ASLP Citrus Factsheet
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Reworking of Citrus in Pakistan

By Tauseef Tahir (ASLP II), Steven Falivene (NSW DPI), Wajid Ali (ASLP II) & Dr. Muhammad Jafar Jaskani (UAF)

Introduction

New varieties introduced by the ASLP2 project can spread the harvest window to capitalize on tha availability of out of season fruit, high market demand and higher fruit prices. It can take about 5-8 years before a new orchard provides an economic yield. This time span could be shortened up to 3-4 years by reworking existing healthy trees to a new variety.

Benefits

1. The roots of already established trees provide an energy store to rapidly grow a new tree.
2. Trees can produce fruit within 3-4 years.

Time of Top-Working/ Weather

1. The best time to rework is in the cool months of early spring from 15 February to 15 April.
2. Reworking can also be done in September and October.
3. It should not be done in the warm to hot months of the year.

Tree selection for reworking

1. Health, vigorous tree with a good root system.
2. Younger the better, up to 20 years.
3. Free of diseases or other stress factors.

Hygiene and sanitation

It is necessary to disinfect all reworking tools to prevent the transmission of diseases . Wash the tools with 10% solution of bleach. (This mixture can be prepared by mixing 1 part of bleach with 9 part of water). This process should to be carried out every time before top-working (Figure 1).

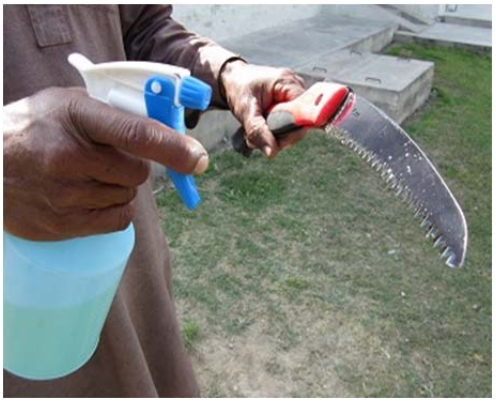

Figure 1: Disinfecting reworking tools

Preparation

Select a limb on the eastern side of the tree and cut it at about waist height. Leave behind an extra 150-200 mm wood from the intended grafting position. When grafting occurs this portion of the wood is removed so grafting can occur into a fresh cut (Figure 2). The remaining portion of the tree will protect the graft from wind and sunburn and also encourage the flow of sap within the tree.

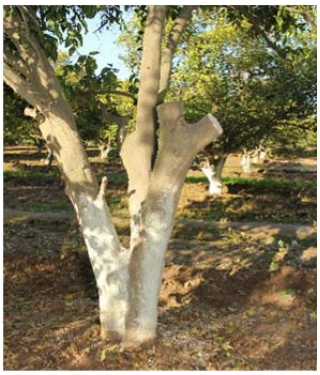

Figure 2: Cutting / removal of tree limbs from East part of the tree

Whitewash the tree with lime or distemper straight after cutting the limb to reduce the risk of sunburn. Apply paint on the main trunk and lower parts of thick limbs by mixing white color with water at 1:1 ratio (Figure 3).

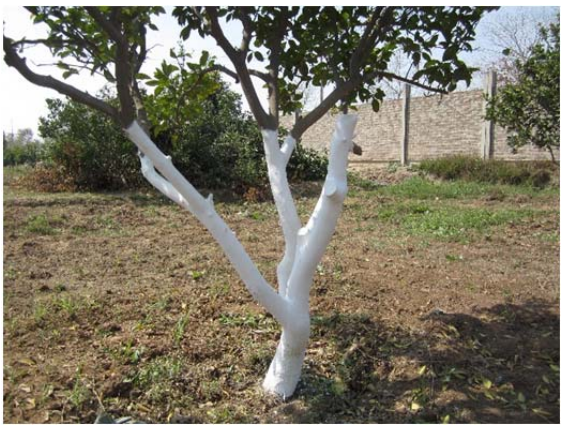

Figure 3: Whitewashing tree trunk and limbs

Graft stick preparation

1. Select one year old grafting stick 100-150mm long and , 5-7mm wide having 3-6 buds (Figure 4)
2. Place the grafting sticks in the plastic bags.
3. If storing sticks, place them in a 5^0C refrigerator.
4. To prevent the grafting sticks from drying by placing them in the ice box before taking them to the field.
5. Do not place the sticks directly on ice, otherwise they will freeze and be unusable.

