

Interreg
Alpine Space



Alp Bio Eco

AlpBioEco

Alpine hay

Market analysis & SWOT analysis



1) Market analysis

Alpine hay as a raw material is generated by cultivating the steep mountain meadows which is a huge challenge throughout most of the Alpine region. The cultivation of these areas is important because of its value for the characteristic landscapes of the Alps and for its rich biodiversity.

Alpine hay can be harvested from dry and sunny habitats as well as from wet habitats like hanging moors and headwater marshes. The structure of the biotopes is divided into small sections depending on geologic, climatologic and utilization patterns. The diversity of landscape and biotope structures made it possible to establish a high degree of biodiversity with a lot of rare and endangered species, depending on an ongoing extensive land-use.

Besides the ecological value of the rough pastures also the woodless mountainsides have an important meaning for the landscape including its value for tourism and regional identity. But the labour-intensive cultivation of less productive, steep hillside situations doesn't suit today's agricultural structure. To maintain the cultivation, additional value added is needed. A bioeconomic analysis of the raw material 'Alpine hay' therefore may be helpful. The problem exists throughout the Alps and therefore an increase of value added with an bioeconomic use of Alpine hay is an important issue.

a) Method

Basis for the value-added chain is Alpine hay from rough pasture (which means poor grassland or alpine grassland which is an extensive, unfertilized, annually or bi-annually mown grassland, often interspersed with rocks and shrubbery). It contains aromatic herbs and grasses / gramineous plants, but in a varying potpourri. Each plant has different substances of content, which can be used individually.

The number and types of plants in the hay depends on the type of meadows/grasslands; each type has specific „Leitarten“ (plant species typical for this vegetation pattern, for example brome grass, tall oat-grass, purple moor grass or mat-grass). The composition varies depending on season and way of cultivation. Therefore, the product 'Alpine hay' has no constant set of characteristics. It can be analysed from the demand-side or from the supply-side. It can be valued either when a shift in quality doesn't influence the utilization very much or when modes of treatment exist which are able to balance the

differences. But it is not appropriate to deal with detailed laboratory analyses (although a certification according to its use for biodiversity is possible).

Further quality checks of hay refer to the share of dusts and mould spores or are simple visual, manual / sensory or olfactory tests. Also certifications according to organic production standards are common. These tests and certifications mainly are used if hay is marketed as forage and are not specific for alpine hay from rough pastures.

A particular product is the so-called 'Heublumen' (hayflowers), which are often used in the traditional folk medicine, for example for compresses and medicinal baths. It is said to help for pain relief, anticonvulsant and to build up resistance. The modern medicine only states the potency as a local heat-therapeutic. Ingredients can be for example flavonoid, tanning agent, essential oil, coumarin and furanocoumarin. According to the tranche the ingredients vary.

The specific quality of the product influences the roadmap to identify value chains and market opportunities. For the market research it means that most products made from hay are based on characteristics which are designated to a broad range of plant mixtures. These characteristics are:

- characteristic contents which in sum creates an impact on human wellbeing (promoting relaxation and blood circulation, generating heat and so on)
- a specific smell originating from different contents (coumarin et al.).
- a specific flavour if the hay is used for food or beverages
- a specific feel of the surface (used for example with wellness applications or surfaces)
- a specific quality as animal feed (roughage with a high degree of lignified parts)
- the ability to become pressed and formed
- the quality of an energy source for thermic use.

Starting from this the market research of the bioeconomic use concentrated on the research on products and producers. A rough and dirty literature review provided a general idea of the issue. The next step was to elaborate a table which act as a form for the project partner's research activities. The form requested the following characteristics:

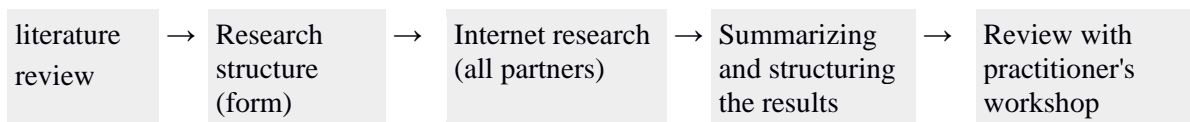
- The use of the resource 'Alpine hay' (Food, Drink, Wellness, Therapy, Animal feed, Others)
- A short description of the product

- The profit model of business (units, prices)
- Unique selling point of product/ obstacles, if available
- NUTS Code/Country
- Company name & details
- Link to product or homepage

A general introduction into the resource 'Alpine hay' was put in front. Already some results have been filled in the form to show the partners an example. Nine project partners filled the form or at least gave some input on specific products or firms. The results from all project partners have been summarized and structured according to different kinds of products.

