Puning Guild Question & Answers

These Questions & Answers will be discussed at lunch at the hands-on pruning events. Should you want more details, clarification, or to see a diagram please go to the MMG website and use the search box. We strive to make things more understandable and believe that being exposed to the same material, in different ways, by different people, enhances our knowledge. We welcome your questions and input.

Basics

1. **What are the essential tools of a Master Gardener Pruner?** MMG site “pruning tools”

   Bypass pruning shears that comfortably fit the hand
   Medium-toothed saw
   Small fine-tooth saw
   Lightweight orchard ladder with a chain
   Gloves and hat
   Tarp
   Safety glasses
   Sharpener

2. **What are some reasons for pruning?**
   - To remove dead/dying, diseased, damaged (3 Ds)
   - To train a young tree for structure
   - To correct structural problems such as limbs that are crossing or attached at sharp/weak angles, competing leaders, or providing more light to the weak side (3 Cs)
   - To reduce or limit size (spacing, size, scale)
   - To let light and air flow into the plant
   - To rejuvenate an old tree
   - To increase fruit or flower production
   - To open up a view (sight line), safety, or shape (3 Ss)
   - Beauty and aesthetics

3. **Describe a thinning cut (removal cut) and what response it produces in a plant.** MMG site “pruning cuts”

A thinning cut removes a smaller branch back to its origin (larger or parent branch). Thinning encourages new growth from the remaining branches or trunk below the cut. Most of your cuts should be thinning cuts because they produce little reaction.

4. **When would you use a thinning cut?**

   To reduce the height or spread of a plant by reducing dense growth
   To reveal the structure of a tree
   To bring more light and air into the interior
   To redirect growth

5. **Describe a heading cut and the typical response by a plant.**

A heading cut (sometimes called a reduction cut) is made when a branch is cut back to a smaller branch or bud (the remaining branch must be at least 1/3 the thickness of the branch being removed.) Since the terminal bud has been removed, lateral buds below the cut will be stimulated. Depending

on the species, heading cuts can produce a great deal of weak reactive growth. Most often used with fruit trees and hedging. Reactive growth needs to be managed.

6. Why are heading cuts made?

To maintain the contour of the plant. (Shearing is heading cuts.)
To shorten long shoots
To stimulate the release of inner buds and thicken the tree.
Control the size of a fruiting tree

7. Describe releadering and its purpose. See the MMG website for a thinning vs releadering diagram.

Releadering removes a portion of a branch at the point where two or more branches split – typically a "Y" junction of two branches. At this junction, one branch is always longer and thicker (the dominant branch or "leader") and the other is always thinner and shorter (the subordinate branch). This cut removes the dominant branch at this point, and the side branch becomes the new leader. Reduces crowding by eliminating a portion of a longer or taller branch (one that is expanding a plant's height and width) in favor of a shorter branch.

Does not remove the dominant branch at its point of origin. Given its dominance, its point of origin is further down the plant, perhaps all the way at the base. As a result, the dominant branch has no branch collar at the point of the cut.

8. What is a branch collar?

The branch collar is trunk tissue usually marked by a swelling or ridge that forms around the base of a branch next to the trunk or between a large branch and a smaller one. It provides the tissue for callusing. Note: A releadering cut will not cut to a branch collar.

9. How do you cut a limb when you <u>can</u> see a branch collar? Draw a diagram. See MMG site

Make the cut just outside of the branch collar, which is the enlarged portion of the branch where it meets the trunk or another branch. Do not remove the branch collar as it contains specialized cells that grow over and seal the wound.

10. How do you cut a limb when you <u>cannot</u> see a branch collar? Draw a diagram.

Make the cut at right angles to the branch, starting above the crotch. Think round wound vs oval wound. A round wound will have a smaller exposed surface area.

Getting Started

11. Describe the steps needed to assess the plant in its environment <u>before</u> you begin pruning.

<u>P</u>lant ID: Identify the shrub or tree: Common name, Genus, species

<u>R</u>ecent Growth**:** Natural growth habit of the plant to determine when and how to prune.
Natural shape and characteristics? When active growth? Identify the prior year's growth. When dormant?
Any timing issues? When does it bloom & set buds? Are fruits/berries important?

