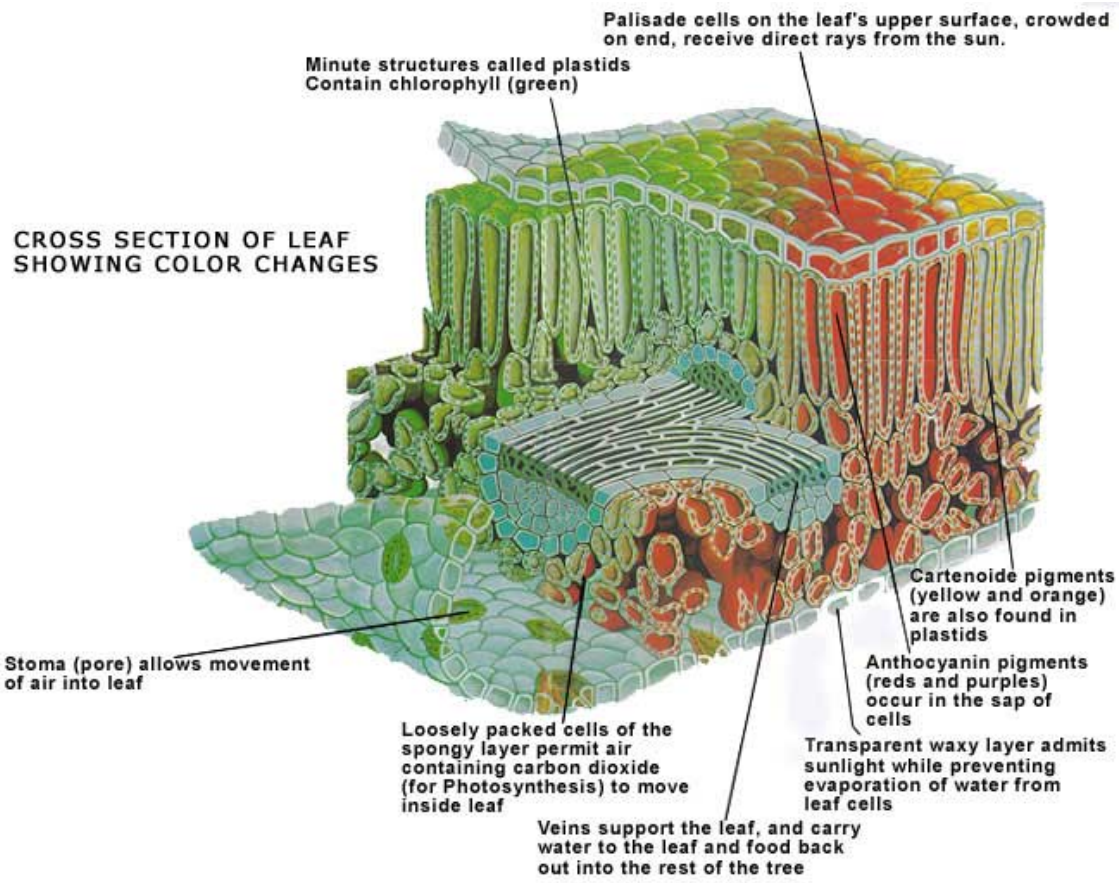