In the next step a summary of the result has been used as input for a workshop with regional practitioners in the Walgau region. The topics of discussions are the practicability from a regional point of view, the innovation content of the products and an assessment of the market relevance. The workshop also was used for the SWOT- analysis of the resource. With the practitioner's view the market analysis has been finished.

The roadmap as a graph:



b) Potential

As a result from the market research, the following product classes which can be generated from the raw material 'Alpine hay' have been identified:

animal feed	<ul style="list-style-type: none"> • feed for productive livestock (cows, pigs...) • feed for horses • feed for pets / rodents • feed for exotic animals
wellness / therapy	<ul style="list-style-type: none"> • hay bath • wellness and cosmetic products (shower gel, shampoo, body lotion, massage oil, hand cream, foot balsam, peeling soap ...)

	<ul style="list-style-type: none"> • naturopathic products (hay-extract for unguents, hayflowers for tea, bath...) • hay beds, hay pillows
food	<ul style="list-style-type: none"> • hay as ingredient in food (for soups, mustard, vinegar, butter, salt, cookies, chocolate...) • hay to produce food (hay milk, hay beef, cheese wrapped in hay) • hay as a mode of cooking (hay boiling, meat in a hay coat...)
drink	<ul style="list-style-type: none"> • distilled hay or hayflowers for alcoholic drinks • hay as an ingredient in soft drinks (often mixed with apple juice and water) • hay for tea • hay aroma in beer
construction and housing	<ul style="list-style-type: none"> • furniture surfaces • wall fairings • surfaces for room acoustics • translucent illumination • 3D- objects
other products	<ul style="list-style-type: none"> • paper and cardboard with hay • hay figures for decoration • candles with hay aroma • hay smell in a can • carbonized hay as fertilizer • hay as mulch for vegetable and landscape gardening
energetic use	<ul style="list-style-type: none"> • Hay combustion (bales) • hay pellets
use for processes	<ul style="list-style-type: none"> • hay as a renewable biosorbents for textile dye removal (further research necessary) • transformation of pressed hay using fungus mycelium (further research necessary)

c) Result

The market research shows a broad range of products made from the resource 'Alpine hay'. But many of the products are not appropriate to process a relevant amount of the raw material. Therefore, these products can only in part support the goal of keeping as much meadows as possible cultivated as rough pastures.

Better effects can be reached looking at the quality of the raw material. For most of the products the composition of the hay in terms of its biodiversity is an important quality characteristic. This supports the extensive use of the meadows. Long-term relations between farmers and producers are helpful to maintain certain meadows.

The market research also showed some products with a market potential which is not yet suitable used. The use of pressed hay for different products using processes like compression molding or pulp molding allows to develop a broad range of products, and only a few of the possible products already become produced. All kind of products which benefit from the specific quality of the raw material (renewable, olfactoric and haptic quality) can be developed.

2) SWOT

a) Method

The SWOT analysis of Alpine hay is based on the same steps as the market analysis: Literature review, internet research and a workshop with regional actors. In the workshop farmers, producers and representatives of different institutions judged the results of the market analysis and appreciated the regional opportunities and constraints.

b) Results

<p>The strengths of the use of alpine hay are:</p>	<ul style="list-style-type: none"> • The traditional use of Alpine hay in the farm cycles with positive effects on animal health and product quality (hay milk, hay meat). • The traditional use of Alpine hay for naturopathy because of active ingredients like flavonoid, tanning agent, essential oil, coumarin and furanocoumarin in hay and hayflowers. • A high societal estimation for the cultivation of mountain meadows to maintain landscape quality and biodiversity (including the possibility to certify the hay quality with respect to biodiversity). • Specific characteristics of flavour, smell, and feel of the surface makes Alpine hay an interesting raw material for different products.
<p>The weaknesses of the use of Alpine hay are:</p>	<ul style="list-style-type: none"> • The quality of the raw material is inconsistent regarding to the type of meadow and the date of harvesting. For this the products

