

**Ted Green, Ancient Tree Forum (United Kingdom)**

## **Trees on the menu - a forgotten, irreplaceable fodder**

### **Des broussailles au menu**

*contact of the corresponding author: edwardgreen629@btinternet.com*

#### **Abstract**

Across Europe, cutting “tree hay” is currently confined to the poor and sparsely inhabited areas such as the mountainous and Mediterranean regions where subsistence farming and attended herding is still carried on. Tree hay is a prehistoric practice that continues virtually unchanged to the present day. But it is also a useful practice, particularly when thinking about animal nutrition, health and welfare, even more so in a context of a changing climate, with increasing periods of constrained fodder supply. History suggests that across most regions of Europe the majority of tree and shrub species were used, in fact herders literally used what they had at hand. In contemporary times with the arrival of meadow hay, tree hay has become especially important as insurance during years when hay making experiences poor growing conditions. When available, Ash and Elm (before its demise) appear to have been the preferred tree species with Holly and Ivy generally cut in severe winters or again after a poor growing season for hay and grazing. As our knowledge of plant communities increases it is not unreasonable that trees may have many different mycorrhizal partnerships to those with natural herb rich meadows. These complex relationships could supply the trees and shrubs with a different range of nutrients and minerals that can be stored for long periods of time and when given to animals will presumably add additional benefits. Together with herb rich meadows they are also known to have beneficial medicinal properties useful for animals. Sadly, in modern animal husbandry and the usefulness of plants as medicine is no longer common knowledge. In the UK restored hedge lines on the Knepp Estate (Sussex) are planted with trees and shrub species without thorns to allow for future harvesting of fodder. Some trees are coppiced at different heights while others are pollarded. Shade tolerant species such as Holly and Hornbeam have been used under the remaining mature hedgerow Oaks. In recent trials, when multi-species bundles (faggots) have been cut fresh (green) and stored horizontally under shelter in a tight stack, many of these still had quite green leaves even after a season or two of storage, some even for twenty-four months.

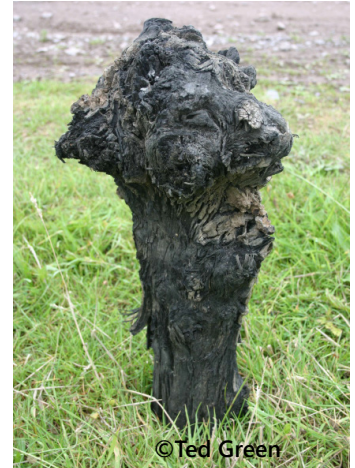
#### **Résumé**

A travers l'Europe, le « foin d'arbres » est actuellement réservé aux régions pauvres et peu peuplées telles que les régions montagneuses et méditerranéennes où l'agriculture de subsistance et l'élevage sont pratiqués. Le foin d'arbres est une pratique ancestrale, pratiquement inchangée à ce jour, très utile lorsque l'on réfléchit à l'alimentation, à la santé et au bien-être des animaux, dans un contexte de changement climatique, caractérisé par des périodes de plus en plus courtes d'approvisionnement en fourrages. L'histoire montre que dans la plupart des régions d'Europe, la majorité des espèces d'arbres et d'arbustes a été utilisée : les éleveurs prenaient ce qu'ils avaient sous la main. De nos jours, avec l'arrivée du foin de prairie, le fourrage ligneux est devenu une garantie importante lorsque le foin connaît de mauvaises conditions de production. Les frênes et les ormes (avant la graphiose), lorsqu'ils étaient disponibles, semblent avoir été les essences les plus utilisées. Le houx et le lierre étaient généralement utilisés au cours d'hivers rigoureux ou après une mauvaise saison pour le foin et le pâturage. Avec les récentes découvertes sur les communautés végétales, il n'est pas déraisonnable de suggérer que les arbres puissent avoir de nombreux partenariats mycorrhiziens différents de ceux des prairies naturelles. Ces relations complexes pourraient fournir aux arbres et arbustes une gamme différente d'éléments nutritifs et de minéraux pouvant être stockés pendant de longues périodes et qui, une fois administrés aux animaux, puissent offrir des avantages supplémentaires. En complémentarité avec les prairies, ils sont également connus pour leurs propriétés médicinales bénéfiques pour les animaux. Malheureusement, dans l'élevage moderne l'utilisation des plantes en tant que médicament n'est plus un savoir commun. Au Royaume-Uni, les haies restaurées du domaine Knepp (Sussex) sont plantées avec des essences d'arbres et d'arbustes sans épines afin de permettre la future