UnHealthy**:** Observe the health of the plant.
Age/vigor? Trunk clear and flared? Roots? Bondage?Irrigation/ Does it work?
Signs or symptoms of pests or disease? Deadwood/suckers/water sprouts?
Getting sun/shade? Run-off/soil/wind? *Pruning does not solve stress problems.*

Need Structure: Look from all sides & underneath.
What is right/what is wrong? Where is the current apex? Is it symmetrical?
Co-dominant leads? Crossing, leggy? Is the structure sound and sustainable?

Engagement in the garden: Consider the relationship of the plant to the garden.
Focal point or background? Size in relation to surrounding pants?
Is it in competition with other plants? Any wildlife considerations?
Want Fall seeds heads? Check all viewpoints.

Example Plan:
3 Ds,
Preserve weeping habit
Create view of trunk in several places
3-5 large structural cuts
lift off the ground
Thin crowded areas
Separate scaffold branches
Separate from adjacent plant
Pause, view and discuss often

12. What is the road map for a basic pruning plan?

3 Ds: Dead/dying, diseased, and damaged; which can be pruned anytime.
3 Cs: Competing, crossing, and crowded; these cuts can be during or outside the dormant season, but large structural cuts are best made during the dormant season.
3 Ss: Safety, sight lines, and shape; consider the location in the garden and envision the need for possible cuts from important perspectives.

13. When should you NOT prune?

Plant not growing.
Plant too weak or stressed.
After a big restructuring.
Leaves are emerging or dropping. (If you remove new growth too early you are asking the plant to push out more growth.)

14. What is meant by the 3 Cs: competing, crossing, and crowded?

Branches rubbing on each other.
Duplicate or redundant branches.
Inward, downward facing.
Branches crossing over the center.

Water sprouts growing straight up through the plant.
Branches overtaking the apex of the tree.
Suckers coming up from below the base or the roots.

15. What does CODIT stand for? C_____O__D_____ I__ T_____
Compartmentalization of Decay in Trees

16. Describe CODIT
CODIT is the process of a tree slowly forming “walls” or boundaries around disease or a wound to prevent or slow disease and decay from spreading into the tree. There are four walls, the last being the strongest on the exterior of the tree. The cut you likely made. As the tree cambium grows, this outer wall will eventually only be seen in a cross section of wood, but the tree still has a weak spot inside.

17. Can woody plants heal wounds on their bark?
No, woody plants cannot heal wounds; they can only callus over.

18. What are the steps you would follow to cut a large limb? Name the type of cut. See MMG “pruning cuts”
A jump cut is used on any branches that are too heavy to hold up while you are cutting. The 3-cut method is used to prevent the branch from dropping and tearing the bark down the trunk or limb of origin.
a. Make a cut 1/3 to ½ of the way through the underside of the branch, several inches beyond where the final cut will be made.
b. Cut off the end of the branch several inches further out from the undercut.
c. Make the final cut of the stub just outside of the branch collar.

19. Why is it considered a best plant culture practice to clear soil and mulch away from the base of the root crown of woody plants?
Excess soil or mulch around the base of a tree promotes rotting of the bark. The tree becomes susceptible to pathogens that may infect and possibly kill the tree.

20. How deep should a tree be planted?
Trees should be planted with the soil level just below where the main roots begin to branch out from the base of the trunk. New plants should always be checked to see that they have not been buried too deep at the nursery.

21. How should an orchard ladder be placed on a hill?
The single leg should be uphill. The wide legs should be downhill and level, perpendicular to the slope with feet firmly planted and chain attached.

22. How far to the side can you lean when pruning on an orchard ladder?
Do not lean. Keep the trunk of your body within the confines of the rails of the ladder.

23. How should an orchard ladder be used on a hard surface?

The chain must always be used on hard surfaces to keep the legs from sliding out. Rubber feet should also be used on hard surfaces that are sloped.

Timing

24. When do you prune to limit growth and why?
Pruning to limit growth should take place at the end of the growing season, usually late summer after the new growth has stopped. This will remove carbohydrates created over the summer growing season, before they are moved down to the roots. If pruning is done shortly after new growth has begun, the tree will have less energy for new growth. If pruning is done in the dormant season, growth will be stimulated.