	<p>cannot be declared as food or drug and some utilisations exist in a legal limbo.</p> <ul style="list-style-type: none"> • All kind of production which depend on a homogenous composition of ingredients or content of active substances is at least difficult to realize and often not possible. • The raw material needs much effort for harvesting. • Because of the decentralized and peripheral production, the expenditure for logistics is high.
<p>The opportunities of the use of Alpine hay are:</p>	<ul style="list-style-type: none"> • In the field of wellness and tourism the use of Alpine hay could be enhanced. • The meaning of Alpine hay utilization for the conservation of biodiversity can be used as a marketing argument. • Some products have a high value added, for example pet feed and feed for exotic animals. • There are possibilities for the indirect use (hay milk, hay meat). • Potentials for networking and growing up institutions (regional Hay 'stock exchanges', Haybath organisation Südtirol...). • Contractual (and trust-based) relationships between farmers and producers • Possibilities of processing by order (extraction) can be used by farmers who want to use hay extracts for products of direct marketing. • Largely untapped potential for products made from compressed / 3D-formed hay. • Good properties for paper and cardboard production (static and dynamic stability). • Hardly researched applications for different uses (insulation) and processes (biosorption, carbonisation, processing with fungus mycelium). • Potentials for energetic use (dependent on general energy prices). • Use for landscape work.
<p>The threats of the use of Alpine hay are:</p>	<ul style="list-style-type: none"> • Some products / applications use hay as raw material but don't rely to Alpine hay; so the Alpine hay is in concurrence with hay from meadows easier to cultivate. • Intensive use or wrong time of harvesting can decrease the potential for biodiversity and therefore the specific quality of the meadows. • The allergenic potential of hay must be taken into account.

Ad. 2c) Results

...used for animals	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Almenland Bio-Kräuterheu	feed for rodents	1 kg, 2 kg, 6 kg: 3.15 – 6.50 €/ kg	evaluated by the research institution Raumberg-Gumpenstein	AT	Willi und Isabella Schwaiger	http://www.almenlandheu.at/
Heuberger Bio-Aromaheu	hay from the region 'Großer Heuberg' (NATURA 2000- protected area)	1 kg: 3.99 €, 1 bale of hay (ca 20 kg): 15.90 €	Hay from a nature park (Großer Heuberg, Schwäbische Alb, Naturpark Obere Donau).	DE	Heuberger Aromaheu	https://www.heu24.com/
Lechtaler Bergwiesenheu	hay for small animals	4 kg: 12.40 € 8 kg: 22.90 € 16 kg: 42.40 € 2 x 2 kg: 13.90 €	organic farming- certified	DE	Lechtaler Bergwiesenheu	https://www.lechtaler-bergwiesenheu.de/Heuprodukte.html
Schwarzwaldheu	hay (round bales)	160 x 120 cm	Hay from the nature park Südschwarzwald	DE	Schwarzwaldheu	https://www.schwarzwaldheu.de/shop
Tiroler Heu	feed		Tyrol	AT	Tiroler Heu	http://www.tiroler-heu.at/produkte.htm
Hay for animals		Balles carrées 150-200 kg, Balles carrées 300-500 kg Balles rondes 200-300 kg Paquets de 14 petites balles de 30 kg	Rhone Alpes	FR	Die Fourrage	http://www.die-fourrage.fr/
Agrobs Hay	hay for horses and small animals, ingredients (variance possible): Crude proteine: 11,40 % Water: 12,40 % Crude oils and fats: 1,80 % Calcium: 0,38 % Crude fibre: 23,20 % Phosphor: 0,31 % Crude ash: 8,66 %	Balles carrées de 300 à 500 kg	AGROBS Heu contains gras and herbs from the oberbayerische Alpenvorland. Minerally soils create a lot of native vital substances, vitamins, and micronutrients.	DE	pferdefutter.de und Heukoening.de Online retailer	https://www.pferdefutter.de/futtermittel/de/shop/markenshops/AGROBS_Heimtier/Wiesenheu/?card=1679 https://www.pferdefutter.de/futtermittel/de/shop/AlpenHeu/?card=1252
Hay cobs	the hay is dried, shredded and pressed to pellets (2 cm) as a replacement for concentrated feed	Balles rondes de 200 à 300 kg		DE	different producers	http://futterfuerpferde.de/heucobs/
Hay for rodents	different mixtures	Paquets de 14 petites balles de 30 kg	organic farming / „premium quality“	DE	Heu-Heinrich	https://heu-heinrich.de/futtermittel
hay for little rodents	hay from Festuca for little rodents	4.69 €/ 1 kg, 14.59 €/ 10 kg		IT	Micota	https://www.miscota.it/piccoli-animali/ribero/fieno-di-festuca?r=8436540790163&aclid=CiOK
loosen hay	variable quality	0.3 €/ kg		SI	family farms	
square bale of hay	variable quality	(240x80x120 cm); 100 kg = 12.- €		SI	family farms	
round bale of hay	variable quality	160x120 cm = 9.- €		SI	family farms	
Hay for feed: horses	Dry hay as feed for horses and other farm animals. In the form of bales or cubes. Also for pets (e.g. rodents).		Opportunity: Organic hay for animal feed.	SI	Many farmers in Slovenia.	
Feeding dairy cows - Hay milk	Quality milk: better smell and taste, better composition, animal-friendly farming. Hay milk also very useful for cheese production, due to technological problems of cheese production from silage milk due to <i>Clostridium</i> bacteria.	Higher price than regular milk (around 30-40% higher)	Selling point: In SI, producers can get a certificate for hay milk - "seneno mleko", highly valued. Obstacle: difficult drying and storing of hay, less milk yield.	SI	Around 50 farms in Slovenia offer Hay milk or meat.	https://www.ikc-um.si/ikc-um/zasebni-standard/seneno-mlekoseneno-meso/
Hay milk	Milk produced from cows feed from at least 75% of hay		Rhone Alpes	FR	Lait de foin (gathering producers of hay milk)	https://www.laitdefoin.fr/
Feeding cows - Hay meat	Quality beef from cows feed with hay instead of silage.	Higher price than regular beef.	Selling point: In SI, producers can get a certificate for hay meat - "seneno meso", highly valued. Obstacle: difficult drying and storing of hay.	SI	Around 50 farms in Slovenia offer Hay milk or meat.	https://www.ikc-um.si/ikc-um/zasebni-standard/seneno-mlekoseneno-meso/
Hay for typical Piedmont bovine race	Hay for feed typical Piedmont bovine race			IT	La Granda	https://www.lagrandait.it/il-fieno-graminacee-e-leguminose-per-il-benessere-degli-animali/

