

# Economic and Technical Aspects of Agricultural Systems in the Apuseni-Mountains (Case-Study at Ghetari, Scarisoara, Romania)



## Introduction

The "Project Apuseni" is a German research-project of the University of Freiburg/Breg., joined by several Romanian and German partners. The objective is determined by the "identification of social, economic and ecological potentials for a sustainable regional development on the example of the Apuseni-Mountains in Romania".

The research object is a small village on 1150m altitude with 28 subsistent farming households. These households dispose of very few land- and financial resources. Their main agricultural activities are grassland and partly field cultivation as well as stock breeding. The main income derives from **best exploitation**.

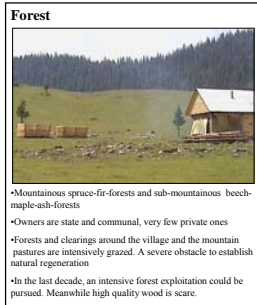
## Natural Resources



\*Area of grassland (about 90% of the cultivated land are meadows, arranged around the houses)  
\*Type: natural secondary grassland, exploitation: cutting  
\*Highly divers, dominated by *Festuca rubra*, *Agrostis capillaris*, on degraded soils *Nardus stricta*.



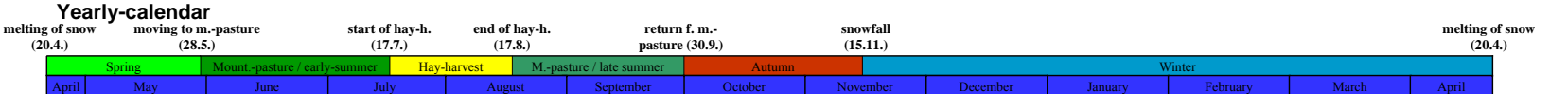
\*Communal mountain-pasture „Călineasa”  
\*1400m altitude; Silicate soils  
\*Type: Natural secondary grassland exploitation; Five months per year grazing  
\*Dominated by *Festuca rubra*, *Nardus stricta*  
\*All species of livestock (horse, cattle, sheep, pig) graze together, no managed grazing system  
\*About 3% of the area are forests, mainly used by the habitants



\*Mountainous spruce-fir-forests and sub-mountainous beech-maple-ash-forests  
\*Owners are state and communal, very few private ones  
\*Forests and clearings around the village and the mountain pastures are intensively grazed. A severe obstacle to establish natural regeneration  
\*In the last decade, an intensive forest exploitation could be pursued. Meanwhile high quality wood is scarce.

