

# Budding, Planting, and Young Tree Training

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**8<sup>th</sup>** *Advances in*  
**PISTACHIO PRODUCTION**  
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From a  
Roll of Dough...









1. EVALUATE YOUR SITE WITH BACKHOE PITS
2. ASSESS WATER QUALITY, QUANTITY
3. DESIGN YOU IRRIGATION SYSTEM AND HAVE IT IN PLACE AND TESTED BEFORE PLANTING
4. CONFIGURE YOUR PLANTING TO MINIMIZE OBSTACLES, SUCH AS POLES, PUMPS, BUILDINGS



PLANNING PAYS!





**LEAVE 6" SLACK IN DRIP LINE BETWEEN TREES AND SECURE ITS LOCATION**





**TIMING**

**EXECUTION**



# PLANTING STOCK: AVAILABLE IN THREE STYLES

1. **STANDARD, UNBUDED ROOTSTOCK IN A SIX MIL PLASTIC SLEEVE. ALTHOUGH IT CAN BE CLONALLY PROPAGATED, IT IS TYPICALLY PRODUCED FROM SEED OF KNOWN PARENTAGE.**
2. **CLONAL ROOTSTOCK, ALMOST EXCLUSIVELY OF UBC1 PARENTAGE (A SELECTION OF ONE UCB1 SEEDLING). IT COMES IN VARIOUS SIZE, FROM THREE TO 36 INCHES TALL.**
3. **PRE-BUDED ROOTSTOCK WITH WHATEVER SCION/STOCK COMBINATION THE GROWER DESIRES.**

**PLANTS COME IN ALL KINDS OF POT DESIGNS AND SIZES, WHICH ARE OFTEN PROPRIETARY TO THE NURSERY. THERE HAS BEEN NO UC RESEARCH TO ASSESS THE ESTABLISHMENT SUPERIORITY BETWEEN POT DESIGNS.**

**NOTE: MENTION OF SPECIFIC NURSERIES DOES NOT CONSTITUTE AN ENDORSEMENT**















# THE KEMPF POT







**KEMPF POT ROOT SYSTEM**

**FIBROUS IN THE NURSERY**

**AND RADIAL IN THE FIELD**









**THE CLONAL PLANT  
SYSTEM IN  
3 X 3 X 7" PLASTIC POT**



# CLONAL PISTACHIO ROOTSTOCK BEGINS WITH ASEPTIC MERISTEM CULTURE





# CLONAL UCB1 AFTER THE MIST CHAMBER







**CLONAL PISTACHIO  
ROOTSTOCK, UCB1  
PARENTAGE**



# PISTACHIO NURSERY STOCK FIELD DISTRIBUTION SYSTEM







**CORREGATED  
PLASTIC TUBE  
STAPLED TO STAKE**

**AND DIRT  
COVERING**

**THE BASE TO  
PREVENT**

**DESSICATION OF  
TRANSPLANT**

**REQUIRES A CLEAN  
FIELD!**



**BUDDED NURSERY TREES READY FOR PLANTING  
HEAD AT 42-44" AT PLANTING FOR OPEN VASE SYSTEM**









**STANDARD AND PRE-BUDDED PLANTS SHOULD NOT BE HANDLED BY THE TRUNK OF TREE. CREW SHOULD USE THE TOP OF THE SLEEVE, WITH ONE HAND UNDERNEATH TO PREVENT ROOT TEARING OR DISRUPTION OF THE BALL**





