

# Agroforestry – Expanding the Vision

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[www.soilassociation.org](http://www.soilassociation.org)



Opportunities and challenges for UK agroforestry  
with “new” fruits and nuts and obtaining  
payments for carbon sequestration

Prof. Steven M Newman  
BioDiversity International Ltd  
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# Introduction

BioDiversity International Ltd is a company with over 30 years of global experience in the design of profitable agroforestry systems. We have worked in over 90 Countries and are very proud of our work in China where we worked on a system that now extends to 2 million hectares

# Aim

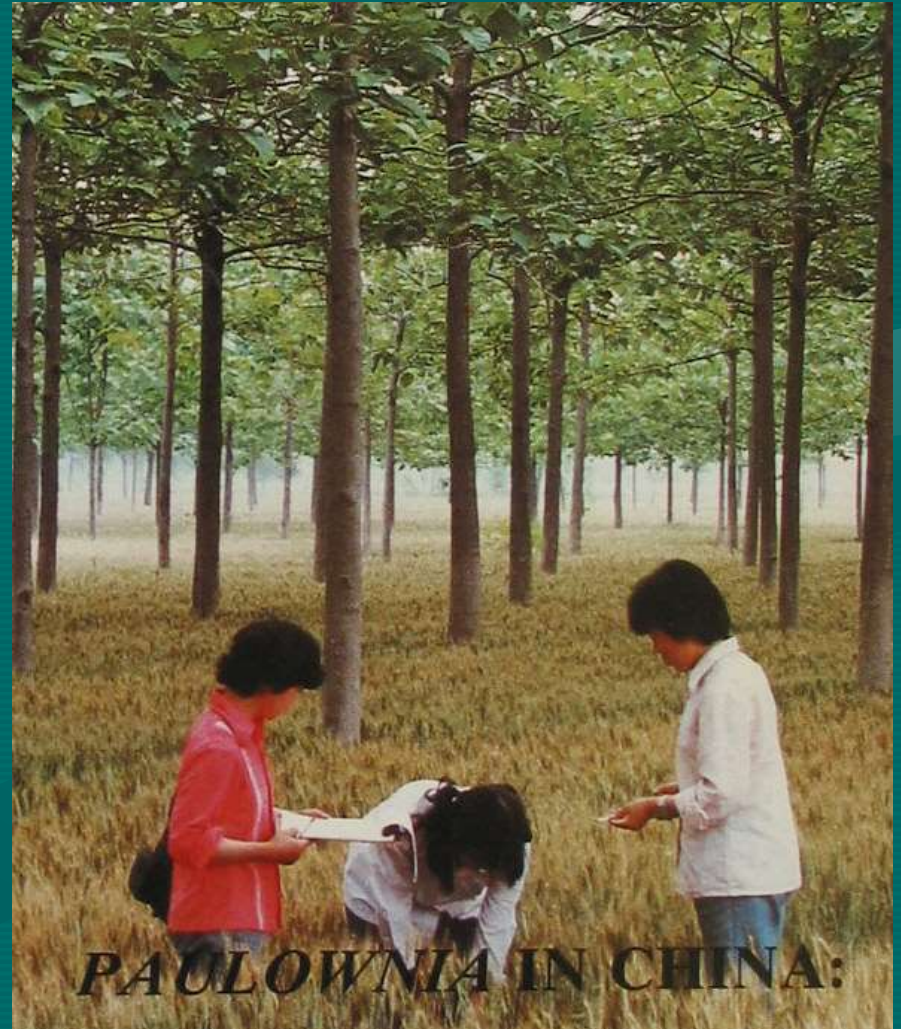
- The aim of this paper is to select two promising agroforestry tree species for the UK as part of climate smart agriculture in order to illustrate some key challenges and how they could be overcome
- A key feature in the context of climate change resilience is that the tree selected should (1) produce multiple products/benefits in the face of uncertain market and environmental conditions and (2) have a lower carbon cost than non-perennial sources.



# Environmental Agroforestry eg soil restoration

Paulownia agroforestry now extends to 2 million hectares in China. The photo shows spring wheat. This is to be followed with Ginger in the autumn.

This land had no organic matter and was subject to strong winds . Soil erosion was a major problem.