...used for wellness, cosmetics, health	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Hay bed	hay bed in spa area	in room price included		AT	Hotel Ehrwalder Hof	https://www.ehrwalderhof.at/hotel/wohlbefinden/
Hay bath	hay bath			IT	Hotel Moosmair	https://www.moosmair.it/massagen-heubaeder
Wellness with hay	hay-bath, hay pack, hay peeling	hay bath 35.- €, hay pack 19.- €, hay-peeling 19.- €, hay massage 36.- €		AT	Hotel Heubad	http://www.hotelheubad.com/de/heubad/original-voelser-heubad.html
Hay bath	hay bath, hayflower bath	Hayflower-bath (25 min) = 40.- €, trad. haybath (90 min.) = 38.- €		IT	Verleierhof	https://www.heubad-verleierhof.com/wellness-heubadl.php
NatuRigi wellness products	oil bath	125 / 200 ml 15.- / 22.- CHF	developed from a landscape management project	CH	Interessen-Gemeinschaft NatuRigi	http://www.naturigi.ch/index.php/angebote/naturigi-wellnessprodukte
	bubble bath	125 / 200 ml 11.- / 14,5 CHF	natuRIGI as a brand demonstrates a strong regional nexus			
	shower gel	125 / 200 ml 11.- / 14,5 CHF				
	shampoo	125 / 200 ml 11.- / 14,5 CHF				
	body lotion	50 / 125 ml 12.- / 22.- CHF				
	massage oil	50 / 125 ml 12.- / 22.- CHF				
	hand cream	15 / 50 ml 8.- / 18.- CHF				
	foot balsam	15 / 50 ml 8.- / 18.- CHF				
	peeling soap	30 / 70 g 3.5 / 6 CHF				
Alchemilla Kräuterprodukte	wild harvested plants from rough pastures used as ingredients for oils, teas, soaps, unguents, ...		local development initiative from a kind of Country Women's Association; combined with guided excursions and workshops	AT	Alchemilla Kräuterfrauen	http://www.grosseswalsertal.at/Alchemilla/Produkte
hayflower cosmetics	hayflower skin oil hayflower unguent hayflower lotion hayflower package for bath	100 ml 16.90 € 50 ml 10.90 € 100 ml 13.90 € 60 / 200 g 3.90 / 4.90 €		DE	Heu-Heinrich	https://heu-heinrich.de/wellness-naturkosmetik
Bergkräuter Erfrischungsgel, Molke-Heublumenseife, Joghurtseife mit Heublumen	gel for cooling and refreshing effects on the skin; Soap from whey or yoghurt with hayflowers	3.90 €/ 50 ml; 2.90 – 3.50 / 100 g		AT	Metzler Käse-Molke GmbH	www.molkeprodukte.com
Allgäuer hay products	hay shampoo, hay bubble bath	6.90 / 8.30 € per 250 ml		DE	Allgäuer Spezialitäten- Alm	http://spezialitaetenalm.de/produktliste/
TREHS hay products	Shampoo, shower gel based on a hay-herbs mixture	18.- € / 250 ml		IT	Sarner Natur GmbH	https://www.trehs.com/de/produkte/
Cosmetics	Balms - Creams - Sticks - Massage oil - Soaps		Rhone Alpes	FR	Bom cosmetique	https://www.bom-cosmetique.com/
Cosmetics	Balms - Creams - Sticks - Massage oil - Soaps		Rhone Alpes	FR	Pure altitude	https://www.pure-altitude.com/#/spa-soins/site-officiel
Natural cosmetics 'hay line'	Contains extracts from hay	Shampoo 13.- € / 250 ml, bubble bath 14.- € / 250 ml solid soaps 2.10 € / 50 g – 63.- € / kg	from Walsler Piedmont Valley	IT	Segreti Walsler	https://www.segretiwalsler.it/en/