# BALLING SHOVEL; THE WEAPON OF CHOICE FOR PISTACHIO PLANTING







**DO NOT GET THE TOP SOIL IN THE PLANTING HOLE IF IT HAS BEEN TREATED WITH PRE-EMERGENT HERBICIDE. TOSS TO THE SIDE**

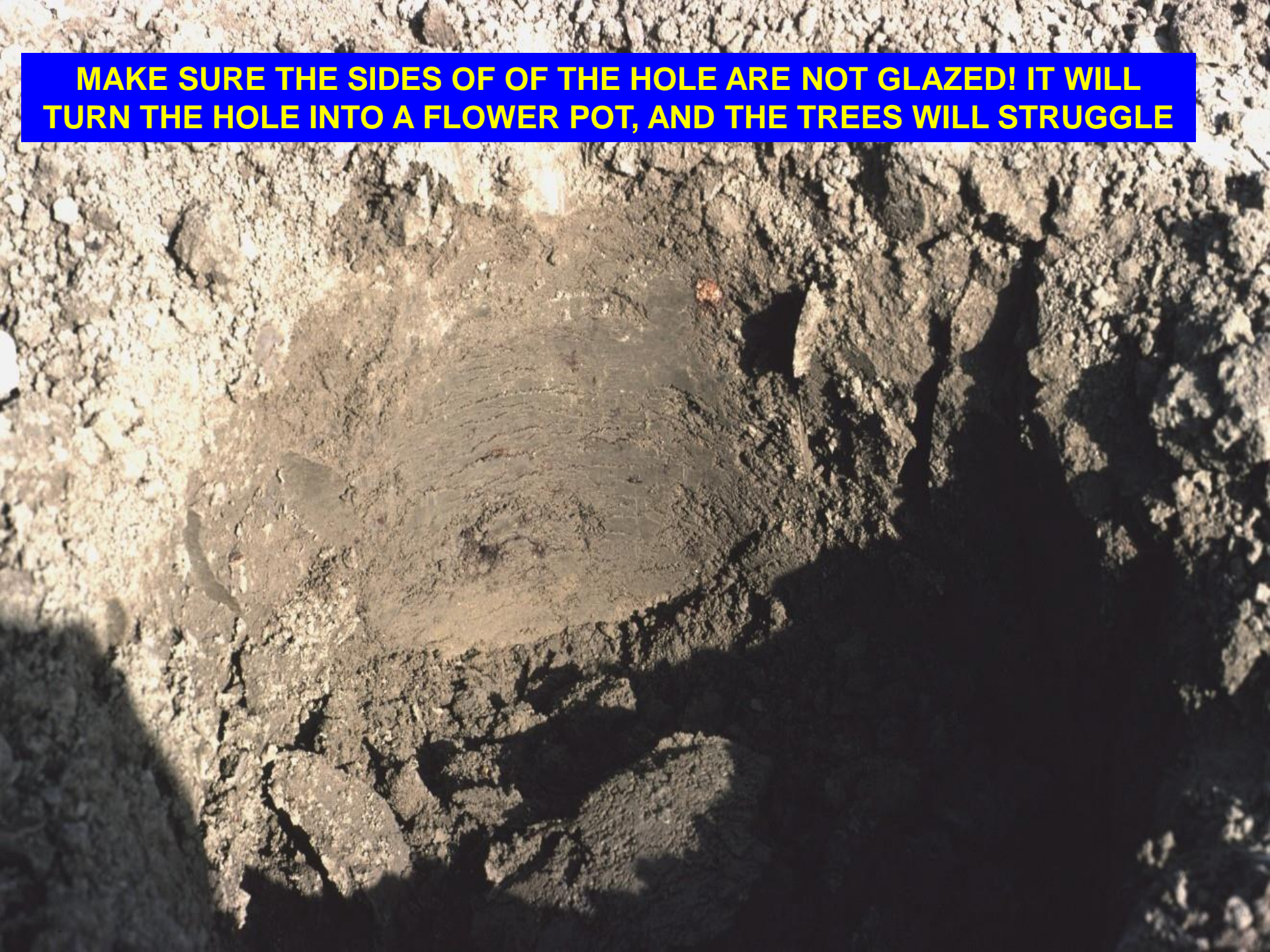




**DIG A BIG ENOUGH HOLE FOR THE TREE! IT USUALLY TAKES ABOUT THREE SHOVELS PER HOLE FOR STANDARD SLEEVED TREES**



**MAKE SURE THE SIDES OF OF THE HOLE ARE NOT GLAZED! IT WILL  
TURN THE HOLE INTO A FLOWER POT, AND THE TREES WILL STRUGGLE**