## Management

	Spring										Mountain-pasture / early-summer					Hay-harvest (in the village)										
<b>Economic activities</b>	Melting of snow	First short grazing period on own meadows at the village	Fertilizing of meadows with droppings of the livestock (accumulated the whole year in the stables; also done in autumn)	Cultivation of meadows at the end of spring; Planning of hay-piles; Collecting of stumps and dung-remains and piling up of those on or beside meadows.	Making and milk-processing	Various house-works	Plowing	Fertilizing with dung and wood-ash	Planting and seeding of potatoes and other vegetables	Timber-harvest in forests, which are part of the communal „Călineasa mountain-pasture” <small>(only by good weather. If the saw has a roof, then bad weathers as well.)</small>	Saving of timber <small>(only by good weather. If the saw has a roof, then bad weathers as well.)</small>	Craft: Production of wood-stubs (bad weather)	Selling of saw-logs to dealers (middle-man), who are coming to the village with their trucks	Around 28.5. moving of livestock and families to the mountain-pasture	Timber-harvest in forests, which are part of the communal „Călineasa mountain-pasture”	Saving of timber with circular-saws at the communal „Călineasa mountain-pasture”	Sticks for wood-stubs (on the communal „Călineasa mountain-pasture”)	Grazing of animals (on the communal „Călineasa mountain-pasture”)	Milking and milk-processing (on the communal „Călineasa mountain-pasture”)	Housework in the summer-cottages (on the communal „Călineasa mountain-pasture”)	Feeding of pigs and chickens (on the communal „Călineasa mountain-pasture”)	Garden work in the village; Piling up of potatoes (once) Weeding vegetables (rarely)	Selling sawn-logs to dealers, who are coming to the mountain-pasture by their trucks	Grazing of livestock in the forests (forest-pasture) and around the village. In case the whole family is moving to the village for the hay-harvest. In case the livestock remains, only the manpower moves to the village	Milking and milk-processing	Mowing and drying of grass and piling up the hay
<b>Technical level</b>	Traditional	Traditional;	Traditional;	Traditional; manual	Traditional; handicraft	Traditional manual	Traditional; 1. Wood-plough (aged model) 2. Dung distribution with wood-karrow 3. Refining of soil-lumps by horses, towing conifers	Motor-manual timber-harvest; Skidding and transport by horses	Timber transport to the saw with horse-wagons; Motor-manual with circular-saws	Traditional; handicraft	Just personal and individual sales, no marketing-co-operation	Traditional; Livestock and habitats by foot, belongings by horse-wagons	Motor-manual timber-harvest; Skidding and transport by horses	Timber transport to the saw with horse-wagons; Motor-manual with circular-saws	Traditional; manual	No flock formation, (only on family level), no fences, no grazing-management	Traditional; manual	Traditional; manual	Manual work; Pigs with whey, horse-droppings and stinging nettle				Traditional	Traditional; manual	Traditional; Manual work with scythe, rake and fork	
<b>Labour</b>	The older ones of the family	Male; In case of two horses male and female	Female	Exclusively female	Female	Male; plowing Female: Vegetables Both: Potatoes	Men	Men	Men	Men	Whole family	Men	Men and young women as supporting workforce	Men	The older ones of the family; Women	Exclusively (old) women	Old Women	Women	Men	Men	Men	The older ones of the family as well as children	Exclusively (old) women	Men and/or labourers mow; Women and children turn and pile up		
<b>Performance / consequence</b>	Mowing of the productive potential of the meadow	Conservation of productive potential	Improving the quality of the meadows; Easier grass-mowing; No dung-remains in the hay	5 to 9 kg milk per cow/day; Consumption by the family; Most of the calves are born during spring	Care for the family	Potatoes and vegetables for the house-consumption	Round wood to saw	Timber for construction (boards, spars, slats, etc.)	Assembly of wood-table	Sales for cash, resp. exchange for flour, grain and corn (for the family and the livestock)	Round wood to saw	Timber for construction (boards, spars, slats, etc.)	Sticks (semi-products)	Increase of milk production	6 to 9 kg milk per cow/day; Consumption by the family; Cheese processing as winter reserve	Care for the family	Pork, eggs and chicken production	Potatoes and vegetables for the family-consumption	Sales for cash, resp. exchange for flour, grain and corn (for the family and for the livestock)	Fodder for the livestock	6 to 9 kg milk per cow/day; Consumption by the family; Cheese-processing as winter-reserve	Winter fodder for livestock; 8-10 hay piles for one cow (only for own farm requirements)				
<b>Development prognosis / chances</b>	Obtained by higher fodder-stocks	Improvement of the dung quality through better storage; Avoiding of storage-losses	Education of the farmers to remain on the meadows as a source of organic matter	Improvement of breed; Improvement of the milk-processing-technology	Water pipe; Sewage as well as waste disposal; Household appliances	Improvement of planting material; new species, new breeds; Fertilizing before plowing; Own seedlings-production	Improved sawing technology (e.g. band-saw for: (i) better measurement-attitude (ii) higher timber yield by less cut-width)	Sauvenir for tourists; Wood-toys	Creating of marketing structures by associations or organisations	If some family-members stay at the farm, they could take care of guest rooms as well as tourism in general	Improved sawing technology (e.g. band-saw for: (i) better measurement-attitude (ii) higher timber yield by less cut-width)	Sauvenirs for tourists; Wood-toys	Methods to rationalise the grazing management (e.g. with fenced sectors); Start of the grazing, just when the grass has a height of 10cm	Improvement of breed; Improvement of pastureland; Improvement of milk-processing-technology	Improvement of breed; Improvement of fodder	Fleeces and foils covers as well as turnnels	Creating of marketing structures by associations or organisations	If some family-members stay at the farm, they could take care of guest rooms as well as tourism in general	Improvement of breed; Improvement of milk-processing-technology	Motor-mowers						



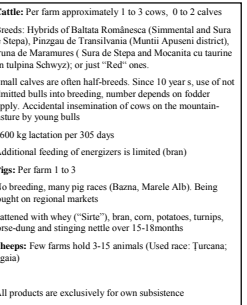
\*Mountainous spruce-fir-forests and sub-mountainous beech-maple-ash-forests  
\*Owners are state and communal, very few private ones  
\*Forests and clearings around the village and the mountain pastures are intensively grazed. A severe obstacle to establish natural regeneration  
\*In the last decade, an intensive forest exploitation could be pursued. Meanwhile high quality wood is scarce.



