Roland Taylor looks at the development of the tyre and how that has enabled the ATV to become a valuable greenkeeping tool

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While sitting in a traffic jam recently, I was pondering that we must spend a considerable amount of our lives sitting on air and rubber - tyres. This prompted the next question, do we really know a lot about this important transportation component or simply do not really care until it causes us aggravation by deflating? Unless you are one of those diligent people, how many times this year have you checked your car's tyre pressures? I cannot remember. My resolution is to do it more often.

Prior to the 1840's a vehicle's tyres were made from either wood or steel. It was thanks to two Scotsmen, that riding any type of vehicle was to become less painful to the rear end.

In 1845 R. W. Thompson, launched the first solid rubber tyre. Apart from being quieter it had no other benefits over its steel counterpart.

Grass played a significant part in Scottish vet, John Boyd Dunlop's invention. He was fed up with the deep grooves his son's tricycle made in his lawn. His solution to this was to fit lengths of hose filled with water to the wheels. An acquaintance suggested that using air instead of water might be better. This he did, and the resulting tyre was patented in 1888.

But Dunlop's invention proved to be impractical and never made him a rich man. However, the die was cast and over the next few years many names, that were to become well known in the future, introduced various forms of the pneumatic tyres.

From the beginning, rubber was seen to be the answer, but its properties posed some major problems. In hot weather the tyres melted and in the cold they froze and cracked. In addition, they stuck to everything. It was a man called Charles Goodyear

who eventually came up with the answer - a heat process, which he named vulcanisation. In 1937 signs of a natural rubber shortage were becoming evident. To counteract this, the Goodyear Tyre Company launched a man made substitute called 'Cherigum'. Today, it is estimated that over 60% of all tyres sold are synthetic.

Tyres come in a vast range of sizes and specification, and depending on the vehicles they are to be fitted on determines the method of construction and the materials used.

The recipe for tyres

Natural rubber is latex (sap), tapped from a tree's outer bark, it then coagulates to form solid slabs. Its synthetic counterpart is produced by the interaction of chemicals and processes. Another important compound is 'carbon black' - a substance for increasing the strength of the synthetic rubber. Burning crude oil in specially designed furnaces produces this product.

Fibreglass, nylon and polyester in the form of sheets of parallel textile cords are used in the construction of tyre casings. High tensile bronze or brass-coated steel wire is also used.

All the ingredients are weighed and mixed in a 'Banbury Mixer' to form a pliable material that is then rolled into sheets. One of three processes then takes place depending on the tyre's properties.

Extruding

The compound is heated and then forced under pressure into a die creating the tread, side wall and apex of the tyre.

Caldering

This involves the textile and steel cores being laid flat, both sides are given a thin coating of the mixture. These layers are cut and reassembled to form reinforced sheets that are used to create the casing ply and breaker belts, which give the final result, added strength, shock resistance and durability.

Coating

High tensile steel wire is given a rubber coating and wrapped into hoops to form the beads of the tyre. Having carried out one or more of these preliminaries it is time to build the tyre.

The first stage consists of an inner liner, that will retain the air, plus the components to form the basic structure being wrapped round a drum. The side walls are then placed in position. On another drum the tread and breaker belts are assembled. These moulded forms are brought together and the tyre is inflated. At this stage special attention is paid to ensure all the air is expelled from between the layers. The bald tyre casing is loaded into a mould where high-pressure steam is used to produce the tread and side wall markings. The heat generated also results in a chemical action that bonds everything together. Once the tyre has cooled down it is given a thorough inspection and is ready to be used.

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Some tyre manufacturers have recognised this and are using their knowledge from other applications, such as agriculture, to produce a specifically designed range for the grasscare markets. The features of these introductions help towards maintaining an open soil structure and avoiding damage to the turf. By using a tyre with a wide surface contact area, plus low inflation, the equipment's weight is more evenly distributed, but this is only part of the picture. The tread pattern is also important in reducing slippage and increasing the machine's efficiency. Stability is another factor, especially on uneven or sloping terrain. With the right tyres fitted it is possible to work on soft, wet areas, with minimal marking or damage to the grass.

There are other spin-offs, these include; lower fuel consumption, longer life and more cost-effective operation.

To achieve all this requires buying the right tyres - this can be a minefield. Low ground pressures tyres are readily available, but the question that needs to be asked is - are they designed specially for your equipment? Unfortunately, this is not always the case and what looks like a bargain can become a liability. To get it right from the onset, it is best to contact companies who offer tyres specifically for working on grass. While the initial outlay might be slightly higher the benefits and technical support will save money and hassle in the end.

When it comes to tyre maintenance there is very little to do. Regular checking of pressures being the main one. For some applications changes in air pressure may be recommend by the equipment's manufacturer. In these cases if there are any doubts then a tyre specialist will be able to advise on the best course of action. Other things to watch out for are missing dust caps and any signs of damage, chaffing or excessive wear.

By looking after your tyres you will get a smoother ride all round.

Saving or making time is problem most of us are faced with in the modern workplace, as a result we are constantly having to be seeking ways of achieving this.

One aspect that can be overlooked is the time taken to travel around a course. With any large operating area, minutes and hours are guzzled up over a week, month and year. The shortest route between two points is a straight line, but unless the area is flat and devoid of any obstacles this is rarely possible. The type of machinery, and the on site work that is to be carried out, is generally the governing factor on which is the best possible route from A to B.

A range of equipment that can speed up travelling times are the "go anywhere" vehicles -the ATVs or Utilities.

When ATVs first appeared on the market they were predominately sold

to the leisure sector so, quickly established a reputation as fun machines. Some of the early models had a three-wheel configuration, but these could, if abused be unstable and dangerous. Four-wheels were found to be safer.

At first this form of transport was shunned by the commercial sector, but farmers, especially, in mountainous areas soon discovered the benefits of this means of transporting foodstuffs, fodder and sheep over difficult terrain. The crop growers also found they could use an ATV, with its low ground pressure properties, for fertilising or spraying when conditions were soft and wet. Using a conventional tractor in this situation was asking for trouble as considerable damage could be caused to both the soil's structure and the growing plants.

In the early days usually a trailer was towed behind but, recognising this as not being always ideal, manufacturers introduced integral transport boxes. They also launched purpose built units, which were given the name 'utilities'. These have the same low ground pressure and traction qualities of the ATVs. Most of today's models have the advantages of pto and hydraulic systems for operating a wide range of turfcare attachments, as well as transporting materials

Both these types of vehicles are now recognised in the grass maintenance sectors and are used throughout the world in a wide range of applications.

For golf course an ATV in the fleet can certainly cut down travelling times, especially for light work such as greens or tees maintenance. It is also a fast way of getting to a breakdown or puncture out on the course. The machine's ability to cover rough ground, soft wet areas without virtually any markings and handle steep slopes means they are able to travel across areas where other units cannot.

The utilities are for many, a substitute for the conventional tractor and trailer and there are some large carrying capacity units now available for transporting materials such as top dressing and sand.

Whilst these 'go-anywhere' vehicles are not everyone's cup-of-tea, for others they are ideally suited to the geographical location of the course.

If you were looking for ways of saving time getting round your course the possibilities of using an ATV or Utility vehicle are worth investigating.