**PLACE THE STAKE OUTSIDE THE EDGE OF THE POTTING SOIL TO  
PREVENT DISRUPTION OF THE ROOTS AND ADDED TRANSPLANT STRESS**





**KEEP THE WATER AT THE BASE OF THE TREE!!**







THE BURCH



**LOCALIZE THE MINI SPRINKLER PATTERN TO THE TREE BASIN.**

**THIS INSURES UNIFORM IRRIGATION BETWEEN TREES, AND LESS WEEDS**





**CHECK YOUR ROOTBALL SOIL MOISTURE REGULARLY!**

**BEING WET ON THE SURFACE DOES NOT NECESSARILY MEAN THE BALL IS ALSO, ESPECIALLY IF IT GOT TOO DRY BEFORE IRRIGATING!**





**DO NOT PROCRASTINATE ON WEED CONTROL!  
THEY WILL REQUIRE EXPENSIVE HAND CREWS IN NO TIME!**





**KEEP THE MAROON LEAVES COMING BEFORE BUDDING!**

**GIVE THEM A GOOD IRRIGATION ABOUT A WEEK AHEAD OF BUDDING, THEN ABOUT FIVE DAYS AFTERWARD. AVOID A WET FIELD DURING BUDDING!**









**TIME OF BUDDING DEPENDENT UPON STOCK VIGOR, PLANTING DATE,  
THE AVAILABILITY OF BUDWOOD, AND THE AVAILABILITY OF THE BUDDER**

- 1. STOCK PLANTED FROM JANUARY TO EARLY APRIL SHOULD BE 3/8" IN DIAMETER BY MID-JULY TO EARLY-AUGUST, DEPENDING UPON PLANTING DATE AND CULTURAL PRACTICES.**
- 2. DO NOT PUSH FOR BUDDING TOO EARLY! LARGER DIAMETER TREES TAKE A BUD BETTER, AND PUSH THE BUD HARDER THAN marginally sized trees. THE BUDWOOD ALSO HAS TO BE UNIFORMLY MATURE.**
- 3. CULTIVARS LIKE GOLDEN HILLS HAVE LARGER DIAMETER BUDWOOD, HENCE THE "SHIELD" CUT FROM THE STICK IS LARGER, AND THUS THE TREE NEEDS TO BE LARGER TO GET A GOOD BUD TAKE. COMMUNICATE WITH YOUR BUDDER TO LET HIM KNOW HOW YOU ARE DOING! I REPEAT....COMMUNICATE!!**
- 4. BE CAREFUL ABOUT PUSHING THE BUD WHEN BUDDING AFTER THE FIRST WEEK IN SEPTEMBER. EARLY FROST IN NOVEMBER CAN KILL THE SHOOT, AND YOU HAVE LOST A LOT FOR LITTLE GAIN!**
- 5. PISTACHIOS CAN BE BUDDED DURING SEPTEMBER, BUT DO NOT FORCE THE BUD. ALLOW IT TO REMAIN DORMANT, THEN CUT BACK THE STOCK IN JANUARY AND TRAIN THE BUD UP THE STAKE IN THE SPRING.**



**BUD VIGOROUS ROOTSTOCK AS EARLY AS MID-JULY TO TAKE ADVANTAGE  
OF THE SCION GROWTH POTENTIAL**











**BUD AT 28-32 INCHES TO GET THE BUD UNION ABOVE THE LOCATION OF WHERE THE SHAKER HEAD ATTACHES TO THE TREE FOR HARVEST. HAVING THE UNION IN THE CLAMPING ZONE GREATLY INCREASES THE RISK OF TEARING THE BARK ON THE TRUNK.**

**PISTACHIOS, ALTHOUGH NOT SUSCEPTIBLE TO TRUNK WOUND CANKER DISEASES LIKE ALMOND, HEAL VERY SLOWLY. EXCESSIVE DAMAGE WEAKENS THE TREE, AND MAKES IT POTENTIALLY LESS PRODUCTIVE.**











**NEWLY BUDDING TREES OFTEN “NOTCHED” ABOVE THE BUD WITH A 24 TOOTHED HACKSAW BLADE. BUD PUSHES 10-14 DAYS AFTER BUDDING**