# The trees

- The two species chosen are Hazelnut *Corylus avellana* and Chinese Hawthorn *Crataegus pinnatifida*.
- The world market for hazelnut was U\$ 0.52 billion or £0.4 billion in 2018.
- Chinese haw fruit is bright red, 1.5 in (38 mm) in diameter. In Chinese, the fruit is called shānzhā, literally meaning "mountain hawthorn") or dà hóng guǒ literally meaning "big red fruit").
- The world market for shānzhā is not known but it is one of the most popular drinks in China and consumption is rising. It is well known that the drink has major health benefits in terms of reducing blood pressure and heart problems  
<https://www.mordorintelligence.com/industry-reports/global-hazelnut-market>



Chinese Hawthorn

shānzhā



Hawthorn  
Kebabs?



# Single stem free husking and spherical



# Mechanical harvesting



# Methods and sources of information

The work is based on the agroforestry advisory services provided by BioDiversity International Ltd in Kent linked to the development of new agroforestry farms run by new entrants to farming linked to (1) vegan values and or (2) young entrepreneurs with low carbon food aspirations

For further information see the UK agroforestry handbook <https://www.soilassociation.org/farmers-growers/technicalinformation/agroforestry-handbook/>



# Key challenges

The most important products from hazel will be round kernels for the confectionary and baking trade and hazel nut oil. The traditional UK production of cobnuts in the UK (plats) is not relevant for these products as it cannot be mechanised. So what are the challenges for agroforestry with new tree crops in the UK as of today? The 6 main ones appear to be

1. Best varieties and tree sizes
2. Sources of plant material
3. Non plastic approaches to tree establishment (mulches) and tree protection (tree guards)
4. Optimal agroforestry configuration (productive hedges or single trees?)
5. Processing and marketing
6. Estimating and getting paid for carbon sequestration benefits (new and stable carbon and how deep?)



# Strategic options

The research effort on agroforestry in the UK over the past twenty years has been excellent but is not at the stage where researchers can give off-the-shelf solutions for the above. This is a pity given the incredible opportunities that we now have. What are the strategic options for speeding up agroforestry development in the UK with high value tree crops?

1. A voucher system for farmers: Innovative farmers could apply for a research and development voucher and the way they spend the voucher could be monitored so government could build on the new “industries” building up
2. County monitor farms: established as a company with public money and open accounts. Board members come from government, research, grower and buyer organisations
3. Farmer field schools run by farmers supported and monitored by Universities (possibly accredited) open to all including woodland trust and other NGO or private sector advisors

# Over to you!

1. What do you think?
2. Where to next
3. Any other ideas?







Anne Stobart

Holt Wood Herbs

[www.holtwoodherbs.com](http://www.holtwoodherbs.com)

# Profiting from Medicinal Plants in Agroforestry



# Outline

- 1. Trade in medicinal and aromatic plants
- 2. Cultivation formats
- 3. Issues re supply
- 4. Issues re demand
- 5. Going forward





# 1. Trade in Medicinal and Aromatic Plants

- Over the counter remedies – ginkgo, limeflower
- Supplements – hops, sea buckthorn
- Botanical drinks – juniper, elderflower
- Pharmaceutical – yew, squill
- Herbal medicines – willow, hawthorn
- Body care/cosmetic products – witch hazel
- Veterinary – nettle, agnus castus
- Artisan/small herb products – candles, incense..

Size of market variable as is diversity of these nontimber forest products

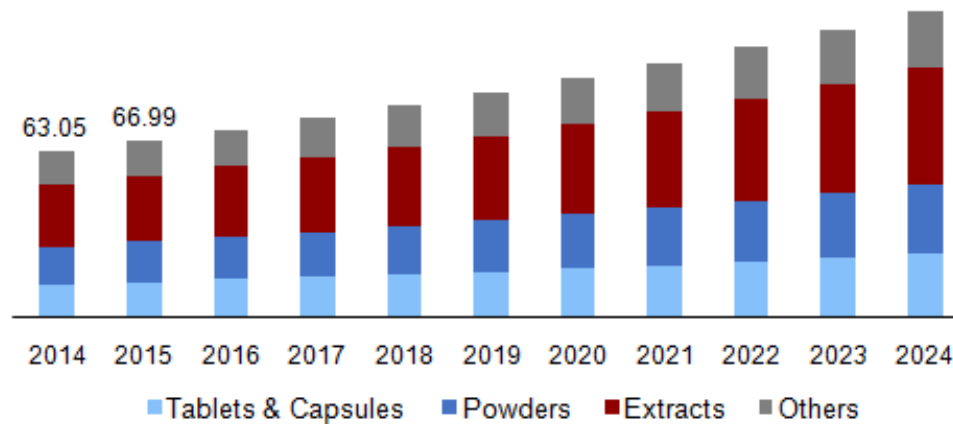
- 2015 Herbal supplement sales in USA (US Consumer Spending reports) estimated at \$6.922 billion
- Up over 7% from 2014 in three channels – mass market, natural and health food, direct sales