25. What are signs that the growing season has stopped?
The new leaves turn a darker green and resemble the prior year's growth.

26. When do you prune to stimulate growth?
Prune during the dormant season just before new growth starts. The plant has stored energy in its core. As soon as dormancy breaks the plant will put all this energy into the newly prune shape.

27. What are the pros and cons of pruning while a plant is dormant vs a plant that is in active growth? (note: avoid pruning while a plant is putting on or shedding leaves.)

Dormant Season - Usually major reduction and correction cuts, rejuvenation and refinement of winter silhouette.
Pros – Usually less pest activity; easier to see structure; can make bigger cuts. Stimulates growth.
Cons – more reactive growth; more bleeding but also a pro because prefer bleeding when pest activity low); more fungal activity; may remove flower buds. (Remember that some plants are dormant during the hot, late summer.)

End of Growing Season - Usually thinning, styling (layering, lacing, weeping), creating more light and shadow play.
Pros - Less reactive growth, good time to remove water sprouts
Cons - more risk of sunburn; more pests; more difficult to see structure; possible loss of flower buds.

28. When should large cuts be made on conifers and why?
Large cuts (key word is large here) on conifers should be made just before growth begins in the spring (January or February in our zone.) Large structural pruning at other times can invite fungal infections or bark beetles, which are attracted to the odor of sap. Bark beetles are active March through July. De-candling and small cuts can be done without increased beetle risk.

29. When are most conifers pruned? Most conifers are pruned twice a year in October and May. Conifers do not grow back from old wood.

30. What are three major classifications of conifers? Any of an order (Coniferales) of mostly evergreen trees and shrubs having usually needle-shaped or scalelike leaves and including

forms (such as pines) with true cones and others with an arillate fruit (such as the berry on yews.)

1. The Pine family: includes pines, firs, spruces, hemlocks, Douglas-firs
2. The Cypress family: includes junipers, redwoods, incense-cedar, cypress, false cypress
3. The Yew family: includes Pacific yew, California nutmeg (stinking cedar)

31. Needled conifers produce new growth or shoots which hold the needles for next year, called candles. When should they be pruned and what is the reaction?
The candle should be removed to keep the tree at the same height. The candle can be reduced to slow growth. Removing the candles early (before the needles start to spread) can cause the tree to push more new growth and therefore not keep the plant at the same height. If you want to maintain the size of a plant, the ideal time to de-candle is when the new needles start to spread.

32. What pruning can be done any time of year?
Any of the 3 Ds: Dead/dying, diseased, and damaged material can be removed at any time.

33. Generally when should you make large cuts on deciduous plants? Why?
Large cuts should be made during the dormant period shortly before bud break since the energy of new growth can help callus the wound. Pines should be pruned in winter when dormant so there is less sap to attract beetles. Apricots and Coast Live oaks should be pruned in late summer when there is no danger of rain.

34. If a plant blooms on old wood, what time of year does it bloom and when is the best time to prune it to maximize flowering?
A plant blooming on old wood will bloom in the spring. Prune after it blooms, just before it pushes new growth which will include blooms for the next year.

35. How deep should a tree be planted?
Trees should be planted with the soil level just below where the main roots begin to branch out from the base of the trunk. New plants should always be checked to see that they have not been buried too deep at the nursery.

Plant Biology

36. What does xylem do and where is it found?
Xylem is formed on the inside of the cambium and it transports water and minerals up from roots to the top of the tree. It gives rise to the sapwood and heartwood which helps provide rigidity to woody plants.

37. What is phloem and where is it found?
Phloem is formed outside of the cambium and transports carbohydrates from the leaves up and down to the rest of the plant. It gives rise to the bark.

38. Leaves use sunlight and water to synthesize carbohydrates. What part of the plant receives the primary benefit of the carbohydrates?
The branches and trunk nearest the leaves.

39. Describe how apical or terminal buds differ from lateral buds.
Apical buds release auxin, a hormone that suppresses the growth of the lateral buds below for the first year. This is called apical control.

