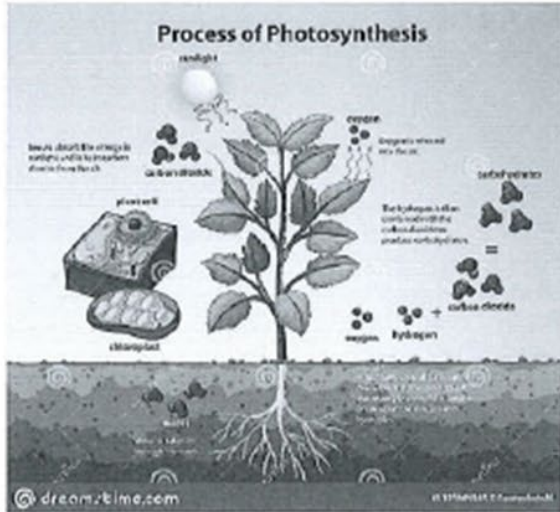


Merit
NZQA Intended for teacher use only

Photosynthesis:

Photosynthesis is the process by which the plant uses the sunlight, water and carbon dioxide to create oxygen and energy in the form of sugar that occurs in the chloroplast. This performs during the day hours because this reaction needs sunlight. During the process of photosynthesis the plant is taking in carbon dioxide (CO₂) and water (H₂O) from the air and soil. This is transforming the water

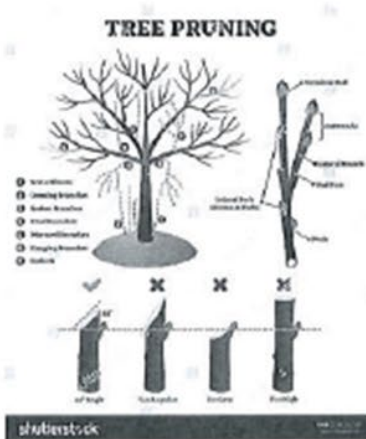


into oxygen and the carbon dioxide into glucose (C₆H₁₂O₆ = Glucose). Then the plant releases the oxygen back into the air and stores the energy with the glucose molecules. Water comes from the soil via the xylem. Carbon dioxide is entering the plant from the air with the sunlight hitting the plant and Chlorophyll (the active ingredient) which makes the plant look green and also absorbs energy from the sunlight. The glucose that the plant has made, the plant now uses this to help it grow and may be transported to the roots, seeds, stalks or the fruits for storage. Starch is the storage for the plant that is stored in the seeds and roots. The plant stores this away so that when the plant needs it to grow it is available for the plant.



Pruning:

Apple trees should have a conical / pyramidal shape with shorter branches at the top, so more light can be let in to reach the lower branches. Pruning is the practice of removing certain branches, such as verticals because apples are unable to grow upwards, diseased branches, we remove these because the tree is using all of its energy up on branches that have a disease or are dead and the tree is trying to heal the branch when it is already dead, so we remove these branches to prevent the tree from using up its energy. We also want to be removing the crossed over branches because it



creates more shade and it slows down the photosynthesis process. Because having crossed over branches they are preventing the sunlight from entering in and being able to reach down towards the branches underneath. The sunlight is one of the most important things towards the process of photosynthesis, so this is why we are removing these branches so that there is less shade and more sun and energy for the tree to be able to grow strong and for the tree to be able to create a good apple yield for when they are ready.

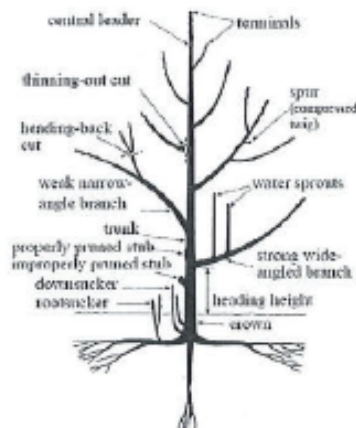
Small branches are also necessary to be removed (mainly size of a pencil) because they also take up too much energy with the growing process, they won't be able to produce apples until the next year (next yield). So therefore it is pointless to have those branches and keep that energy for those branches that are already producing the apples. When we go to prune the tree we

want to be leaving the horizontal branches and the mature spurs. This is because the apples will be growing from the spurs. When you go to cut off a branch you have to make sure that you cut on a diagonal line so that when it rains the rain is able to run off the branch but at the same time the branch is able to gather the water that is needed without being drowned. The equipment that you used must be cleaned and sanitised so that we don't spread bugs and we want to be sure that the equipment is

sharp so we have a clean cut. The equipment that is used must be suitable for the job of what you are cutting. Pruning shears from the little branches , loppers for the bigger, thicker branches and a hand saw for the massive branches that are unable to be cut with the loppers.

Tiakitanga

Tiakitanga means guardianship and to care and protect people ,land and environment.To allow for intergenerational sustainability in future.



We are showing Tiakitanga by caring for our apple trees via pruning them to improve their growth and being able to have a better chance with photosynthesis and being able to produce a good yield. This is related to our photosynthesis for apple trees because we are trying to improve the photosynthesis of apple trees by removing the diseased branches , crisscross and the small branches to be able to help the tree improve the growth and a better apple yield. This is helping the environment by not letting the diseases spread and being able to have the tree string for the rest of the year and it is helping the people with being able to have a good yield of apples to be able to sell to make money and even have something healthy and organic for a snack and creating a sustainable future for the next people.