récolte du fourrage. Certains arbres sont recépés à différentes hauteurs alors que d'autres sont trognés. Des espèces tolérantes à l'ombre, telles que le houx et le charme, ont été utilisées sous les derniers chênes.

Dans des essais récents, des grappes multi-espèces (fagots) ont été coupées fraîches (en vert) et stockées en piles serrées horizontales à l'abri. Après une saison ou deux de stockage, parfois même pendant vingt-quatre mois, elles conservaient une bonne partie de leurs feuilles vertes.

*(Fig.1) An oak pollard carbon dated to 2,400 BC found during gravel extraction work along the River Trent in Nottinghamshire.*



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## Introduction

It is our understanding that humans were originally wandering hunter gatherers. So, sometimes before their transition to becoming settled farmers with domesticated livestock, it is reasonable to assume that they developed the skills of herding wild animals; the beginnings of transhumance. As they wandered with their animals and watched their behaviour, they would have noticed how the animals browsed both trees and shrubs. This was particularly so in warm regions such as the Mediterranean, when in the summer months other vegetation was 'burned' by the sun and lack of water. In northern regions, however, they would have noticed the browse height of trees, and how animals rushed to feed on the green foliage from fallen trees or limbs, and in winter on the bark, buds and twigs.

The chances are that it was a small step from this observation to the herders intervening and deliberately breaking and tearing twigs and small branches for their animals. It was then perhaps not long before it was also noticed that if any green leaves that remained were allowed to dry they could be fed to animals in the winter months.

## Pollarding and the original "hay"

It is difficult to imagine how vegetation in a natural herb-rich pasture could have been easily harvested before the development of some form of cutting tool. So, perhaps the meadow hay with which we are all familiar was preceded, perhaps by millennia, by 'tree hay', fodder that could be collected from trees without any tools. I use the term 'tree hay' simply to draw attention to the similarities with the more familiar 'meadow hay' and to try and capture the imagination and curiosity of people who may be inspired to investigate its potential further.

Eventually, of course, tools would have been used to cut trees, and it seems likely that regular cutting for tree hay was the origin of pollarding. Only recently, evidence for prehistoric pollarding came to light during gravel extraction alongside the River Trent in Nottinghamshire. An oak pollard was found, and has been carbon dated to 2,400 BC (Fig.1). The pollard was well over the height at which beavers could work, so clearly they were not responsible. The growth rings were so incredibly small that it appears that the tree might have been cut annually, so reducing its growth to very small twigs.

It appears that across the temperate regions of Europe the majority of tree and shrub species have been used for tree hay through to historical times. However, if available, ash and elm (before its demise) appear to have been the preferred tree species, while holly and ivy were generally cut in severe winters or after a poor growing season for meadow hay. Indeed, in the early days of agriculture, as the use of meadow hay became more widespread, tree hay probably continued to be important as an insurance against poor growing seasons in which meadow-hay making was not possible.

### Tree hay in modern Europe

Today, the cutting of tree hay in Europe is generally confined to the poorer and less inhabited areas such as mountainous regions. It is, however, more widespread in Mediterranean countries where subsistence farming and attended herding is still carried on.

While the methods of cutting and drying tree hay appear to be very varied (sometimes even down to an individual farmer) across the regions of Europe, the basic principles remain the same. Generally speaking, tree hay is produced by the cutting or breaking of limbs and twigs of deciduous trees and shrubs that are in full leaf. Branches vary in length from 60cm to 2m.