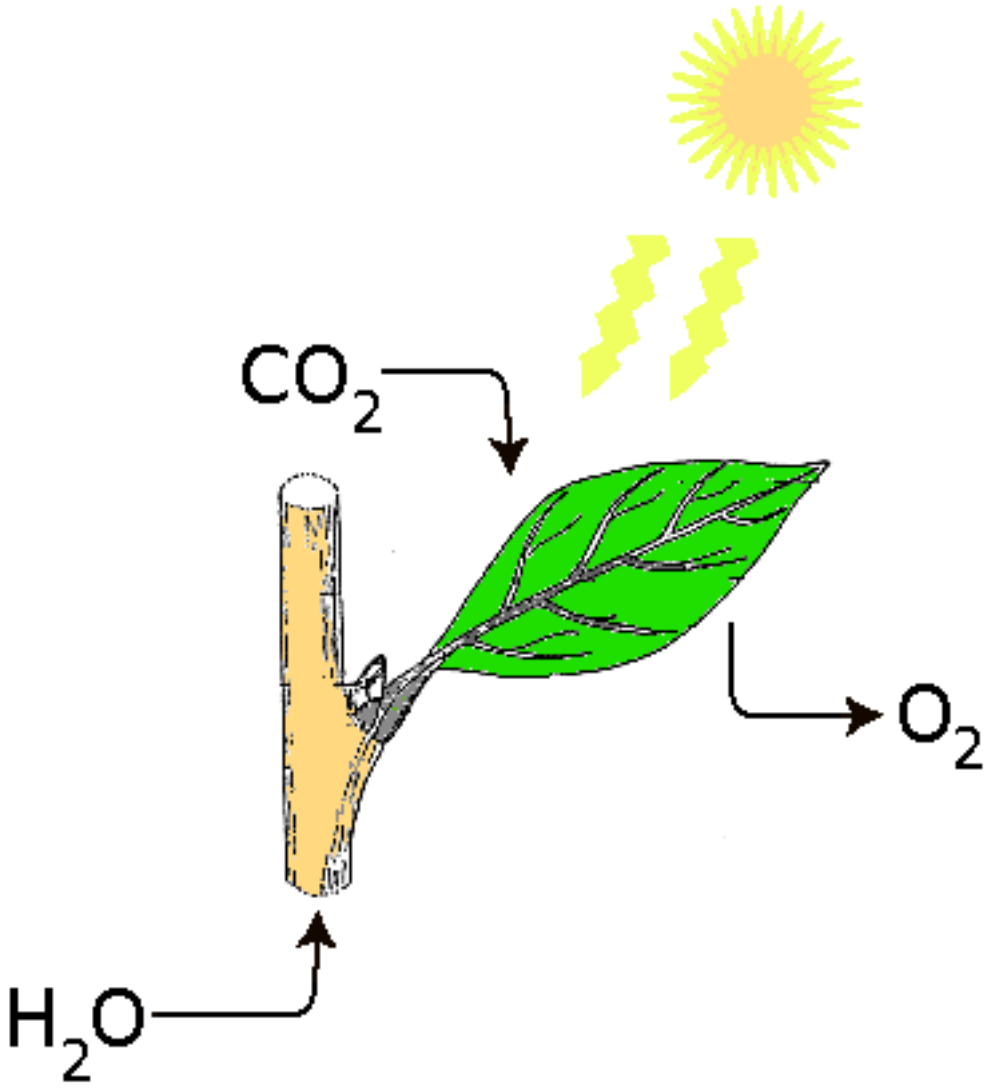
Green Gold - The Leaves of Life!

