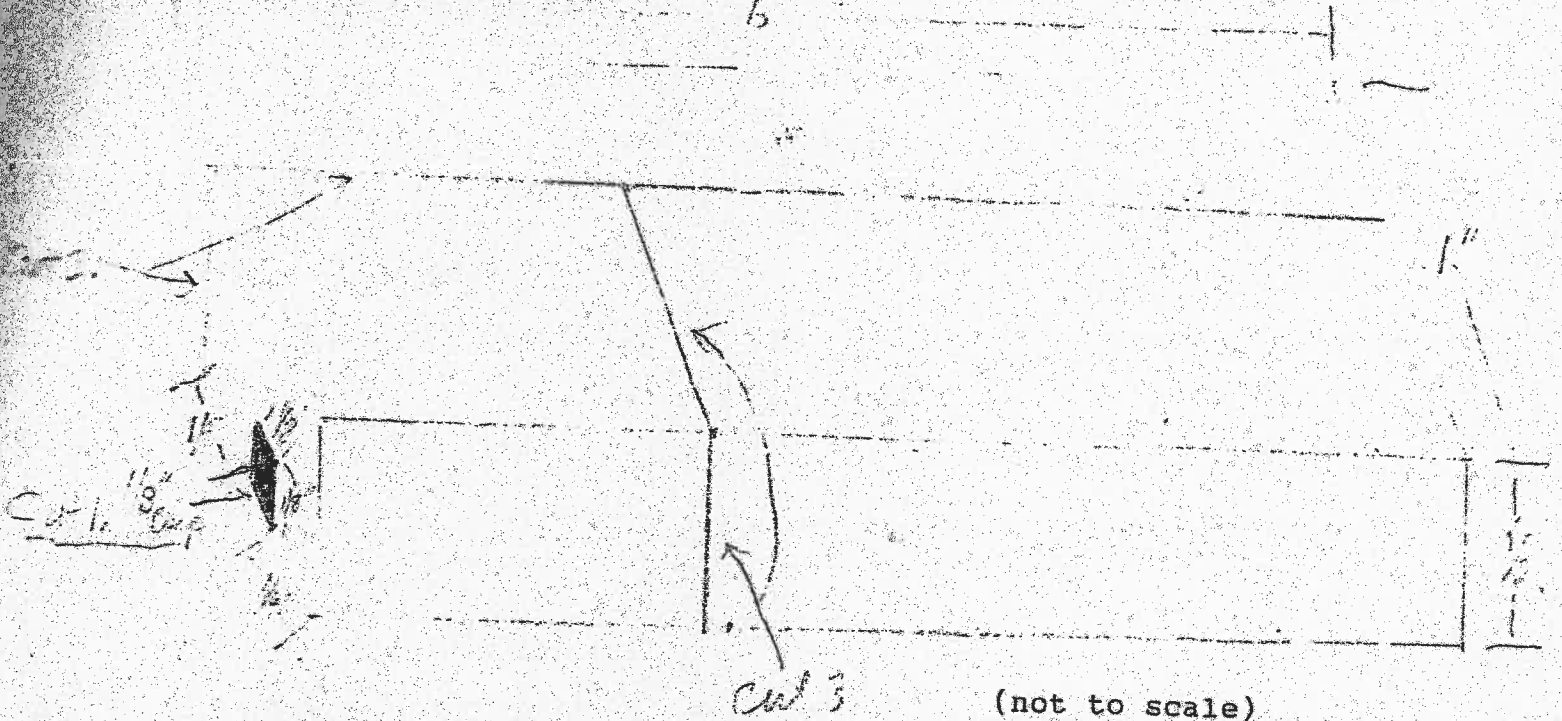
Other Notes

1. DO NOT REMOVE THE GRAFTING CLIPS--- they will fall off as the plants grow.
2. Make sure the graft is above the soil line when planting.
3. If any suckers grow from the root stock or rootlets grow down from the scion--- snip them off.

MAKING AN ANGLE CUTTING GUIDE

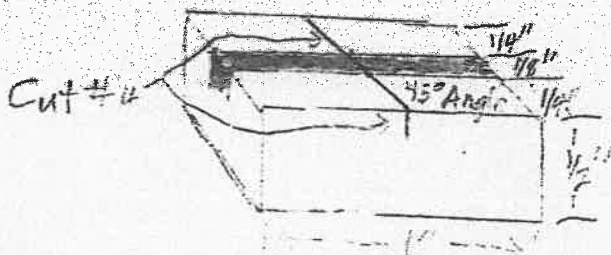
1. Cut---Take a 1" x $\frac{1}{2}$ " x 6" piece of wood. Put it on a table saw and run a $\frac{1}{8}$ th. cut, $\frac{1}{4}$ " from the railing down the length of the board.