**RATHER THAN STRIPPING THE ROOTSTOCK, I STILL RECOMMEND THE STANDARD TIPPING OF ALL SHOOTS 50 PERCENT TO FORCE THE BUD. THIS IS DONE ABOUT FIVE DAYS AFTER BUDDING.**













# WHY TRAIN / PRUNE PISTACHIO TREES?

- **INCREASE VIGOR. RATE OF GROWTH, NOT TOTAL GROWTH!**
- **CREATE STRONG FRAMEWORK FOR LARGE CROP LOADS**
- **ESTABLISH AN EFFICIENT “LIGHT INTERCEPTOR” FOR THE ALLOTTED AREA**
- **INDUCE DESIRED BRANCHING WELL DISTRIBUTED WITHIN THE CANOPY**
- **STIMULATE NEW FRUIT WOOD**
- **MITIGATE ALTERNATE BEARING**
- **FACILITATE HARVEST AND CULTURAL OPERATIONS**



VIDEO OF PISTACHIO SHAKING  
SHOWS THE NEED FOR ADEQUATE TRUNK HEIGHT  
NOTE THE LOCATION OF THE SHAKER APRON  
JUST BELOW THE HEAD OF THE TREE





# PISTACHIO GROWTH CHARACTERISTICS

- MODERATELY VIGOROUS
- TWO MAIN FLUSHES OF GROWTH
  1. SPRING
  2. SUMMER
- GROWTH LARGELY FROM TERMINAL BUDS. SPURS (NEOFORMED GROWTH 7-9 NODES) OCCURS Laterally ON ONE-YEAR OLD WOOD.
- GROWTH IN DIAMETER (GIRTH) SLOW, CREATING THE POTENTIAL FOR FLAT STRUCTURAL LIMBS, AND EXCESSIVELY OPEN TREE CENTER.
- FRUIT BORN CLOSE TO THE BRANCH TERMINAL INCREASES THE LIKELIHOOD OF GREATER LIMB ANGLE OVER TIME.
- IMPORTANT TO CREATE “COMPRESSED” STRUCTURAL BRANCHES DURING THE TRAINING YEARS.



## **PISTACHIO DEVELOPMENT GOALS FOR THE FIRST SEASON**

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- 1. DEVELOP A VIGOROUS ROOTSTOCK FOR BUDDING.**
- 2. BUD IN MID JULY TO MID AUGUST, DEPENDING ON VIGOR AND BUDWOOD AVAILABILITY.**
- 3. ACHIEVE 36 INCHES OR GREATER OF SCION GROWTH. WELL MANAGED TREES CAN GROW ONE INCH PER DAY. I ADVISE NOT HEADING THEM TO REDUCE TRUNK TAPER AND BUILD CARBOHYDRATES FOR THE FALL. WHAT IS THERE TO GAIN?**
- 4. BUD MISSED TREES IMMEDIATELY, BUT DO NOT FORCE THOSE BUDDED AFTER THE END OF AUGUST.**
- 5. WINTER PRUNE SCION AT 42 TO 44 INCHES PREFERABLY, BUT NO LOWER THAN 38 INCHES.**



**GET A TIE ONTO THE EMERGING SHOOT BEFORE IT GETS WOODY!  
THIS INSURES THAT YOU HAVE A STRAIGHT TRUNK AND CENTRAL AXIS**











**MAKE PASSES EVERY 10-14 DAYS TO TIE SCION TO THE STAKE, SUCKER THE BASE OF THE STOCK, AND RE-TIP STOCK GROWTH 18 INCHES OFF THE GROUND**