40. What is trunk caliper and why is it important?
Trunk caliper is the diameter of the trunk measured at 4 ½ feet. The larger the caliper of the trunk, in relationship to the crown, and the more tapered it is, the stronger and more resistant it is to wind damage.

41. Give two reasons for leaving small branches on the lower trunk of a young tree.
Leaving small branches on a young tree helps develop the caliper of the trunk by bringing carbohydrates to feed the developing trunk and by protecting the trunk from damage while it is young.

42. Explain the value of letting a small branch develop at the base of a pruning cut. How long should it be allowed to remain?
The small nurse branch at the base of a pruning cut draws up nutrients that help callus the wound. The branch can be left until the wound is callused over on the bottom.

43. How can you tell the difference between last year's growth and this year's growth?
One can usually see the leaf bud scars on the bark that mark the end of one year's growth and the beginning of the next year's growth. There is often a difference in the color of the bark as well.

44. What is the difference between an excurrent and a decurrent tree?
An **excurrent** tree has strong apical dominance, with a single trunk and smaller laterals. Redwood trees are excurrent. A **decurrent** tree has weak apical dominance, with a rounded or spreading crown. Maples and oaks are decurrent.

45. What is ramification?
Ramification is the process of tree (or plant) branching into increasingly smaller branches, twigs and shoots.

46. What is back budding?
Back-budding is a response to heavy pruning that activates dormant buds away from the active growing areas. The terminal buds or the buds at the tip of a branch have a hormone called auxin which regulates growth and prevents the dormant (or nascent) buds from growing. By removing auxin buds away from the active growing areas of a plant, buds deeper inside the tree structure along the inside branches, crotches and in some cases the main branches and trunk of the plant can be activated. This is different from the growth stimulated from light pruning or pinching which makes a plant bushy by activating buds close to the active ends of the branch.

47. Name some plants that back bud freely.
maples, many junipers, cotoneaster, cypress, privets, pittosporums, magnolias, rhodies, camellias, olives

48. Name some plants that do not back bud well. Manzanita, dogwood, conifers

Level 1

49. What is the importance of "Coarse to Fine"?
Coarse to Fine refers to the natural growth habit of woody plants. Larger trunks and limbs usually ramify into finer limbs and branches. When pruning, we try to enhance this habit.

50. When pruning, what constitutes coarse growth?
Coarse growth is growth that is thick compared to the rest of the tree. Coarse growth can also mean growth with long (coarse) internodes instead of short internodes (fine).

51. What is the 'Rule of Thirds'?
The 'Rule of Thirds' is the practice of making a thinning cut to a side branch that is at least 1/3 the diameter of the branch that is being removed. See Q17. It also refers to removing no more than 1/3 of healthy plant wood in one growing season. This is the upper limit, with ¼ or less being the more acceptable amount to remove on an established tree. Deadwood doesn't apply.

52. What is "included bark?"
Included bark occurs when two branches form a narrow angle and both branches produce bark inside the angle which pushes against each other, eventually forcing one branch to fail. This is evidenced by a deep V between them. Two stems can also have a narrow angle and have excluded bark, which forms a ridge between them. Excluded bark is not damaging, but it is often poorly attached.

53. Describe codominant stems/trunks and explain why they are a problem.
Codominant trunks are two or more main trunks, usually of similar diameter, that have a narrowly angled crotch. They are problematic because they often have included bark, meaning they are not strongly attached. As they get larger, they are more likely to split.

54. What are water sprouts?
Water sprouts are vigorous branches that grow vertically from the upper part of a branch from adventitious buds located in the bark. Often they are poorly attached.

55. What is the best way to remove small suckers?
Yank small water sprouts at their base. This can sometimes remove the dormant buds next to the branch.

56. Why do water sprouts form?
They often develop after heavy pruning or after a branch breaks. Because the apical bud has been removed, adventitious bud growth is stimulated.

57. Why should water sprouts usually be removed?
Since they do not originate from deep within the trunk or branch, water sprouts are weakly attached and prone to breaking when they get larger. They are aggressively growing vegetative branches with

large water-filled cells. They will take a significant amount of the tree's energy at the expense of the rest of the plant.