2. Move the rail $\frac{5}{8}$ inch and cut the board all the way through the board.



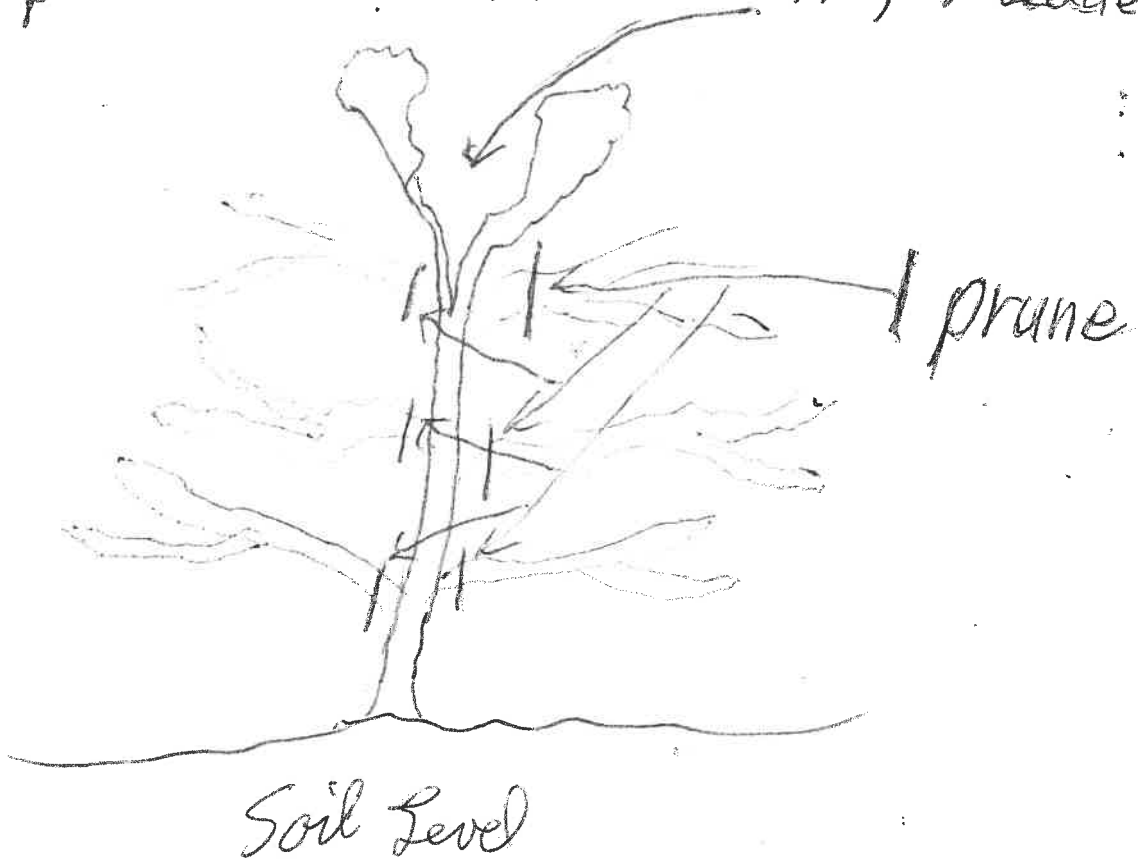
Cut # 3. Cut a 1" piece off the end of the board.

Cut # 4. use a hacksaw and make a $\frac{1}{8}$ th. inch deep cut on a 45° angle.



Pruning Indeterminants

When the plants are 14"-16" high
prune the lower branches leaving 2 leaders,



RECOMMENDED SOURCES

For Healthy (GMO Free) Plants, Seeds, Grafts & Supplies

1. Alameda Nursery

9515½ 4th. St. NW
Alb. NM (N.w. corner 4th & Alameda)
Ph. 505-898-3562

2. Territorial Seed CO.

P.O. Box 158
Cottage Grove, OR. 97421
Ph. 800-626-0866

3. ~~Seeds & Such~~

~~P.O. Box
Graniteville, SC 29829
803-653-1501
www.Seeds&Such~~

Burpee
300 Park Ave.
Warminster, PA. 18974
www.burpee.com
800-999-1447

4. Spray & Grow

20 Hwy 35 South
P.O. Box 2137
Rockport TX 78381
800-323-2363
www.spray-n-grow.com

5. Jerico Nursery

505-509-5039

have relocated to alameda just before 4th. st.
on the right side

The best way to get tomato diseases is buying plants from places like Home Depot, Walmart, grocery stores and Lowes --- I speak from experience!