The foliage is then dried, stored, and fed to the animals in the winter. One method of drying is to stack and pack the cut branches into very tight bundles that are tied with twisted ropes of willow or hazel twigs. These are then stored green for drying, either under cover or hung above ground outside.

### Minerals and medicinal value

It is thought that, as with meadow hay, the cutting of tree hay occurs at the optimum time for the storage of minerals and nutrients in the leaves and twigs, which then will remain present with drying. The dried leaves may also have some medicinal value. In the light of our increasing knowledge of plant communities and their interactions with associated essential micro-organisms, it does not seem unreasonable to suggest that trees may have many different mycorrhizal partnerships to those of herb-rich meadows. In turn, these complex relationships could be supplying the trees and shrubs with a very different range of nutrients and minerals, which are then stored in the dried leaves. Together with herb-rich meadows, trees are known to have natural beneficial medicinal properties useful to animals. Sadly, in modern animal husbandry such traditional medicinal knowledge has been lost.

### Restoring the cutting of tree hay

The cutting of tree hay has recently been trialled at the Knepp Wildland Project in West Sussex. Branches of different species of trees and shrubs were cut and bundled into faggots, while still green. These were then stored horizontally under shelter in a tight stack. Although some of these faggots went mouldy, many still had quite green leaves even after a season or two of storage. In these trials, the tree hay was fed to the project's free-ranging longhorn cattle, which otherwise are not fed any supplementary hay or feed. They seemed happy to eat a range of species, although wild cherry appeared to be the least attractive. The cattle were regularly attracted from some distance to the area where the faggots of tree hay were being loaded on to a vehicle, which they would gather around, waiting to be fed (Fig.2). When the faggots were opened and scattered close to the wild Exmoor pony herd, the response was exactly the same. Presumably the smell of the hay plays a major part in attracting the curiosity of both the cattle and the ponies.



(Fig.2) Longhorn cattle at Knepp regularly attracted from some distance to the area where the faggots of the hay were being loaded on to the vehicle

### Creating new pollards

We are all now familiar with the biodiversity value of veteran and ancient trees, and the importance of their decaying wood to communities of fungi, insects and other micro-organisms. Many of these trees began life as pollards, regularly cut for many wood products including tree hay. The cutting of tree hay today provides an ideal opportunity to establish new pollards that could become the veteran trees of the future. So, at Knepp much of the tree hay was cut from young trees, primarily ash. In addition, some new hedges have been planted with the future production of tree hay in mind, and, for example, have not included thorn species. Such hedges will be managed by a combination of coppicing and pollarding.

The ideal time to start pollarding is once the tree is above the browse height (2.3–3.5m). Trees can be cut from when the main stem is about the thickness of a thumb, up until about 19cm in diameter. At this size the trunk is still all sapwood, and so when cut the exposed tissue will usually callus over completely, so making a fist-shaped bolling. This is incredibly strong, and any subsequent growth will be very secure and not liable to break off. In contrast, when newly-cut main stems do not callus over and form a bolling in this way, any new growth will only have support from the vertical face of the trunk, and therefore become very vulnerable to breaking away.

The two preferred species for tree hay, ash and elm, are now significantly affected by disease. The regrowth of ash on trees pollarded for tree hay can be more susceptible to Chalara dieback. But, in contrast, the regular re-cutting of elm can keep the trees in a young phase of growth that is not vulnerable to attack by elm bark beetle and subsequent infection by Dutch elm disease.

### A future for tree hay?

To some, the cutting and pollarding of trees to produce products such as tree hay will appear to be a labour-intensive, high-cost, and unproductive operation. However, for others it will be regarded as the continuation of an age-old part of our cultural and landscape heritage. The natural medicinal properties of tree hay will appeal to many, given the high monetary and environmental cost of manufactured pharmaceutical products. And, if we include the benefits of the minerals, nutrients and trace elements that such fodder contains, it could become appealing, especially to the owners of horses or rare breeds, and others at the 'high end' of the animal husbandry sector. Add in the benefits to biodiversity and the low environmental impact, and the revived use of tree hay becomes a very attractive option.

### References

Based on an article that first appeared in *Conservation Land Management* in 2016.