58. When should water sprouts be kept? (Give 2 examples)
Water sprouts may be kept when trying to salvage a failing or diseased tree or, on fruit trees, they may be headed back to a few buds to encourage fruit bud formation.

59. What is a sucker and what should you do about them?
A sucker is a sprout that comes up from the roots or off the base of the tree. They should be removed completely unless they are needed to rejuvenate a tree or shrub that is not grafted.

60. Give the definition of old wood and new wood. Give examples.
Old wood is wood that was produced the prior year. New wood is the growth that was produced during this year's growing season. Flowering shrubs set flower buds and bloom either on "old wood" or "new wood" and this determines the best time to prune for preserving the blossoms. Peaches produce fruit on new wood.

61. What is the weakest part of a callus on a tree with a pruning wound, and why?
The weakest part is below the pruning wound because the vessels of the xylem that carry water and minerals up from the roots, and the vessels of the phloem that carry nutrients down from the canopy have been cut. This lowest section is the slowest to callus.

62. Some trees callus and compartmentalize better than others. Name examples of trees that callus well and examples of plants that do not callus well.
Strong: Oak, Maples
Weak: Birch, Cherry, Manzanita, Willow, Dogwood

63. Why would you want to bring more light and air into the center of a plant?
To create more air circulation which helps reduce the risk of disease and pests. To keep interior growth alive. To bring more light into the shady side of the tree in order to keep it more balanced.

64. On what types of trees are heading cuts usually made?
Fruit trees - since heading cuts can produce lots of reactive growth, they are usually only used on fruit trees where aesthetics are not so important.
Hedges - to preserve shape

65. Explain how to correct uneven growth on a tree through pruning.
Trees often grow faster on the sunny side and slower on the shady side. The strong side should be thinned to allow more light to reach the shady side. The shady side should be pruned less.

66. What are best practices for pruning in relation to rain and drought?
It is best NOT to prune in moist conditions (or when rain is expected within a week) because pruning wounds would be susceptible to water-borne pathogens. It is best not to prune plants when they are stressed from drought or without adequate irrigation.

67. When is the best time to prune a tree susceptible to Sudden Oak Death?
Oaks and other woody shrubs (Camellias and Rhododendrons) susceptible to SOD should be pruned only in August and September when it is not expected to rain for at least a week, to prevent the spread of disease.

68. Generally when should you make large cuts on deciduous plants? Why?
Large cuts should be made during the dormant period, shortly before bud break, since the energy of new growth can help callus the wound. Pines should be pruned in winter when dormant so there is less sap to attract beetles. Apricots and Coast Live oaks should be pruned in late summer when there is no danger of rain.

69. If a plant blooms on old wood, what time of year does it bloom and when is the best time to prune it to maximize flowering?
A plant that blooms on old wood will bloom in the spring. Prune after it blooms, just before it pushes new growth which will include blooms for the next year.

70. Give an example of a plant that blooms on old wood. Rhododendrons, Azaleas, Camellias, Wisteria, Magnolias, Pines, Crape Myrtle, Dogwoods, Viburnum, Quince, Lilac, Apples.

71. If a plant blooms on new wood, what time of year does it bloom and when is the best time to prune?
A plant that blooms on new wood will bloom in late summer and early fall. The best time to prune is in the winter when it is dormant and before it starts setting new buds.

72. Give an example of a plant that blooms on new wood. Roses, Buddleia, Toyon, Abutilon

73. What type of pruning would you do to a young tree or shrub?
Young trees should only be pruned to improve structure by correcting problems such as co-dominant leaders or crossed branches. Fruit tree whips on plants just home from the nursery need to be severely headed to encourage growth of strong low scaffolding branches.

***Fruit Trees* (see MMG "When & How to Prune Common Fruit Trees")**
74. What is the best way to prune trees with Fire Blight.
Trees with Fire Blight should be pruned back below areas displaying burned tips or cankers on the bark until there is no evidence of discoloration inside the branch. There is differing advice on how far to prune after no sign of discoloration, but 8-12 inches seems to be the norm. Pruning shears should be disinfected with Lysol to reduce possible risk of spreading disease to another plant. Debris from both affected trees should be discarded, not placed in green waste or composted. Pear trees are susceptible to fire blight.