Figure 4: Graft stick

6. One to two hours before the grafting (not more than two hours) make 50mm long sliding cut on the one side of grafting stick. Make another 5-10 mm sliding cut on the opposite side (Figure 5).

Figure 5: Preparation of stick for grafting (Handling of Stick, 50mm long sliding cut & 5-10mm small sliding cut)

Grafting

Grafting is usually done at autumn or spring, when the bark can be lifted and separated from the inner wood.

1. The width of tree trunk should to be less than 6 inches. Before grafting cut the upper 2-3 inches of the already trimmed trunk (Figure 6).
2. Cut the trunk at 0.8-1m height of from the ground. It's good to graft the tree as low as you can so that the tree will have a limb structure that is not too high. Do not cut too low because grafting success decreases as the cut height decreases.

3. Flatten the trimmed surface and edges of trunk before the grafting with the help of grafting/ budding knife (Figure 7)
4. Place a 50-70mm vertical cut at the bark of trunk and up lift the bark slightly (Figure 7)

Figure 6: Freshly cut at trunk

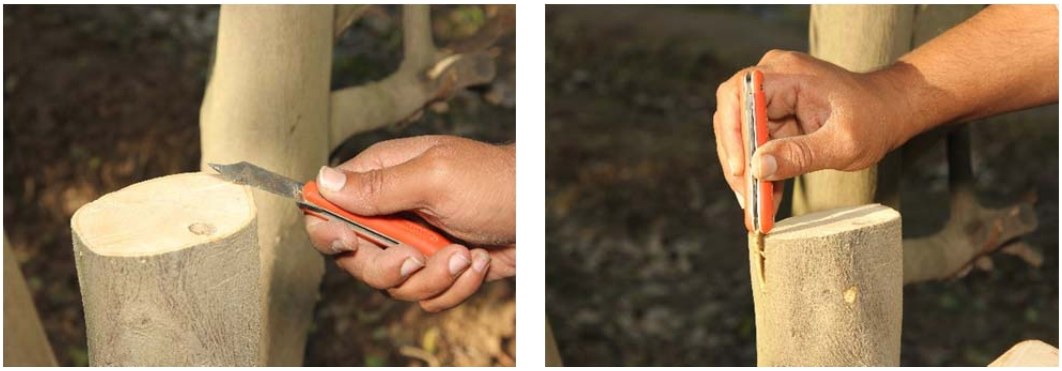

Figure 7: (Left) Flattening of trimmed surface and edges; (right) Lifting of bark

5. Place grafting stick on the upper side of split bark surface and drag it to downwards (Figure 8).
6. A small portion of graft should be left outside the trimmed part of trunk. This helps the graft to attach to the cut limb (Figure 8).
7. Spray the fungicide on the graft to protect it from the fungal infestation.

Figure 8: (Left and mid) Placement of Grafting Stick in the Bark; (right) Graft portion outside the trunk

8. Two graft sticks can be placed into one trunk (Figure 9).
9. Wrap 20-25mm wide budding tape around the graft firmly to secure the grafting stick in close contact with the trunk and prevent dehydration (Figure 9).

Figure 9: (Left) Graft at one trunk ; (right) Wrapping of graft with grafting tape)

10. Cover the graft with 1ft long plastic bag by placing it inside the paper bag with open edges at both sides. Close the upper open side of paper bag with paper clip. This enables the bag to be easily opened checked. (Figure 10).

