

Cotmarsh Tannery

Cattle Hide Vegetable Micro-Tannery – Feasibility Study



Attendees



Alice Robinson
Fashion Designer



Andy Rummings
Farmer



Karl Flowers
Leather / Tannery Expert



Katy Warriner
Designer / Maker



Process	<ul style="list-style-type: none"> Hide collection services will store them salted Refrigeration and anti-bacteria gives up to 2 weeks Green hides straight into process skipping salting, 16 hours window before degrading starts. Straight to lime
Materials, equipment, chemicals & labour	15kg of salt per hide (unused salt important)
Waste	Salt mountain, can possibly use for gritting, need to find an answer, may need treating to remove the bacteria. Don't reuse. Can go into landfill
Alternatives	Refrigeration instead of salting, 72 hours before it degrades Freezing gives thawing damage Preservatives an option
Comments	Will an abattoir salt? Abattoir and hide collector will need paying Feedback to farmers for hide improvement schemes Wet salted hide stored for up to 6 months Hides can be held at the pickling stage for months

Cost

★☆☆☆☆

Viability

★★★★★

Value

★☆☆☆☆



<p>Process</p>	<ul style="list-style-type: none"> Washing drum for removing salt. <ul style="list-style-type: none"> Can only fill half full 1kg of hide takes up roughly 1 litre, 1 cubic meter is roughly 1000 litres If not salting soaking is a shorter process – wash out blood and dirt and makes it softer. 2 hours, soapy water with possibly enzymes and alkaline (soda or wood ash) to swell. Drum or pit over night <p>Fleshing at this stage or flesh later in the lime</p>
<p>Materials, equipment, chemicals & labour</p>	<p>Fleshing machine for side, rather than full hide, £10k</p>
<p>Waste</p>	<p>Animal by-product category 3, bins of it. £20 per big bin.</p>
<p>Alternatives</p>	
<p>Comments</p>	<p>Jack’s drum size is roughly 10-15 hides but needs to be direct driven rather than belt driven. Fleshing and splitting can be done after lime If green fleshing then dung can be an issue Can use paddles to soak Could round at the soak as won’t get rounding if liming in the pit</p>

Cost

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Viability

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Value

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<p>Process</p>	<p>Pit liming (takes longer) can stack in pit, possible 2 lime pits or drum (separate soaking drum and liming drum required unless plastic drum which can be cleaned) Lime pit doesn't need sharpening agent, drum does, sharpening agent is sulphide (smell) Removed hair and epidermis from hide, dehairing by hand Trim and round after liming into at least halves (reduces fleshing and splitting machine size) Option to flesh and split in the lime</p>
<p>Materials, equipment, chemicals & labour</p>	<p>Hydrated lime – British Sharpening agent if in drum Splitting machine £20k+</p>
<p>Waste</p>	<p>Used lime, would need to go through waste management</p>
<p>Alternatives</p>	<p>Darmstad process, paint hair with (sulphide and) lime and push the hair off Get Thomas Ware to lime and flesh, Alister needs them in packs of 50 (likely to be unrealistic)</p>
<p>Comments</p>	<p>Scud is epidermis that hasn't been removed properly pH has to be above 12.5 to remove the hair You will get some salt coming over into the liming process, contaminates a lime pit over time, can get 10 cycles before need to refresh lime liqueur Can bellies if removed and discarded, go to dog chews? Animal by-product ends after liming Split in the lime to have a product that is usable 50 hides is 1.3 tonnes = 33kg of hair (2.5%)</p>

Cost

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Viability

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Value

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<p>Process</p>	<ul style="list-style-type: none"> • Ammonium salt to bring the pH from 12.5 down to 8, m <ul style="list-style-type: none"> • Might not be the easiest to use • 90 minutes • Waste more of an issue • $(\text{NH}_4)_2\text{SO}_4(\text{aq}) + \text{Ca}(\text{OH})_2(\text{s}) \rightarrow \text{CaSO}_4(\text{s})\downarrow + 2\text{H}_2\text{O}(\text{l}) + 2\text{NH}_3(\text{aq})$ • Carbon dioxide <ul style="list-style-type: none"> • lower than ammonium salt • From cylinder into drum as mixing
<p>Materials, equipment, chemicals & labour</p>	<p>Drum for delimiting, bating, pickling and pre-tan</p>
<p>Waste</p>	<p>Ammonium sulphate use as fertilizer or accelerate for compost. 600 litres per 50 hides, 13kg of ammonium salts in that 600 litres</p>
<p>Alternatives</p>	
<p>Comments</p>	<p>Delimiting reduces the swelling from liming Can use other acids including vinegar Traditional bran was used to produce the carbon dioxide Have load cell on drum</p>