75. On fruit trees, what kind of growth is predominant on a vertical branch?
Vertical branches tend to have mostly vegetative buds.

76. On a fruit tree, what type of growth is most common on a horizontal branch?
Horizontal branches bear more fruit buds.

77. When is the best time of year for pruning apricots and cherries and why?
The best time to prune apricots is in the dry summer months after harvest. This would be August on the coast. Both apricots and cherries are highly susceptible to the waterborne Eutypa fungus that can enter the tree through pruning cuts made during wet conditions.

78. What are fruiting spurs? What fruit trees have spurs? How long do spurs produce?
Spurs are slow growing leafy shoots and have a mixed terminal bud. A mixed terminal bud will produce shoots and flowers. A spur has a shortened shoot or branchlet where the internodes are shorter. In general….
Apples: long lived spurs, 12-15 years
Pears: long lived spurs 12-20 years
Plums: spurs live 6-8 years
Apricots: spurs live about 3 years
Peach/Nectarines: spurs produce once, remove after fruiting (produce only on new growth)
Cherries: long-lived 7-10 years, (fruit on one- and two-year **old wood**, and on spurs of **older wood**.

79. What is meant by "tip bearing?"
Persimmons have a tip bearing habit; most of their fruit is on the last three buds of new growth. This makes pruning tricky. In addition, the persimmon branches can be brittle and break under the weight of fruit, so necessary early training will likely sacrifice fruit.

80. What is biennial bearing or alternate bearing? Can it be controlled?
Alternate bearing is the alternating of a heavy crop with a light crop of no crop. Fruit thinning during a heavy crop can reduce the chance of no crop following. Apricots naturally tend to be alternate bearing.

81. When and why do you prune fruit trees in summer vs winter?
Pruning in summer is to control the size of the tree. Summer pruning controls growth, but be careful not to expose branches and trunk to sunburn.
Make structural cuts in winter. Exceptions are apricots and cherries, which are susceptible to Eutypa fungus. See Q75.

82. Why should some long lived fruiting spurs be removed periodically?
By renewing branches every so often you can maintain tree size, vigor, and quality in productive trees. Use thinning/renewal cuts to do this.

83. Name some fruiting trees that don't mind being pruned hard?
Fig, Asian Pear, Olive. These are very figuous growers and produce fruit on new wood. They will react to pruning so spreading pruning out over a few years can help manage the reaction.

Level 2
84. Describe coppicing and give some examples of plants that take coppicing well.
Coppicing is done by cutting all or some most of the stems close to the ground in late winter, which stimulates many new shoots growing from the base in the spring. Willows, Privets, Bay trees,

Redbuds, Elderberry, Hornbeam, Cotinus, Willow, Calycanthus, Buddleja and Yews are examples of plants that respond well to coppicing.

85. Describe pollarding and name some common trees that are suitable candidates.
Pollarding is a pruning method in which the upper branches of a tree are repeatedly removed at the same spot, promoting a dense head of branches and foliage. Plants that have many epicormic buds, such as willows and sycamores, are often pollarded. Epicormic buds lie dormant beneath the bark, their growth suppressed by hormones from active shoots higher up the plant.

86. What common landscaping practice inhibits a tree from developing taper?
Poor staking practices. Flexing in the wind stimulates trees to develop taper. If a tree is constrained so that it does not flex, it will remain weak. (**Tree taper** is the degree to which a **tree's** stem or bole decreases in diameter as a function of height above ground. **Trees** with a high degree of **taper** are said to have poor form, while those with low **taper** have good form.)

87. What is the best way to stake a tree?
Trees are best supported with two stakes at right angles to the prevailing wind. The supporting straps should be loosely wrapped around the trunk at the lowest height that will keep the tree from falling over. This will allow the tree to move in the wind which will encourage thickening of the trunk. Three stakes also work well.

88. At time of transplanting when is root pruning necessary or desirable?
Before the tree is planted the roots should be examined to make sure that they are not circling the root ball. Circling roots need to be cut as they will NOT straighten out on their own. They will continue to grow in a circular pattern, leaving the plant unable to form a sturdy root plate. Any roots girdling the base of the trunk should also be removed.