hay mud	Hay mud for skin care (Fango da impacco al fieno)	23.- €/ l		IT	Areaderma Natura Cosmetica Trentina	http://areadermashop.it/shop/fango-impacco-fieno/
Allgäuer Berg-wiesen Heu- Fluid	for external use only. Hay-fluid is a distillate from hay	125 ml 6.90 €		DE	Allgäuer Spezialitäten- Alm	http://spezialitaetenalm.de/produktliste/
bath extract	extract with extraction of medical plants, also useful for beauty- and wellness applications (packings)	550 g, 5 kg, 12.5 kg, 35.- €/kg		DE	Schupp GmbH & Co.KG	https://www.shop-apotheke.com/arzneimittel/1922523/heublumen-extrakt.htm other brands: https://www.shop-apotheke.com/arzneimittel/3874136/opea-kraeuterbad-heublume.htm
Opea Kräuterbad Heublume	hayflowers for bath	200 ml 7.50 €		DE	BIO-Diät-Berlin GmbH	https://www.kraeuter-kuehne.de/opea-kraeuterbad-heublume
Heublumen geschnitten / cut hayflowers	tea and bath for pregnant women, sold in pharmacies byApoFit (only supplier)		pregnant mothers as a target group	DE	ApoFit Arzneimittelvertrieb GmbH	https://www.medizinfuchs.de/preisvergleich/heublumen-geschnitten-100-g-apofit-arzneimittelvertrieb-gmbh-pzn-222203.html
hay flowers	for external use	200 g 8.90 €	organic farming certified	DE	Lechthaler Bergwiesenheu (Bauernhof Friedl)	https://www.lechthaler-bergwiesenheu.de/shop/index.php
Hay packs	Little pillows with hay debris (therapeutic heat packs)	8.- € per 1 pack	Selling point: Not many other offers in Slovenia. Obstacle: People are not familiar with hay, the don't believe in therapeutic properties.	SI	Občutek narave (hay debris, little pillows with hay)	https://www.obcuteknarave.si/si/izdelki/naravna-poinila/seneni-drobir
Hay debris / hay flowers	Mix of dried flowers, fruits and leaves of meadow plants - used for baths, steam baths, bandages, compresses,...	<u>Hay bandages:</u> 13.- € /200 g (SITIK) <u>Hay debris</u> (občutek narave): 3.- €/ 1 kg	Opportunity: For baths and bandages, used in case of injuries, insect bites, rheumatic fever, gout. Also opportunity: Baths from hay debris for pregnant. SITIK is the only one offering Slovenian hay products (there are not many foreign also...). They offer hay bandages. Selling point: Lack of offer for hay debris! - You can get debris only from farmers if you make a deal. But it is not official - you don't know the quality.	SI	SITIK (hay bandages) Občutek narave (hay debris)	http://sitik.si/pater-simon-asic/
Hay beds	hay beds			AT (Tyrol)	Ehrwalder Hof	https://www.ehrwalderhof.at/zimmer/