<p>Cost</p>
<p>★★★★☆</p>
<p>Viability</p>
<p>★★★★☆</p>
<p>Value</p>
<p>★☆☆☆☆</p>



<p>Process</p>	<p>Bating softens the hide Pickling pulls the pH down ready for tanning</p> <ul style="list-style-type: none"> • Can use vinegar but won't take pH below 4.5 <ul style="list-style-type: none"> • Going to struggle to get veg tan in thick leather at 4.5 • pH ideally 3.8 / 3.6
<p>Materials, equipment, chemicals & labour</p>	<p>Drum, pancreatic bates, warm water (35 deg) Cold water bring temp down for pickling Pickling in pit</p> <ul style="list-style-type: none"> • Sulphuric acid (not fun to work with) will remove the colour • Acidic acid (vinegar, chip shop vinegar) about 1% up to 3% to get though thicker hide (vinegar needs 50% float in drum, 1000% if in a pit)
<p>Waste</p>	<p>Store pickling in a IBC and reuse and restrengthen</p>
<p>Alternatives</p>	
<p>Comments</p>	<p>Bating is complete when pressing finger leaves print, should be whiter and feel smooth Check baume before putting acid in. Acid through the side as the drum turning to stop burning Need to add salt into the liqueur as the pH goes down, particularly below 4.5 to stop the swelling In pickling now susceptible to mould Can do a pre-tan with the pickle to make the hide workable to split before tanning</p>

<p>Cost</p>
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<p>Value</p>
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Process	<p>For drums, tan liqueur goes it pickle in drum For pits can use pickle pit and then move into colour pit After shaving black stains need clearing</p> <ul style="list-style-type: none"> • EDTA – more expensive, not the nicest to work with • Oxalic acid – won't remove stubborn, in drum for 30 mins (remove dispose of float)
Materials, equipment, chemicals & labour	<p>Drum or pits (colour & 4 tanning pits) Use willow, oak, alder etc to produce a tea Process to produce bark, dry, shred and then brew tea Splitting machine £20k - splitting can be done in the lime (preferred), here or after wetting back the crust (technically difficult) <i>Samming machine to squeeze water out £10-12k (water down to 35%)</i> <i>Shaving machine £20k</i></p>
Waste	<p>Sludge and trimming Spend bark and wood</p>
Alternatives	
Comments	<p>Counter current flow tanning liqueur and hides through pits Cover pits to keep heat in if heating up to 35 deg C. Cold pit hides are in 6 months and needs more pits up to 8 Warm pit hides are in for 2-3 weeks might get away with 5 pits Start in a colour pit, weaker solution, last pit in previous cycle. After colouring pits remove the squeeze water out, split and then shave Hides go into last strong concentration into a rinse in colour pit before remove 8 hours in a drum to tan hide, hot pit 3 weeks Bark required is 2.5 x weight of hide Can split after a pre-tan before going into pits, only for thick leather that you want to keep thick</p>

Cost

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Viability

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Value

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<p>Process</p>	<p>Clearing</p> <ul style="list-style-type: none"> In drum <p>Stripping</p> <ul style="list-style-type: none"> Removes surface tannins, removes unevenness and stops it cracking Raise temperature (45 – 50 deg). Raising pH, Sodium bicarbonate <p>Retan</p> <ul style="list-style-type: none"> Gets consistent tanning Different properties <ul style="list-style-type: none"> Veg tans don't hold dye well or intensely. Adding a mordant agent, like Aluminium to give high dye fastness Can raise the shrinkage temperature, for shoe lasting etc <p>Fatliquor</p> <ul style="list-style-type: none"> Addition of an oil that is emulsified, fine droplets will penetrate into fine material Tallow, olive oil & birch fat, or lanoline) Tumble fatliquor for an hour (depends on soft you want it) Could add filling step to make firmer leather (clay)
<p>Materials, equipment, chemicals & labour</p>	<p>Drum, some chemicals to raise and lower pH (vinegar, bicarbonate, wood ash etc).</p>
<p>Waste</p>	<p>fatliquor</p>
<p>Alternatives</p>	
<p>Comments</p>	<p>Strip to get tannins off the surface as makes grain crack.</p>