The Importance of Green Leaves to the Planet.
The chlorophyll in green leaves forms the basis for all life on Earth. Without it life as we know it would not exist. There might be a few chemosynthetic bacteria left, since these can obtain energy from chemical reactions other than photosynthesis, but that would be it. Virtually all life depends on that beautiful green chlorophyll molecule.

The chlorophyll pigment is concentrated in the leaves of plants - though it is also present in other parts such as the stems of many herbaceous plants, flower buds and certain fruits and occasionally roots.



The chlorophyll molecule is responsible for trapping the sun's energy; and this solar energy is converted to chemical energy in the form of glucose using carbon dioxide (CO_2) from the atmosphere,



and water (H_2O) from the soil. This glucose is then transported all round the plant for use as required. Some is oxidised for energy, some is stored as insoluble starch when it is not required immediately. Some is converted into cellulose to make new plant structures e.g.. more leaves, stems, flowers, roots. Some is taken to fruits and accumulated there. Some is used to make proteins utilising nitrogen from the soil.

All plants live and grow by photosynthesis. The only exceptions to this are extreme parasites such as dodder (which have lost their chlorophyll) and saprophytes such as the ghost orchid, most fungi and bacteria. The saprophytes feed off dead and decaying vegetation, whilst the parasites feed off living plants and so both are dependant on green plants and chlorophyll, even though they do not possess it. Green plants are the primary producers as a result of their wonderful greenness! Many animals - including humans - eat plants. Some animals eat other animals, but if you follow the food chain back you will find that green plants are always at the base. Animals and plants die and decay, releasing minerals into the soil and CO2 into the air for green plants to use for photosynthesis. Thus the cycle continues, and we all (except a few bacteria) need green plants. If green plants were to suddenly disappear, then so would virtually all life on Earth - including Homo Sapiens.
Green leaves are thus the powerhouses - the great driving force for Life on Earth. Photosynthesis is the life generating chemical process. Chlorophyll is thus the Molecule of Life.

The Importance of Green Leaves to Health.
It is no small wonder then that green leaves are so very extremely beneficial to the health. If someone mocks you as you eat your green salads and calls you a rabbit then you could always say that you would rather be as healthy as a rabbit than as sick as a human urban junkfood eater!

1. Vital Life Energy.
When you eat a leaf you are taking into your body - into your very being - that wonderful source of energy and vitality that powers Life on Earth. It is no coincidence that the haemoglobin molecule (which is responsible for carrying oxygen in our blood and distributing it to all our cells - as well as picking up CO2 and taking it back to the lungs for excretion) is very similar in structure to that of chlorophyll. The main difference is that haemoglobin contains iron whilst chlorophyll contains magnesium. Some people even believe that by eating chlorophyll you actually make haemoglobin directly!

Freshly picked raw leaves in particular are teeming with activity and vitality. This vitality, or life force, can be measured by Kirlian photography and it reduces when an individual plant or animal becomes sick or very old. When you eat fresh raw leaves you are taking that vitality into you. Leaves that have been picked and stored for a while, or leaves which have been cooked or dried will have much less vitality, but will still be very beneficial. Eat Green Leaves - take in LIFE!

The chlorophyll molecule itself is very soothing and healing and is useful in healing wounds. It is also a wonderful de-odouriser and can help to remove unpleasant smells from the gut!

2. Vitamins and Minerals.
When first changing from an animal based to a plant based diet, people often wonder where they will obtain their minerals, vitamins, protein and fats. I will answer all these questions in this series - but green leaves will provide most of the nutrients that we require.

Of all the many foods, green leaves are actually the richest in vitamins and minerals. The reason for this is that these nutrients are also required in photosynthesis - hence our heavy emphasis at Plants For A Future on plants with edible leaves.

Green leaves are the foods richest in easily utilised calcium. On a dry weight basis, chemical analysis shows that most plant leaves are actually as rich or richer in calcium than cow's milk. This may come as a surprise to most people - but the figures are official! Cow's (or goat's) milk is in fact not a very good source of calcium at all because milk is very mucus -forming and tends to generate large amounts of sticky mucus in the gut. This mucus interferes with digestion and absorption, so the calcium it contains is not well utilised. In addition to this, calcium requires magnesium for its utilisation in the body - without sufficient magnesium, calcium cannot be utilised properly. Milk is a poor source of magnesium, while green leaves, are a rich source of both calcium and magnesium together. Also, unlike milk, green leaves are very clean, light foods which the body finds easy to handle, and they actually help to clear the body of mucous and toxins.

It is very interesting to note that the incidence of osteoporosis is very high in the so called 'developed' countries where large amounts of milk and meat are consumed; but is much lower in countries where few animal products are eaten.