Südtiroler Bergwiesenheu	hay blankets, hay pillows, hay bags			IT	Südtiroler Heuwelt	https://bergwiesenheu.com/suedtiroler-bergheu/suedtiroler-bergheu.html
Heukissen / hay pillow	hay flowers of high quality, Südtirol	Small pillow 22.- €		IT	naturashop	http://www.naturashop.com/heukissen/51-heukissen-suedtirol-heu-aus-suedtirol-vitalis-alpicare.html
Heukissen / hay pillow	hay pillow	Pillow: 27.90 €		DE	Lechtaler Bergwiesenheu	https://www.lechtaler-bergwiesenheu.de/Heuprodukte.html
small hay pillow	small hay pillow	28.- €		IT	Cuscini Bio	https://www.cuscini.bio.it/it/prodotti/cuscini-terapeutici/sacchetti-di-fieno-alpino-bio/
hayflower pillow	Different kind of pillows filled with hay	1 pillow between 19.90 € and 66.50 €		AT	Himmelgrün	https://himmelgruen.at/de/fuellungen/bergheu
Heukissen / hay pillow	hay pillow, also hay bags and hay pads	hay pad in special fleece 4.- €		AT	Tiroler Heu, Familie Peter Prantl	http://www.tiroler-heu.at/produkte.htm
Original Waldviertler Heu-Unterbetten / underbeds	Hay underbeds in different standard sizes			AT	Original Waldviertler Heu-Unterbetten - Manfred & Heidemarie Haselböck	http://www.heuunterbetten.at/page.asp/-/heuunterbetten
Augenkissen / Eye pillow 'Bergkräuter'		17.90 €		DE	Echt Dufte	https://www.echtdufte.de/produkt-kategorie/augenkissen/
Kräuter Stempel / herbs stamp	...for therapeutic use (massage)	8.90 €		DE	Echt Dufte	https://www.echtdufte.de/produkt-kategorie/kraeuterstempel/

...used for food	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Hay as ingredient in gastronomy	a variety of meals with hay (hay soup, hay smoothie, hay butter, hay boiling, meat in an hay-coat, and a lot more		other providers: hotel „Bergpanorama“ and „Trautmanns Dorfwirt“ in Pfronten, Jägerhof in St. Leonhard (Südtirol)	DE	Hotel Rose, Oy-Mittelberg	https://www.hotel-rose-allgaeu.de/250/restaurant/heukueche
Berglegenden – Schokolade mit Almkräutern gefüllt	chocolate filled with mountain herbage	5.99 €/ 100 g		AT	Berger Feinste Confiserie	http://www.confiserie-berger.at
Bergkräuter Senf	Mustard with mountain herbs pesto (salvia, melissa, calendula and more)	36.30 €/ kg		DE	Puntzelhof	https://www.puntzelhof.de/de/senf/bergkraeuter-senf.html
Hay vinegar	wine vinegar with fresh hay	19.60 €/ l				
Hay vinegar	brandy vinegar with charge of hay	250 ml, 28.- €/ l		DE	Marktscheune	https://shop.markt-scheune.com/
Herbs salt	yarrow salt, wild herbs salt	5.80 €	local development initiative from a kind of Country Women's Association; combined with guided excursions and workshops	AT	Alchemilla Kräuterfrauen, Silvia Manahl	http://www.grosseswalsertal.at/Alchemilla/Produkte
Hay cookies		3.- €	(see above)	AT	Alchemilla Kräuterfrauen, Marietta Sicher	http://www.grosseswalsertal.at/Alchemilla/Produkte
Feeding dairy cows - Hay milk	Quality milk: better smell and taste, better composition, animal-friendly farming. Hay milk also very useful for cheese production, due to technological problems of cheese production from silage milk due to <i>Clostridium</i> bacteria.	Higher price than regular milk (around 30-40% higher)	Selling point: In SI, producers can get a certificate for hay milk - "seneno mleko", highly valued. Obstacle: difficult drying and storing of hay, less milk yield.	SI	Around 50 farms in Slovenia offer Hay milk or meat.	https://www.ikc-um.si/ikc-um/zasebni-standard/seneno-mlekoseneno-meso/
Feeding cows - Hay meat	Quality beef from cows feed with hay instead of silage.	Higher price than regular beef.	Selling point: In SI, producers can get a certificate for hay meat - "seneno meso", highly valued. Obstacle: difficult drying and storing of hay.	SI	Around 50 farms in Slovenia offer Hay milk or meat.	https://www.ikc-um.si/ikc-um/zasebni-standard/seneno-mlekoseneno-meso/
Hay wrapped and matured Typical Italian cheese -	hay wrapped "provone" cheese	20.- €		IT	Salumarte	http://www.salumarte.com/sito/provone-affinato-in-fieno/
Hay wrapped and matured Typical Italian cheese -	hay wrapped "pecorino" cheese			IT	Caseificio Maremma	https://www.caseificiomaremma.it/nuovi-sapori/fieno-e-paglia/
Hay wrapped and matured Typical Italian cheese -	hay wrapped "seiras del fen" cheese			IT		https://www.cibo360.it/alimentazione/cibi/formaggi/saras_del_fen.htm
Wildhay cheese	cheese mells wrapped in hay over wintertime	250 g 7.50 CHF; 1 kg 28.- CHF; 5 kg 130.- CHF		CH	Alp Spilau	https://www.alp-spilau.ch
Cheese with hay			Rhone Alpes	FR	Les caves d'affinage de Savoie	https://www.caves-affinage-savoie.fr/fr/fromages/

