POLLINATION:

Proper pollination is essential for the economic production of tree fruits. Some tree fruits such as apples require cross pollination, that is, pollen from the anthers of flowers of one apple variety must be transferred to the stigmas of a different, compatible variety. Not all varieties are compatible. Inadequate pollination results in small crops of low quality fruit. Good pollination helps produce large crops of bigger, better shaped fruit resulting in higher sugar content. Storage qualities and flavor are also improved by proper pollination.

Pollination is a critical but very brief event in the production cycle of all tree fruits, **including self-fertile varieties**. Good conditions for pollination may exist for only a few hours during bloom. Because of its importance, pollination should be planned and not left to chance.

Tree fruit pollen is heavy and sticky so wind plays a very minor role in its transfer between flowers. Insects are the primary agents in transferring pollen from flower to flower. **Honey bees are by far the most important pollinators of tree fruits** because they are easily managed and are relatively abundant. Wild bee populations fluctuate from year to year and cannot be relied upon to pollinate large monocultures, such as apple orchards.

There are two main requirements for planned cross pollination:

1. An adequate source of pollen of a compatible variety
2. A bee population large enough to meet the crop's pollination requirement at the time of bloom.

For a permanent source of pollen, plant the correct number and variety of pollinizer trees, or graft in pollinizer branches with the exception of crabapples. The use of pollen inserts, bouquets and hand applicators act only as stopgap methods.

Pollinizer Varieties

The pollinizer requirements of apple, pear, cherry and apricot plantings are often underestimated. Triploid apple varieties have sterile pollen and cannot be depended on as pollinizers of other apple varieties. Most apples, pears and cherries (except for self-fertile varieties) require pollinizers. Japanese plums require a Japanese pollinizer and European plums require a European pollinizer. Early prune strains benefit from pollinizers if the bloom period is cool. In standard and semi-standard

plantings pollinizer varieties should be inter planted, usually, as every third tree in every third row, or a maximum of 18 m from pollinizer to the main variety. It is frequently more convenient to plant every third or fourth row to a pollinizer variety. With Bartlett and Delicious more pollinizers are required. For high-density hedgerows, pollinizer varieties should be planted in the row with a maximum spacing of 15 m. planting of pollinizers in adjacent rows should be staggered. For further details consult your crop management advisor.

Pollinizer Charts

CHERRY POLLINATION CHART

CHERRY POLLINATION EXPLANATION

APPLE POLLINATION CHART

Managing Honeybees for Pollination

For apples, beehives must be moved in when the king blooms are opening, but not before. In low-density orchards, place two to three hives per hectare. High-density orchards with heavy bloom may require as many as five hives per hectare for optimum pollination.

Pears are less attractive to honeybees, requiring five hives per hectare. Move hives into the orchard when 30 to 50% of the blossoms are open.

Sweet cherries require three hives per hectare. Hives should be placed when the first 10% of the blossoms are open.

Do not keep beehives in orchards year round because insecticides will reduce bee populations or kill colonies. Also, bees placed in the orchards too early will find other attractive floral sources which they may continue to forage on, ignoring the fruit trees that begin to bloom.

Hives used as pollination units should meet the following conditions:

(1) Have a laying queen.

(2) Contain a bee population large enough to cover eight standard combs.

(3) Have at least five standard combs covered with large areas of brood (immature stages of bees) or the equivalent of 0.5 m^2 of comb space occupied by brood.

(4) Be free of American Foulbrood Disease and show little or no evidence of other diseases.

(5) Contain a minimum of 4.5 kg of stored food other than pollen or the equivalent of two well-filled standard combs.

Any growers questioning the quality of their pollination units should contact their supplier to arrange for an inspection or arrange for a government inspection by contacting the Apiculture Program, BCMA, Abbotsford (604-556-3129) for the nearest Apiary Inspector.

Planned pollination is an essential part of modern fruit culture and is a co-operative enterprise between beekeeper and orchardist. Consult your crop management advisor for names of beekeepers providing pollination services.

For more information on pollination, contact BCMA Abbotsford office. Also visit BCMA's web page Bees (Apiculture) for reference material on the pollination process, the biology of bees, various crop requirements and the use of bees to achieve proper pollination.