Incidentally, when I talk about green leaves, I mean *green leaves*. I do not mean the pale white hearts found inside cabbage, lettuce, celery or chicory hearts - or any other blanched vegetable. I mean dark green leaves such as those found on plants of dandelion, green chicory, parsley, kale, various campanulas, thyme, reichardia, violas etc. See our leaflets on Winter Salads (http://www.pfaf.org/user/cmspage.aspx?pageid=39), edible leaves etc. for more examples.

Green leaves are also extremely rich sources of potassium - a mineral that tends to be lacking in the processed diet of industrial society. The potassium and sodium are in balance, there being much more potassium than sodium - which is the natural order of things. Processing foods tends to leach out the mineral rich and potassium rich part, and piles on lots of sodium in the form of salt, sodium bicarbonate (= bicarbonate of soda) and various other sodium salts. This excess of sodium causes serious imbalance in the body resulting in numerous health problems.

Green leaves are a very rich source of iron. They are also good sources of zinc, manganese cobalt, copper and many other minerals that we need, but tend not to think much about.

Green leaves are a rich source of the whole B complex (except perhaps B12 - which can be obtained by other means - see later). Pregnant women are often advised to take vitamin supplements, and especially folic acid, in order to prevent Spina bifida in babies. All they have to do, of course, is make sure they eat a salad every day since, of course, foliage is the best source of folic acid. The B complex is involved in many different bodily functions, but two of the most important ones are:-

1. The release of energy from food.
2. Maintaining the immune system.

So if you keep feeling tired or keep catching colds, perhaps you need to eat more green leaves!
Green leaves are the richest sources of carotene, or provitamin A, from which the body easily makes as much vitamin A as it needs. Pure vitamin A or retinol (found in animal products) is highly toxic if eaten to excess - Arctic explorers have been known to die from vitamin A and vitamin D poisoning after eating the livers of polar bears since this is where these vitamins are stored in particularly high concentration. Carotene is totally non toxic and in fact is very beneficial and healing in large quantities. It is a very useful antioxidant vitamin in these days of high pollution. I have heard of children going blind in India because they did not have enough vitamin A in their diet. No - they do not need high-tech eye operations - all they need is green leaves to restore their sight. So simple, so cheap, so easy! Carotene is also found in orange or yellow fruits or vegetables such as apricots and rosehips.
Freshly picked raw green leaves are excellent sources of vitamin C. Cooking, wilting, drying or storing the picked leaves in a warm place destroys much or all of the vitamin C, depending on how it is done. Amongst other things, vitamin C is very important for the function of the immune system, tissue repair, and it is an antioxidant vitamin. Vitamin C is present in all living and actively metabolising parts of plants, not just leaves (i.e. it is not present in dormant seeds, but is made in large amounts when seeds germinate.) Most people tend to be rather short of vitamin C because they do not eat enough fresh raw foods. Our forest dwelling ancestors living largely on fruits and leaves would have had an abundant supply of vitamin C.
We do not obtain vitamin D from leaves, but we can make our own if we regularly expose our skin to some sunlight. We do not need large quantities of sun for this nor do we need to sunbathe all day. We can also store vitamin D in the liver so we can stock up in the summer for the winter.
Vitamin E (another antioxidant vitamin) and vitamin K (essential for bloodclotting) are also abundant in green leaves.
Bioflavonoids, which are sometimes known as 'vitamin F', are various plant pigments which occur in green leaves in association with the chlorophyll; and also in many fruits, especially small berries such as rosehips. They are important for the utilisation of vitamin C and some people believe they are very good for the brain. Bioflavonoids are also beneficial to our health in many other ways. Thus rutin, which is found in the leaves of buckwheat, is a bioflavonoid that has a very beneficial effect on the circulatory system. The bioflavonoids found in the fruits of all Eleagnus and Hippophae species have been shown to be an effective preventative and treatment of cancer.

3. Essential Fatty Acids
Although leaves are very low in fats, the small amounts of fat that they do contain tend to consist of the essential fatty acids linoleic and alpha-linoleic acid. These are essential for the health of the immune system and in making cell membranes.