...used for drink	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Bergheu	distilled hayflowers, alcohol: 40%	Füllmenge: 0,35l: 23.- €		AT	Siegfried Herzog Destillate	http://www.herzogdestillate.at
Äpler Kräutersprudel Heublumen & Apfel	softdrink from hay and apples, with 43 different herbs	2.50 €/ liter		AT	Bergbrennerei Löwen	http://www.about-drinks.com/neu-aelpler-der-natuerliche-kräutersprudel-mit-heublume-und-apfel/
Yo Fruchtsirup Apfel-Almkräuter	syrup with apples and alpine herbs	2.49 – 4.53 €/ liter		AT	YO Fruchtsirup Österreich	https://www.yo-fruchtsirup.at
Nupsy Bio Apfel Heu Schorle		7.42 €/ l	no additives, sustainable	DE	Nupsy	https://www.foodist.de/nupsy-bio-apfel-heu-schorle-2901 http://nupsy.me/
Äpler Kräutersprudel Heublumen & Apfel	Ingredients: applejuice, water and an extract from alpine flowers and herbs	0.5 l, 2.50 €/ l		AT	Bergbrennerei Löwen	www.bergbrennerei-loewen.at und www.aelpler-sprudel.at
Berglimonade Heugäuer	Ingredients: fruits (apple + currant, apple + grape), hay extract, water, carbonated	0.33 l, 4.82 – 5.12 €/ Liter		DE	Brauerei Zötler	www.zoetler.de und www.berg-limo.de
Bio-Limonade Heu	(with sugar from grapes)	0.33 l, 4.10 € (in gastronomy)		DE	Moarwirt (Hechenberg / Dietramszell)	https://moarwirt.de/speisekarte/
Bio-Kracherl Herr frischend	Meadows herbs flavour	0.33 l, 3.80 € (in gastronomy)		AT	Lugeck Fieglmüller (Wien)	https://www.lugeck.com/
Heu & Bräu	Beer-mix-drink with wheat beer, applejuice and hay extract	0.33 l, 1.98 €	organic farming certified	DE	Brauzeit GmbH Friedrichshafen	www.brauzeit.com
Allgäuer Heubier	beer with hay extract	6 x 0.5 l, 14.90 €		DE	Klosterbrauerei Neuzelle	https://www.klosterbrauerei.com
Beer made with hay			Rhones Alpes	FR	Brasserie alpine (bière des 3 vallées)	https://www.brasseriealpine.com/
Heu Soda	mineral water with hay aroma	0.33 l, ca. 3.- €		DE	Make Your Own Sunshine GmbH	http://www.trinkheu.de
Bio Alpenlimonade Wilde Wiese	hay lemonade with herb extracts and lemonjuice	0.33 l, 2.20 €		DE	Kelterei Stadler	www.watzmann-beverages.de
Bergheu Schnaps		40%, 29.- €/ l		AT	Bergbrennerei Löwen	www.bergbrennerei-loewen.at und www.aelpler-sprudel.at
Hay flavoured Italian typical distillate "grappa"	hay flavoured "grappa" (Italian distillate)			IT	Cappelletti	https://www.cappellettinovasalus.it/ita/PRODOTTI/GRAPPE-AROMATIZZATE/FIENO
Destillat Bergheu	destilled hayflowers	0.35 l, 23.- €		AT	Siegfried Herzog Destillate	http://www.herzogdestillate.at
Gipfelstürmer	Bündner Huusschnaps with alpine hay	0.5 l, 42.- CHF		CH	Swiss Premium Drinks GmbH	https://www.gipfelstuermer-arosa.ch/
Original Zillertaler Bergheubrand		0.35 l, 28.- €		AT	Stiegenhaushof	https://www.stiegenhaushof.at/shop/
Bergheu Gin		0.5 l, 36.- €				
Allgäuer tea	Alpine meadows herbs tea with flowers or pieces of apple	75 g each, 4.95 €		DE	Allgäuer Spezialitäten-Alm	http://spezialitaetenalm.de/produktliste/
Almwiesenheu Latte Macchiato	need of selfmade hay extract	can be produced at home		DE		http://freihaendigkochen.de/fancy-food-show-ii-bergwiesenheu-latte-macchiato-heu-rezept/