Cost

Viability

Value



Process	<p>Drying leather</p> <p>When dry topcoat oiling (by hand)</p> <p>Store to avoid mould</p>
Materials, equipment, chemicals & labour	<p>Hot table for setting for flattening</p> <p>Toggle frame (clips £1.50 each)</p> <p>Drying room, with big fans pushing air through with heaters</p> <p>Air-conditioned room for storing to avoid mould,</p>
Waste	
Alternatives	
Comments	<p>Can add fats on the drying frame</p> <p>Heavier the leather the slower to dry, 2 or 3 days for heavy, 12 hours for thinner</p> <p>Shelf racking with covers top and bottom of stacks</p> <p>Horse after removing from fatliquor</p>

Cost

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Viability

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Value

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Tannery Rhythm

	Labour		Labour
• Collect (outsource to hide collector to deliver)	2 x 2.5h	• Tanning – warm pit (liritan) (x weeks)	Daily visit 2 mins
• Soak / clean – in drum or with paddles (few hours)	2 x 1.5h	Can outsource from here	
• Liming – pit (above or below ground) (week)	1 x 0.5h	• Samming	1 x 2mins per hide
• Dehair (short)	1 x 0.5h per hide	• Shaving	1 x 2mins per hide
• Fleshing – fleshing machine (short)	1 x 2m per hide	• Clearing	2 x 1.5h
• Trimming, rounding & inspect – rounding table (short)	1 x 15m per hide	• Stripping	?
• Possibly split	1 x 2m per hide	• Retan	1 day
• Relime (overnight – few days)	1 x 0.5h	• Fatliquor	10 mins?
• 2 warm washes (mins) deliming	2 x 1.5h	• Drying	2 x 15mins per hide
• Delime 35° – don't drain float (2 – 4 hours)	10m	• Quality inspection and oil	1 x 45mins per hide
• Bating – 90 mins	10m	• Remove and store	1 x 2mins per hide
• Cold wash (mins)	10m		
• Pickle – water and salt, check the baume (pit day or two)	2 x 1.5h		

Key Partners

What can we not do so it can focus on its Key Activities?

Who are our Key Partners?1

Micro-Tannery Association x 3
Pasture for Life x 2
British Pasture LeatherMentor
Workshop attendees
Leathersellers
Leather UK
Leather industry
Tannery Technicians
Finishers
Leather Merchants
Hide Collectors
Abattoirs
Farmers x 2
Local Planning Agency
Environment Agency
Marketing / media support x 2
Soil Association
Textile exchange / sustainable angle

8

Key Activities

What are the activities we perform every day to deliver our proposition?

6

Key Resources

What are the resources we need to deliver our value proposition?

7

Value Propositions

What is the value we deliver to our customers? What is the customer need that our value proposition addresses?

Story

Traceable x 5
Sustainable x 3
Provenance
British
Organic
Pasture for Life
High quality product
Unique product
Approachable
Fresh and funky
Giving voice to woodsmen

Financial

Revenue for farmer
Employment
Increase value of hides
Create leather industry interest
Maintain heritage skills x 4

Education

Safe accessible setup

2

Customer Relationships

How do we interact with the customer through their journey?

Makers magazines x 2
Local & national PR x 3
Leathersellers
Leather UK
Markets (farm / craft)
Social media x 4
Work of mouth x 3
Face to face selling
Website with Q&A x2
Blog
Newsletter

5

Channels

How are these propositions promoted, sold and delivered?

In Person

Events / Markets / Trade shows x 3
Tannery open days / shop x 3
Belt vending machine (Avebury)

Online

Website x 5
Social m x2
Mail order

Leather community
Wholesalers x 2
Leather merchants
Independent sho

4

Customer Segments

Who are our customers?

Small Scale Consumers

Traditional makers x 4
Hobby leather workers
Farmers (tan & return) x 2
Locals (finished products)

Companies

Brands
Small fashion brands x 2
Micro-tannery services

Education

Schools
Fashion education (brands)
Courses (sell knowledge)
Tourists

1

Cost structure

What are the important costs we make to deliver to value proposition?

9

Revenue Stream

How does the business earn revenue from the value propositions?