4. Proteins
And, believe it or not, green leaves contain a fair amount of top quality protein. On a dry weight basis, leaves are about 25% protein, so they are comparable to beans here. And unlike the storage proteins of most seeds, which tend to be somewhat short of one or more essential amino acid, green leaves are high in all of these substances. The reason for this is that leaf protein is actually in the form of enzymes (biological catalysts which speed up and direct biochemical reactions such as those responsible for photosynthesis, respiration, digestion and so on.) These are the many enzymes that work with that wonderful chlorophyll molecule in the process of photosynthesis. Not that I am recommending that you use leaves as your sole source of protein of course, but the protein content is there and not to be sneezed at.

As well as providing protein, the enzymes in raw leaves, and in other raw plant foods, actually help in the digestion of the particular food in which they are found, and are very beneficial to the body.

There is an association called "Leaf for Life/Find your Feet" which juices leaves and uses this as a protein supplement for children in countries like India. The resulting product is called "Leafu" and has greatly improved the health of many people there. The other advantage of leaf protein is that it is soluble and therefore easily digestible - unlike many other forms of protein.

5. Fibre
Leaves are an excellent source of healthy fibre. Lack of fibre (usually due to a diet of processed foods and animal products) causes pain, constipation and disease. Adequate fibre results in regular soft stools and health. The fibre in leaves is particularly beneficial and much healthier than excessive amounts of bran (from wheat) which can act as an intestinal irritant. In fact the fibre present in fresh raw leaves encourages the "friendly" lactobacteria - mainly Lactobacillus acidophilus in the intestines to proliferate and grow there. These bacteria thrive on green stuff. Inside us they make B vitamins (including B12) and vitamin K. They help in the digestion of food, help our immune system and help in keeping the "unfriendly" bacteria at bay. The "unfriendly" putrefactive bacteria, such as E.coli, proliferate when there is an absence of fibre and an abundance of decomposing remains of meat and milk. They do not make any vitamins, and instead encourage the putrefaction (rather than digestion) of food and produce toxins and foul smells in the process. These bowel toxins are a major cause of disease in Western Society - and can even result in colon cancer! It is often said that dis-ease starts in a toxic colon. So - eat plenty of raw leaves to encourage the friendly lactobacteria.

6. Medicines
In addition to using green leaves as a food, specific green leaves make excellent natural medicines. Leaves generally are very cleansing, healing soothing and revitalising as well as being very nourishing. A green leaf juice is in fact an excellent nutritional supplement, and such juices are often used in natural therapies, including in the treatment of cancer. And they work! As Hippocrates the Father of Medicine said "Let Food be Your Medicine and Medicine be your Food".
Specific leaves are good for specific things. For example dandelions and chicory are good for the liver and kidneys and are good blood purifiers. Dandelions are also good diuretics, but, unlike diuretic drugs which deplete the body of minerals especially potassium, dandelions are so high in potassium and other minerals that the body has a considerable positive gain in potassium despite the diuretic effect.
Nettles (and I do not recommend you eat these raw!) are good blood purifiers and help in the treatment of Arthritis. Mint and fennel leaves contain aromatic oils which help with the digestion of food and also dispel intestinal gases. The juice from comfrey leaves and or Aloe Vera leaves applied directly to a wound, burn or ulcer, will greatly speed up the healing process. (If you want more information on this aspect of leaves then read the books 'The New Holistic Herbal' by David Hoffman, 'The Dictionary of Modern Herbalism' by Simon Mills and 'The RHS Encyclopaedia of Herbs and their Uses' by Deni Bown.

To summarize
It is the chlorophyll in green leaves which is responsible for virtually all life on earth. No green leaves - no life. Leaves are the powerhouses of the plants where sunlight energy is transformed into plant energy. And when we eat leaves we eat this energy, vitality, life-force and power which has wonderful energising properties for our whole beings. If you eat a leaf - you take in Life!