# Modern trade in herbs - statistics?

Global herbal medicine market revenue, by product, 2014-2024 USD billion, valued at USD 71.19 billion in 2016

Many small businesses and some major stakeholders in the industry include Tsumura & Co., Dr. Willmar Schwabe India Pvt. Ltd., Blackmores and Nature's Answer.



<https://www.hexaresearch.com/research-report/global-herbal-medicine-market>

- <http://www.intracen.org/itc/sectors/medicinal-plants/>

Extract from top-selling 40 US herbal supplements in 2018 (US\$) (\*indicates data not available)

<b>Primary ingredient</b>	<b>Likely preparations</b>	<b>Mainstream channel sales (ranking)</b>	<b>Natural channel sales (ranking)</b>	<b>Direct sales</b>
Elderberry ( <i>Sambucus nigra</i> )	For respiratory complaints	50,979,669 (4)	25,374,666 (3)	*
Ginkgo ( <i>Ginkgo biloba</i> )	For circulatory complaints	16,041,038 (22)	4,632,234 (21)	*
Cranberry ( <i>Vaccinium macrocarpon</i> )	For urinary complaints	*	7,454,158 (15)	*
Barberry ( <i>Berberis</i> spp.)	For skin complaints	5,060,098 (37)	*	*
Hawthorn ( <i>Crataegus</i> spp.)	For circulatory complaints	*	2,801,274 (37)	*
Lime flower ( <i>Tillia</i> spp)	For nervous complaints	*	*	*

Extract from T Smith, M Gillespie, V Eckl, J Knepper, CM Reynolds. 'Market Report: Herbal Supplement Sales in US Increase by 9.4% in 2018'. *Herbalgram: The Journal of the American Botanical Council* no. 123 Aug-Oct 2019, pp 62-73.



# Many UK herbs imported from abroad

## **Pukka Herbs**

Annual usage e.g.

- Elderberry – 4000 kg
- Elderflower – 21,000 kg
- Limeflower – 14,000 kg
- Hawthorn berry – 300 kg

Supplies from Bosnia, Bulgaria,  
Hungary, Poland, UK

## **Organic Herb Trading**

Some UK 'field' crops especially  
prone to adulteration and  
pollutants:

Nettle

Meadowsweet

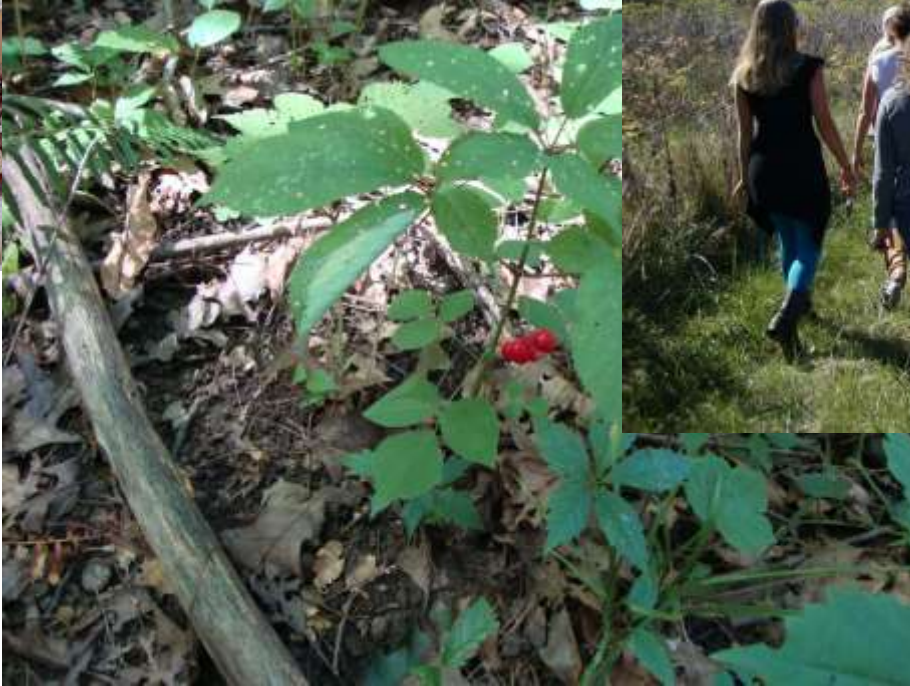
# Increasing demand for experiential products