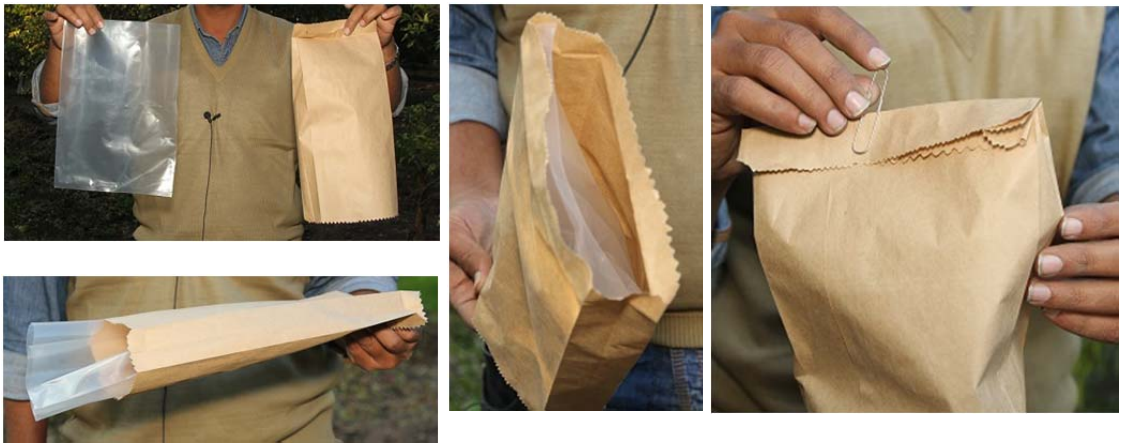

Figure 10: Plastic bag placed inside the paper bag to cover the graft and close the paper bag with paper clip

11. These bags provide the shade and maintain the humidity to protect the graft from drying.
12. Tie the bags firmly around the trunk with plastic tape or strip (Figure 11).
13. The bags should be covered with red net to protect them from the birds (Figure 11).
14. Paint the exposed trunk completely (Figure 11).

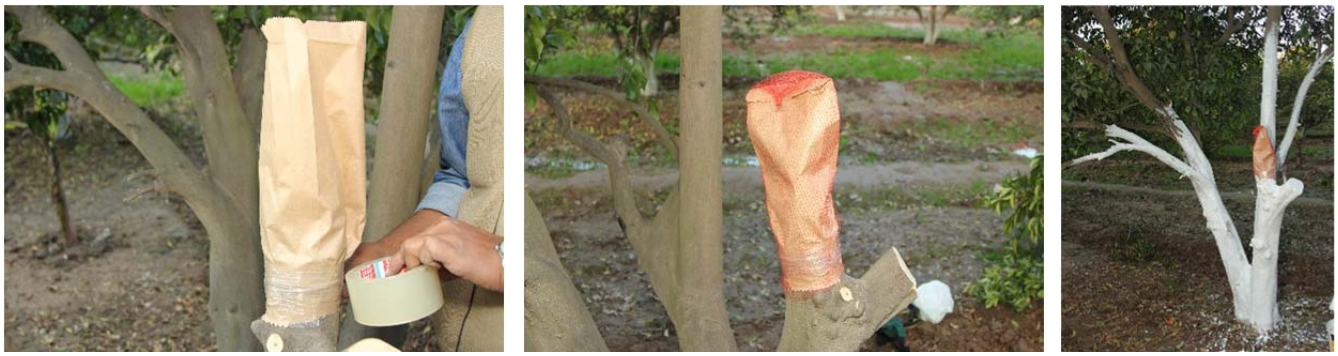

Figure 11: (Left) Binding of bags with trunk; (mid) Covering of bags with Red net; (right) Painted tree

After Grafting care:

1. Grafting stick buds will start to burst within three to four weeks.
2. Open the plastic and paper bags slowly as the shoots start to grow.
3. When shoots reach 20-30mm in length, cut the 50-75mm upper side of plastic bag and open the side of the paper bag slightly.
4. After a further 7-10 days open both bags completely (Figure 12).
5. Remove the bags completely, when shoots reached about 30 cm in length.
6. The graft surface could be protected from drying and cracking by applying whitewash after the removal of bags.
7. The new branches should be occasionally trimmed because the new graft shoots are weak and prone to wind breakage.
8. Protect the new shoots from insects and diseases, especially leaf miner.
9. Irrigate and fertilize to maintain a healthy growing tree.
10. The remaining limbs and branches can be cut down in the second or third year.

Figure 12: Opening the bag