...used for construction and habitation	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Organoid naturally surfaces	Material made from pressed hay to be used for furniture surfaces, wall fairings, room acoustics, translucent illumination, and 3 d- objects.	ca. 226.- /qm	affordable regional furnitures as a market opportunity	AT	Organoid Technologies GmbH	https://www.organoids.com https://www.farbefreudeleben.de/marken/organofleur-heutapeten/
decorative wall covering (also organoid©)	decorative wall covering			IT	Edilegni	https://www.edilegnotranciati.it/i-nostri-prodotti/organoid/fieno-alpino/
surface curtain	Movable panels made from pressed hay.			AT	LEHA	www.leha.at
Lampshades	Lampshades made from pressed hay.	358.- to 1.299.- €		AT	ALMUT von Wildheim	https://almutvonwildheim.com
Natural design plastering	... with vegetable binding agents and hay and other ingredients to create structure effects.			DE	Naturafix	http://www.naturafix-naturbaustoffe.de/
Absorber- elements	... for noise protection, made from 100% PET-staple fibers and a coating with alpine hay on a flax mat of fibres 80 g/m² with 6 different decors.			DE	Org-Delta	https://www.org-delta.de/buero-callcenter-absorber-wand-element-natur;2.0.0.0/cat6/id131.html

...used for energy production	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
hay combustion	Hay bales from landscape conservation projects used for heating (1 kg hay corresponds to 3 l heating oil)			DE	Erich Renz, Heuverbrennungsanlage in Sonnenbühl	https://www.lpv.de/uploads/tx_ttproducts/data-sheet/best_practice.pdf
hay pellets	used for heating in automatically filled heating facilities				Gebhard Aierstock (Kreisbauernverband / Blumenwiesen-Alb e.V.)	

...used for other products	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
Hay figures	for decoration			SI	Maja Rogelj	http://www.crp-kranj.si/ http://www.crp-kranj.si/uploaded_images/file/fothe%20z%20ee%20et.pdf
Grasfaserpapier / paper from grass fibres	Papers for graphic use and packaging, 50% fibres from hay			DE	Papierfabrik Scheufelen	https://www.scheufelen.com/
Graspap-Pellets / pellets made from hay	Hay pellets as ressource for paper-/board-production			DE	CREAPaper GmbH	http://www.graspapier.de/papier-umwelt/
Kerzen mit Heuduft / candle smells like hay	Aromatisierte Kerzen	\$ 65.00		FR	Roses Collection	https://www.diptyqueparis.com/foin-coupe-candle.html
Heuduft / hay smell	hay smell in a can	3.99 €	organic farming certified	DE	Biolandhof Kelly	https://www.biolandhof-kelly.de/betriebszweige
Riechsäckchen 'Bergwiese	small bags with hay to smell	14.90 €		DE	Echt Duft	https://www.echtdufte.de/produkt-kategorie/riechsaeckchen/

...used for production processes	Description	Profit Model of business	Unique selling point of product/ Obstacles	NUTS Code/ Country	Company Name & Details	Link to product or homepage
hayflowers for cheese production	as an additive / 'raising agent'	Swiss research has analysed that the holes in some sorts of cheese are caused from hayflowers		CH		http://www.spiegel.de/wissenschaft/natur/loecher-im-kaese-schweizer-forscher-loesen-emmentaler-raetsel-a-1036148.html , https://www.sciencedirect.com/science/article/abs/pii/S0958694615000631
Hay as mulch for vegetable gardening						

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CONTACT

Gloria Kraus ||| Project coordination ||| EU Interreg Project AlpBioEco ||| kraus@sigmaringen.de

PROJECT PARTNERS



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