"At present there is increasing demand for territorial and niche products for urban consumers interested in nature and identity products for health and food. A further evolution of this urban-consumer demand takes the form of increased interest in experiential products related to combining NWFP collection for personal consumption with recreation/ leisure activities."

Wolfslehner B, Prokofieva I and Mavsar R (2019) *Non-wood forest products in Europe: Seeing the forest around the trees*. European Forest Institute (p.23)

## 2. Cultivation Format Examples

- UK Wildcrafting – birch artisan products
- US Woodland simulation – goldenseal/ginseng medicinals
- US Coppice crops – elderberry botanical drinks
- UK Alley cropping – swales and mixed elder/witch hazel medicinals
- EU Agroforestry – cherry and lemon balm for distillation
- UK Forest garden – willow, witch hazel etc. for body care products











Artisan body care products from  
Holt Wood Herbs

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### 3. Issues re Supply

- Identification and provenance - records
- Cultivation and harvesting – labour
- Drying and storage
- Processing equipment

INTEREST IN INNOVATION TRIALS?

Get involved in Organic Herb Growers Co-op



## Regulation!!!

Legal constraints on medicinal claims without a licence

Cosmetic formulae can be assessed and registered with EU database

Food hygiene and herbal teas





## 4. Issues re Demand

- Which plants?
- Quality standards – organic accreditation?
- Timescales?
- Contracts and quantities?
- Trust and commitment?

INTERESTED IN THIS DEVELOPING MARKET?

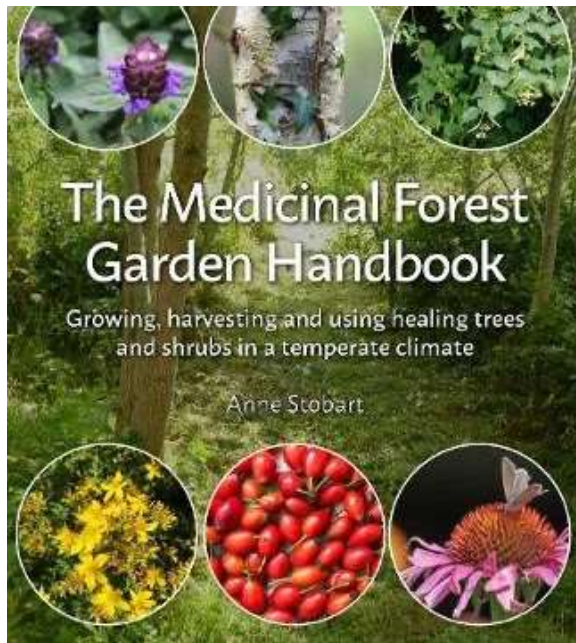
Get involved in Organic Herb Growers Co-op

# 5. Going Forward

## **Benefits of including medicinal trees and other plants in agroforestry**

- Developing market for sustainable and artisan produce
- Increasing demand for 'experiential' courses, walks, workshops etc
- Using land otherwise unproductive
- Reducing imports and associated environmental costs
- Carbon capture and water management
- Speciality crops and known demand with trusted partners
- Increased quality

## Holt Wood



- Holt Wood courses in Devon in May and June 2020

[www.holtwoodherbs.com](http://www.holtwoodherbs.com)

Anne Stobart, *The Medicinal Forest Garden Handbook*  
(Permanent Publications, March 2020)

## Organic Herb Growers Co-op



We are still setting up – but  
register interest at  
[info@organicherbgrowers.uk](mailto:info@organicherbgrowers.uk)

OHGC Spring Event,  
Wed 22 April 2020  
Cotswold Seeds/FarmED  
Chipping Norton, OX7 6BJ



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