\*About 5% of the farmland is cultivated land  
\*Small-fenced parcels of land, scattered on excellent sites are situated in the meadows as kitchen-garden, 3-5 at each farm.  
\*Exclusive subsistent production, mainly vegetables (*Allium cepa*, *Allium sativa*, *Daucus carota*, *Brassica oleracea*, *Petroselinum crispus*, etc.) and potatoes (*Solanum tuberosum*)  
\*After 15 years follow up the land  
\*Since 40 years no more cultivation of cereals



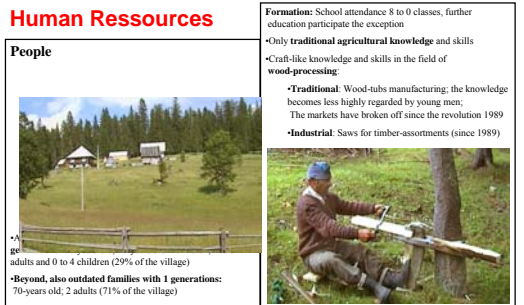
\*Horses: Per farm 0 to 2 draught horses for forest work and agriculture  
\*Cruised light cold-blood horses; No own breeding  
\*Being bought in workable age and sold afterwards.  
\*All farms have **poultry**, especially hens from own breeding; 3 to 10 animals per house. Being bought in addition if own breeding is not successful enough  
\*High losses through robbery-birds and carnivores



\*Cattle: Per farm approximately 1 to 3 cows, 0 to 2 calves  
\*Breeds: Hybrids of Balata Romănească (Simintental and Sura de Steps), Pinzigan de Transilvania (Muntii Apuseni district), Bruna de Maramures ( Sura de Steps and Mocanita cu turarie din tulpina Schwyz), or just "Red" ones.  
\*Small calves are often half-breeds. Since 10 years, use of not admitted bulls into breeding, number depends on fodder supply. Accidental insemination of cows on the mountain-pasture by young bulls  
\*2600 kg lactation per 305 days  
\*Additional feeding of energizers is limited (bran)  
\*Pigs: Per farm 1 to 3  
\*No breeding, many pig races (Bazza, Marcele Alb). Being bought on regional markets  
\*Fattened with whey ("Sire"), bran, corn, potatoes, turnips, horse-dung and stinging nettle over 15-18 months  
\*Sheeps: Few farms hold 3-15 animals (Used race: Turcana, Tigaja)  
\*All products are exclusively for own subsistence



\*Water  
\*Karst-region; therefore limited water supply  
\*Few wells with summer-shortage, relative bad water quality coming from agricultural water waters  
\*Use of cisterns for rainwater and snow utilisation  
\*In the planning process: Establishing of drinking water supply (installation of wells and water-pipes); however still no funding



**Human Ressources**  
**People**  
\*Formation: School attendance 8 to 0 classes, further education participate the exception  
\*Only **traditional agricultural knowledge** and skills  
\*Craft-like knowledge and skills in the field of **wood-processing**:  
\*Traditional: Wood-tubs manufacturing: the knowledge becomes less highly regarded by young men; The markets have broken off since the revolution 1989  
\*Industrial: Saws for timber-assortments (since 1989)  
\*Age: 70+ years old; 2 adults (71% of the village)  
\*Byond, also outdated families with 1 generations:

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Mountain-pasture / late-summer							Autumn							Winter										
Around 17.8, after hay-harvesting, moving to the mountain-pasture with whole livestock and family	Timber harvest (on the communal „Calineasa mountain-pasture“)	Sawing of timber (on the communal „Calineasa mountain-pasture“)	Sticks for wood-tubs (on the communal „Calineasa mountain-pasture“)	Grazing of livestock (on the communal „Calineasa mountain-pasture“)	Milking and milk-processing (on the communal „Calineasa mountain-pasture“)	Housework in the summer-shepherd-cottage (on the communal „Calineasa mountain-pasture“)	Feeding of pigs and chickens (on the communal „Calineasa mountain-pasture“)	In the village: Mowing the re-grown grass (second cut), drying, piling up; combined with distribution of droppings	In the village: Transport of hay-piles into barns; some hay-piles remain outside during the winter	Selling of sawn products to dealers coming up to the mountain-pasture and village by their trucks	Livestock-returns with the whole family from the mountain-pasture into the village (Grazing in the forests (forest-pasture), around the village. Grazing on own meadows in the village)	Harvest of potatoes and vegetables	Cultivation of meadows: End of the autumn, foliage and twigs are raked together and burned	Milking and milk-processing	Housework	Timber-harvest; (only by good weather)	Sawing of timber (only by good weather. If the saw has a roof, then bad weathers as well.)	Craft Production of wood-tubs (bad weather)	Selling of sawn timber to dealers coming up to the village by their trucks; Selling of wood-tubs to dealers	Livestock remains in the dark stables during the whole snow-season; Just for drinking they are brought twice to the wells	Milking and milk-processing	Housework Spinning of and weaving of sheep-wool	Timber harvest, in the case of bad no good weather and less snow	Craft Production of wood-tubs
Traditional; Livestock and habitats by foot, belonging by horse-wagons	Motor-manual timber-harvest; Sliding and transport by horses	Transport to the saw by horse-wagon; Motor-manually with circular-saws	Traditional, manual	No flock formation, (only on family level), no fences, no grazing-management	Traditional, manual	Traditional, manual	Manual work; Pigs with whey, horse-droppings and stinging nettle	Traditional, manual work; With scythe, rake, fork	By horse-wagons, traditional	Just personal and individual sales, no marketing-co-operation	Traditional	Traditional, manual	Traditional	Traditional, manual	Motor-manual timber-harvest; Sliding and transport by horses	Transport to the saw by horse-wagons; Motor-manual with circular-saws	Traditional, manual handicraft	Tubs and boards: Traditional by own horse-wagon in remote regions (with wine and fruit-cultivation) Sometimes with a hired truck	Traditional handicrafts	Traditional, handicraft	Traditional, manual	Motor-manual wood-harvest Backs and transports with horses	Traditional, manual handicraft	
Whole family	Men	Men and young women as supporting workforce	Men	The older ones of the family; Women	Exclusively (old) women	Old Women	Women	Men and / or labourers mow; Women turn and pile up	Men	Men	The old ones of the family, children	Male and female	Male and female	Exclusively (old) women	Women	Men	Men and young women as supporting-workforce	Men	Men	Men	Exclusively women	Women	Men	Men
Roundwood to saw	Timber for construction (boards, spars, slats, etc.)	Sticks (semi-products)	Increase of milk production	6 to 9 kg milk per cow/day; Consumption by the family; Cheese processing as winter reserve	Care for the family	Production of pork, eggs and chicks	Winter fodder for livestock (only for own farm requirements)	Winter fodder (only for own farm requirements)	•Sales for cash, resp. exchange for flour, grain and corn (for the family and for the livestock)	Spare for the winter-fodder supply; Mowing of the productive potential of the meadow	Potatoes and vegetables for the family-consumption	Improvement of meadows; More light for the grass in the spring	6 to 9 kg milk per cow/day; Consumption by the family; Cheese processing as winter reserve	Care for the family	Roundwood to saw; Fuel-wood	Timber for construction (boards, spars, slats, etc.)	Assembly of wood-tubs	•Sales for cash, resp. exchange for flour, grain and corn (for the family and for the livestock)	Get the animals on a low level, to bring them through the winter, no production	0 to 9 kg milk per cow/day; Consumption by the family;	Socks, gloves, etc.; Carpets; Care for the family	Roundwood to saw	Assembly of wood-tubs	
If some family-members stay at the farm, they could take care of guest rooms as well as tourism in general	Improved sawing technology (e.g. hand-saw for: (i) better measurement-attitude (ii) higher timber yield by less cut-width)	Souvenirs for tourists; Wood-toys	Methods to rationalise the grazing management (e.g. with fenced sectors); Start of the grazing, just when the grass has a height of 10cm	Improvement of breed; Improvement of pastures; Improvement of milk-processing-technology	Improvement of breed; Improvement of fodder	Motor-mowers	Creation of marketing structures by associations or organisations	Obtained by higher fodder-stocks	Improvement of plant-material; New Species, breed Fertilizing before the plowing Own seedling-production	Improvement of breed; Improvement of fodder; Improvement of milk-processing-technology	Water pipe; Sewage as well as waste disposal; Household appliances	Improved sawing technology (e.g. hand-saw for: (i) better measurement-attitude (ii) higher timber yield by less cut-width)	Souvenirs for tourists; Wood-toys	Creation of marketing structures by associations or organisations	Better stable-conditions; Higher fodder-stocks	Improvement of breed; Improvement of fodder; Improvement of milk-processing-technology	Selling of handicrafts in summertime to tourists					Souvenirs for tourists; Wood-toys		