Education

Courses x 3
Team days
Tours x 5
Knowledge share x 2

By-products x 2

Dog chews
Leather scraps x 2
Hair
Compost

B2B

Hides x 5
Back to farmers x 2

Funding

Tanneries

Contract tanning
Felshing
Tannery services (chemical)

B2C

Finished products x 2
'Make your own' kits
Balm

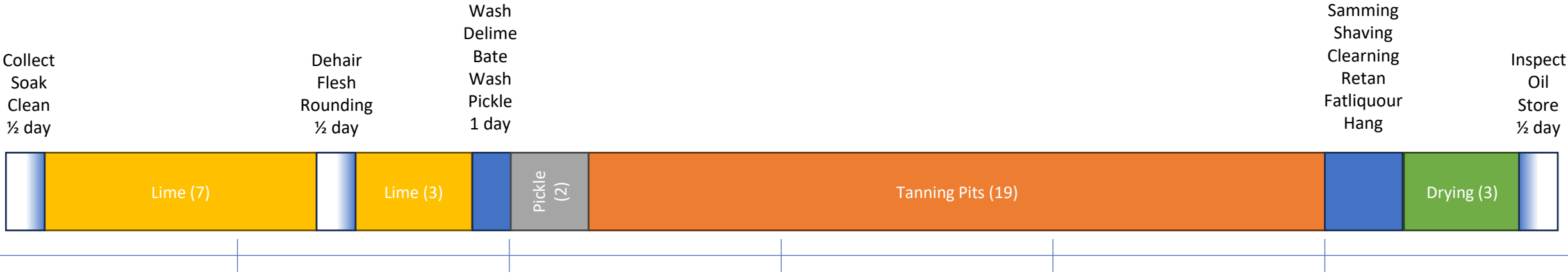
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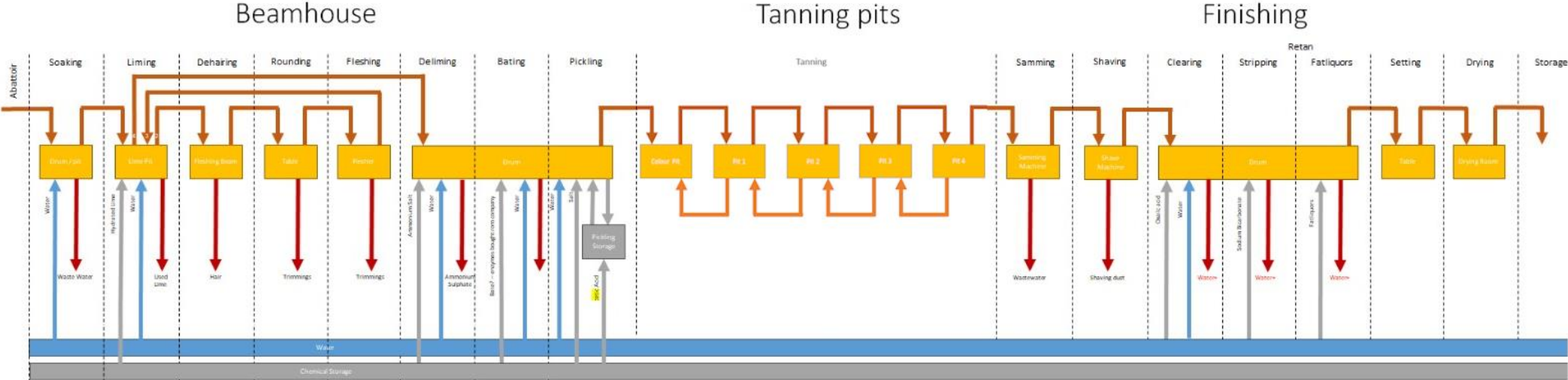


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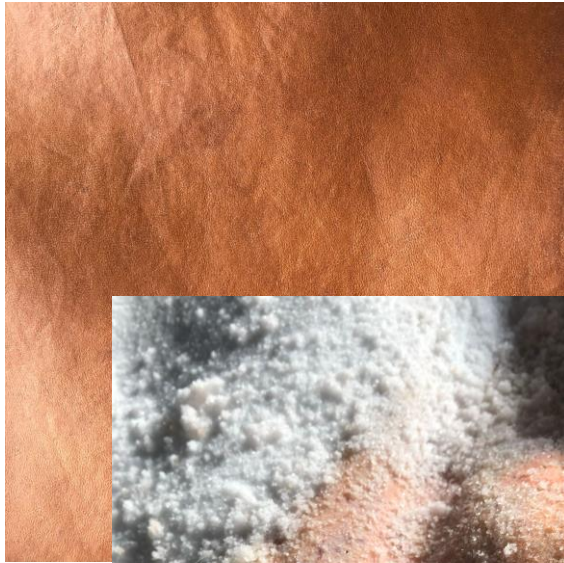
Tannery Rhythm



Tannery Rhythm



Courses, Experiments & Visit



Next Steps





Churchill Fellowship

- Oregon USA – Improve tanning knowledge
- Italy – Visit the tannery district
- Norway – Visit a reindeer micro-tannery

Tannery Plan



Design, Funding & Build

Thank You & Questions

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