

Study Guide for HORT 201 Lab Practical Exam II on Tuesday, April 22.

Lab practical exam II will cover labs 8 through 13. Your best preparation is to review the lab handouts and quizzes from labs 8-13. This study guide highlights key points from each handout which you should focus on understanding/learning when you study.

Various items used in labs 8-13 will be available in Zone 21 for you to review on Monday April, 21st after noon. These items will be removed from Zone 21 on Tuesday morning at 8:30am.

Lab 8 – Tissue Culture II – corn embryo rescue and cauliflower organogenesis

1. Understand why embryo rescue is used.
2. Review the steps required to obtain a corn embryo. Know what tissues you have to cut through to get to the embryo.
3. Understand why hormones were used or not used in the corn embryo rescue media.
4. What tissue was used for our cauliflower explants?
5. What plant hormone was used in the media to get cauliflower shoots to form?
6. Contamination can be a problem for tissue culture. Understand the various sources of contamination and the steps taken to limit contamination in vitro.
7. Know the purpose of bleach, alcohol, and the Bunsen burner. Know how to flame-sterilize tweezers or scalpels.

Lab 9 – Grafting willow, tomato, and potato

1. Understand why tomatoes and potatoes can be grafted together.
2. Know the two reasons for sealing your graft union with wax or parafilm .
3. Understand why rootstock buds must be removed.
4. Be able to demonstrate how to graft a tomato to a potato.
5. Why were the potatoes covered with a plastic bag and placed under shade cloth?
6. Understand the mechanics of preparing rootstock and scion wood for various grafting techniques. Be prepared to demonstrate or identify the following: whip and tongue, splice, saddle and cleft grafts.
7. Be able to identify mistakes on graft samples provided which would prevent the graft from 'taking'.

Lab 10 and 11 – Grafting apple

1. Be able to identify all the different grafts and budding done by hand that we practiced in lab 10 and used in lab 11: whip and tongue, chip bud, T-bud
2. Know the correct name of the graft each of the grafting machines can make and the names of the grafting machines.

3. Be able to correctly identify the location of the the bark and wood and which vascular system (xylem, phloem) is in each on a cross-sections diagram or on wood samples provided.
4. Be able to demonstrate how to use the various grafting machines.
5. Know whether rootstock and scion should be dormant ar actively growing for each type of graft used in lab. This is outlined in lecture April 16th.
6. Know the advantages of budding over grafting.
7. Understand how our apple rootstock (EMLA 7) effects the mature size of our apple tree grafts.

Lab 12 – Tissue Culture III – transferring shoots to rooting media

1. Know the difference between *ex vitro* and *in vitro* rooting.
2. Know why shoots have to be transferred out of stage II media.
3. Know what hormone needs to be in Stage III media and more importantly what hormone needs to be absent or very low levels in stage III media
4. Know what stage IV in tissue culture is.

Lab 13 - Topworking

1. Be able to identify the various grafts used in topworking: cleft, bark inlay, rind, bridge, inarching. Be able to identify the mistakes when these grafts are done incorrectly.
2. Be able to explain the use of the various tools used in preparing these various grafts.
3. Know why cleft, bark inlay, and rind grafts are used and why inarching and bridge grafts are used.
4. Know size restrictions for rootstock and scions for each type of graft.
5. Understand why an orchard grower would do topworking.