## Economic Activities

### Summer-shepherd-cottage; On the communal mountain-pasture



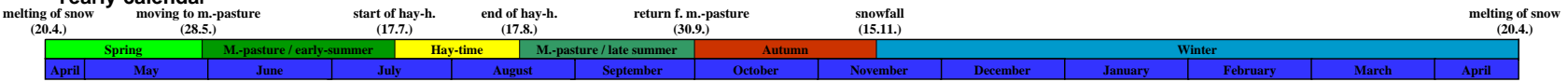
~30 years ago all summer-cottages were common good. Since 1990, the motor-manual forest-use by the farmers has been legal. Therefore each active family has build up their own wooden cottage for the summer life of the family. Also stables for cattle, horses and pigs have been build.

### Traditional Milk-processing



•Milk is kept in bowls from evening to next morning or from morning to evening to gain cream; afterwards cream is skimmed off the top and with rennet (gained from pig stomachs) fermented; the mass becomes thick and has to be cut and put into blankets for 3-4 days after taking off whey; finally the cheese is treated with salt and can be stored in buckets for around one year (cheese for own subsistence)  
 •Each family produces their salty-cheese (brânza) individually.  
 For one charge of brânza-cheese the farmer needs one week unfermented raw-cheese (cas). The brânza cheese if of lower quality, because of the not fresh raw-cheese  
 •When is used for secondary products (jinita, food); The rest (zer) is the main fodder of pigs.

## Yearly-calendar



### Equipment

- Chainsaws (78%)
- Circular saw (home-made) with slice-depth maximum of approximately 28 cm; On the mountain-pasture with diesel engine, at the house with electric motor; Own Utilisation and for hire (67%)
- Production of timber-assortments
- Tools for wood-tub construction exists in almost all houses (86%)
- Transportation
  - Horse-wagons and sleighs (78%)
  - Cars (11%)
  - Trucks (4%)

• „Big“ residences: Two floor houses with unsealed living space – potential for guest-rooms (32% of the village)  
 • „Small“ residences: One floor houses without unsealed space  
 •Stables: All horse/cattle stables in traditional architecture, becoming dark, unventilated, small; - horses and cows separated or together

### Infrastructure

Roads and ways

- The connection to the main road is 18km long and in a desolate condition. A normal car cannot pass it. In wintertime the way is usually impassable. A shorter foot-way (8km) exists and a road has been under construction for some years
- The connections between the economic centres (village and mountain-pasture) and between most villages are foot-horse ways which cannot be used which standard cars
- Since 9 years the villages have got electricity power supply

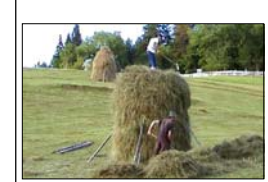
## Economic Activities

### Moving to the Mountain-pasture



- Around 28.May, the families move with their whole livestock to the mountain-pasture
- Traditional: Habitants and livestock by foot and their belongings by horse-wagon
- Return for hay-harvest during middle of July to middle of Aug and finally return in the end of Sept. / beginning of Oct.

### Hay-Harvest



- Mowing the grass, dry it and pile it up
- Traditional manual work with the help of scythes, rakes, forks
- Men and or labourers mow, Women and children turn and pile it up.



### Forest-pasture



- General habit; only with horned livestock, no horses
- In the forests around the village and in forests on the communal „Calineasa mountain-pasture“;
- On Calineasa also pigs are tended close to the cottages
- Increased activity especially on hot summer days and during hot noon hours, but also during rain-weather
- By the law prohibited, in praxis not punished