**IS HEADING THE TRUNKS OF FIRST YEAR TREES WORTH THE RISK?**

**I SAY "NO"**













# PISTACHIO DEVELOPMENT GOALS FOR THE SECOND SEASON

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1. DEVELOP 2 TO 4 PRIMARY AND SECONDARY SCAFFOLDS.
2. TIP PRIMARIES AND SECONDARIES WHEN THEY REACH 12 TO 14 INCHES TO FORCE LATERAL BRANCHING.
3. THE LAST TIPPING DATE IS DEPENDENT UPON PLANT VIGOR AND GROWING LOCATION. KERN COUNTY GOES AS LATE AS MID-AUGUST, BUT THE EAST SIDE OF TULARE AND FRESNO MAY BE MID-JULY.
4. PINCH LEAF OFF PETIOLE AT SECOND AND THIRD NODE POSITION TO ENCOURAGE MORE THAN ONE LATERAL TO GROW.
5. CROSS TIE AS NEEDED OR DESIRED TO IMPROVE UPRIGHT TREE SHAPE.
5. PREVENT NUTRITIONAL DEFICIENCIES!! **THEY STOP TREE GROWTH!!**
6. WINTER PRUNE SECONDARIES 12 TO 14 INCHES, TERTIARIES AT 22 INCHES.





**CONVERT THIS GROWTH  
POTENTIAL TO DEVELOPMENT OF A  
COMPACT, WELL BRANCHED  
CANOPY FOR EARLY PRODUCTION.**

**THIS REQUIRES SIX TO EIGHT  
PASSES DURING THE SECOND  
GROWING SEASON TO PERFORM  
TIMELY PINCHING OF THE PRIMARY  
AND SECONDARY BRANCHES.**

**PLAN TO SPEND \$250 PER ACRE ON  
TRAINING DURING THE SECOND  
YEAR!**

















































**ZINC  
DEFICIENCY**





**COPPER  
DEFICIENCY**



**WATCH OUT FOR FALSE CHINCH BUG! THEY KILL YOUNG PISTACHIOS WITH A TOXIN THEY EMIT DURING FEEDING. FOUND IN CERERAL GRAIN COVER CROPS, SPOTTED SPURGE, SHEPHERD'S PURSE, AND LONDON ROCKET**





**GOPHERS KILL PISTACHIOS!  
TAKE CARE OF THEM IMMEDIATELY!**





**CROSS TYING THE LIMBS OF YOUNG TREES CAN MAKE A FLAT ONE UPRIGHT!**

**BEFORE:**





**AFTER**





**I RECOMMEND YOU AVOID TAPE BETWEEN THE PRIMARIES. IT SOON BECOMES ENGULFED FROM LIMB EXPANSION, RESULTING IN WEAK SCAFFOLD ATTACHMENT AND POTENTIAL SPLITTING**





**THIS IS THE BETTER TIE, IN MY OPINION**





**THIS IS THE PREFERRED METHOD OF SECURING THE TREE HEAD TO THE STAKE**









# **PISTACHIO DEVELOPMENT GOALS FOR THE THIRD SEASON:**

- 1. CROSS TIE MAIN BRANCHES AS NEEDED FOR IMPROVED UPRIGHTNESS OF PRIMARIES AND SECONDARY LIMBS.**
- 2. MAXIMIZE GROWTH OF THE TERTIARIES AND OVERALL TREE GROWTH BY NOT PERFORMING ANY SUMMER TIPPING.**
- 3. PREVENT NUTRITIONAL DEFICIENCIES! THEY KILL CANOPY DEVELOPMENT!**
- 4. WINTER PRUNE CURRENT SEASON'S GROWTH TO ABOUT 18-22 INCHES. AVOID KNUCKLE CUTS WHICH WILL STOP LIMB DEVELOPMENT!**



**DO NOT TIP THE TERTIARIES DURING THE THIRD SEASON! ALLOWING THEM TO GROW UNTIPPED BUILDS LIMB GIRTH THROUGHOUT THE CANOPY**





**NOT TIPPING THE TERTIARIES DURING THE THRID LEAF BUILDS LIMB GIRTH TO SUPPORT MORE UPRIGHT GROWTH AND BEARING OF EARLY CROP**





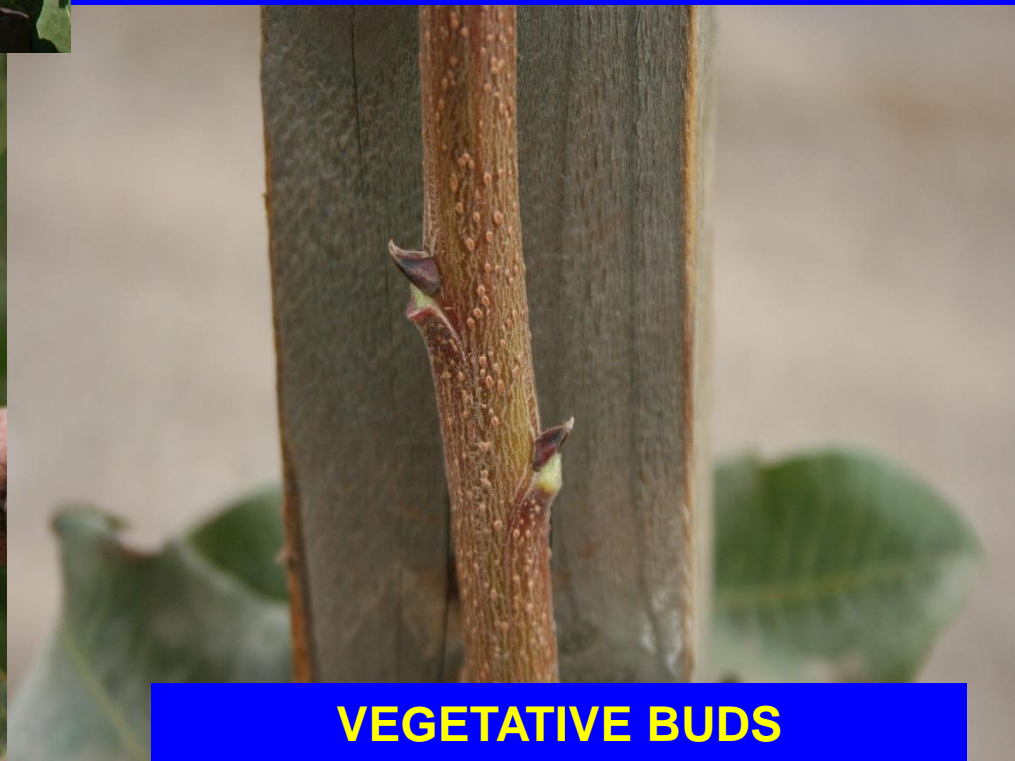


**DO NOT ACCIDENTLY TIP MAIN BRANCHES BACK TO FRUIT BUDS! THEY OFTEN DIE DUE TO THE LACK OF LATERAL VEGETATIVE BUDS BEHIND THEM. THIS ALSO CAUSES A TEMPORARY IMBALANCE IN THE YOUNG CANOPY.**

**FRUIT OR FLOWER BUD**



**VEGETATIVE BUDS**





**MAKE "KNUCKLE CUT" ONLY ON LIMBS  
YOU WANT TO STOP GROWTH ON!**





# DON'T PRUNE YOUNG TREES LATE! POOR BUD BREAK AND LEAF DEVELOPMENT





## **PISTACHIO DEVELOPMENT GOALS FOR THE FOURTH THROUGH THE FIFTH SEASON:**

- 1. MINIMIZE THINNING CUTS TO IMPROVE EARLY BEARING POTENTIAL. THINNING CUTS REMOVE ENTIRE LIMBS AT THEIR POINT OF ORIGIN. THIS CUT IS PERFORMED MORE ON OLDER TREES.**
- 2. WINTER PRUNE CURRENT SEASON'S GROWTH ABOUT IN HALF.**
- 3. OPTIMIZE NUTRITIONAL STATUS IN PREPARATION FOR EARLY FRUITING**
- 4. AVOID EXCESSIVELY LATE SEASON IRRIGATION TO PREVENT TENDER CURRENT SEASON GROWTH IN THE FALL. THIS WOOD IS SENSITIVE TO FALL FREEZES.**



**THIS IS YOUR GOAL; A WELL TRAINED SIX YEAR OLD, READY TO MAKE YOU MONEY!**





# Successful Farmers

## Know:

- 1. What to do.**
- 2. How to do it.**
- 3. When to do it.**
- 4. And then ... they do it !**



**THANK YOU!**

**QUESTIONS?**