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Summer Farms in Switzerland: Profitability and Public Financial Support

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Summer farms are seasonal enterprises in high-elevation mountain regions, established for and highly specialized in grazing ruminants. This article synthesizes studies by the Swiss AlpFUTUR research program on the profitability of and public financial support for summer farms. It highlights current challenges of Swiss pastoralism and makes recommendations for future reforms. Profitability hinges on the size of the summer farms as well as on their ability to create value added. Particularly for smaller summer farms, key value-added strategies appear to be innovative cheese production and effective direct marketing. Public financial support is substantial, and the underlying agri-environmental scheme is relatively sophisticated. Eligibility for public support is based on both action-oriented and results-oriented criteria. Direct payments consider not only the number of livestock but also the duration of their presence on the summer pastures. For each summer farm, a stocking target is defined based on the pasture's carrying capacity. However, this target does not take into account the wide variation in forage needs between different meat and milk production systems. During the last decade, there has been a decline in the number of cattle sent to summer farms. Understocking is widespread, and the abandonment of marginal pastures has increased, resulting in scrub encroachment. The remaining cattle tend to be concentrated on more productive surfaces to reduce management costs; this causes overgrazing. More attention should therefore be given to the accurate enforcement of agri-environmental standards and to regional-level agreement on which surfaces should be abandoned. Supporting traditional pastoral practices remains an explicit objective of Swiss agricultural policy. Recently introduced agri-environmental payment schemes promoting biodiversity conservation can complement the summer farm subsidies. However, implementation costs are likely to increase.

Keywords: *Direct payments; agri-environmental scheme; cross-compliance; pasture management; structural change; profitability; mountain farming; mountain grassland; marginal pasture; grazing.*

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Introduction

The use of pastures at high elevations in Switzerland during the summer months has a long tradition (Cole 1972; Netting 1972; Bürgi et al 2013). Summer farming as a special form of transhumant pastoralism (Oteros-Rozas et al 2013) has been a self-sustaining system based on both private and common-property institutions (Stevenson 1991) for centuries. However, since the 1950s, more and more summer pastures have been abandoned because of economic pressure in remote rural areas and the migration of the local population to the lowlands and cities (Werthemann and Imboden 1982). Similar patterns have also been observed in other regions, for example, in the Czech Carpathians (Spicka 2009), Ukraine (Warchalska-Troll and Troll 2014), and Tibet (Negi 2007).

Abandonment of transhumant pastoralism is a serious challenge for the affected ecosystems, as extensively used mountain pastures have developed into biodiversity hotspots (Bunce et al 2004; Oppermann et al 2012), which are now threatened by scrub and tree encroachment. Many European countries try to preserve transhumant pastoralism by providing direct payments to "simultaneously support cultural heritage, traditional practices, economic development, [and] environmental protectionism," as Kerven and Behnke (2011: 3) put it. Although such agri-environmental schemes receive strong public support (Bernues et al 2014), they are usually too low to provide sufficient incentives to sustain traditional

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agricultural practices, and their effectiveness remains questionable (Ribeiro et al 2014).

The Swiss government started to support the improvement of marginal mountain pastures, the refurbishment of buildings, and the restoration of roads and paths in summering areas as early as 1894 (Werthemann and Imboden 1982); since then an increasing number of state-led programs have been established to support mountain farms in general and summering practices in particular.

Summer farming is no longer profitable, and it faces other serious challenges as well: aging farmers' difficulty finding successors, long and exhausting working days, and changes in worldviews and social traditions (Jurt et al 2015). Accordingly, the number of cattle on summer pastures declined between 2000 and 2006 by about 6% (Mack and Flury 2008); however, it remained relatively stable thereafter (Morand 2016: 43). With a decrease in year-round farms of about 20% between 2003 and 2013 (De Paola 2016: 37), agricultural structural change has been more modest in Switzerland than, for example, in France and Italy (Streifeneder and Ruffini 2007), largely because of high government subsidies. The number of summer farms (which are operated only during the summer months) dropped by only about 6% during the same period (Morand 2016: 43).

More important for the maintenance of the summer pastures than the number of livestock or farms, however, are the types of livestock sent there. Mack et al (2013) observed that numbers of sheep, and of the cattle breeds suitable for pasturing on steep slopes and marginal land, have decreased, because modern breeds are not adapted to climbing and require special forage. As a result, marginal pastures (remote, steep, and/or of low forage quality)—mostly those with the highest biodiversity value—have increasingly been abandoned (Gellrich et al 2007).

This is one of the recent developments in Swiss alpine pasturing that was studied by AlpFUTUR, a collaborative research program involving numerous scholars from various Swiss research institutions and disciplinary backgrounds that aimed to provide strongly use-oriented description and analysis of the most pressing problems of Swiss pastoralism and to evaluate, develop, and propose solutions to these problems (Lauber, Herzog, et al 2013).

This article presents the findings of various research projects examining the economic viability of summer farming and the effectiveness of government support for it. Some of these studies looked at historical data on the development of summering and direct payments; many also collected primary data from farmers, summer farms, and cooperatives as well as municipal, cantonal, and federal government offices. The objective of this article is to highlight the challenges facing efforts to preserve alpine pasturing in Switzerland, either by improving the management of the summer farms and making them more profitable or by adjusting policy instruments in a way that helps optimize the distribution of scarce financial support.

Relation between summer farms and year-round farms

Summer farms exclusively lie in the explicitly delineated "summering area" at higher altitudes. They receive their cattle from the year-round farms that lie at lower altitudes and to which they are thus tightly linked, or into which they sometimes might even be incorporated. Agricultural structural change in Switzerland is caused by falling prices for agricultural commodities, due to a gradual liberalization of trade in those commodities but also to advancing technologies and changes in traditions and lifestyles. The main elements of agricultural change are concentration and modernization: a continual abandonment of smaller farms and the growth of large farm enterprises employing modern breeds and means of production. Modernization has immediate consequences for the type and amount of livestock sent to summer farms, as mentioned above. Summer farming is also affected by concentration, with a trend toward fewer year-round farms with larger forage bases. Recent surveys among summering ($n = 856$; von Felten et al 2012) and nonsummering ($n = 233$; Fischer et al 2012) year-round farms have confirmed that the expansion of the forage base is still the most important motivation for farmers to send their cattle to high-elevation summer pastures. A similar result was found by Gueydon (2012) for farms in Bavaria (Germany), particularly for part-time farmers.

Year-round farms that have been able to lease or purchase additional lowland forage areas are thus less dependent on summer pastures. The surveys also show that farmers who have never summered their cattle are highly unlikely to do so in the future, and that farmers who have abandoned summering are unlikely to return to it, since abandonment of summering is usually a result of a more fundamental strategic repositioning of the year-round farm enterprise. These are additional indications that agricultural structural change is likely to result in a further decline in livestock summering and thus further abandonment of remote pastures.

Profitability of summer farming

Cattle

Blättler et al (2013) developed an accounting instrument that helps establish the cost effectiveness of using summer pastures. They calculated key statistics for 18 summer farms, each of which summered between 10 and 160 "normal stock units" (NSUs). One NSU or *Normalstoss* is the equivalent of a standard milk cow kept on a summer pasture for 100 days. The average stocking of farms is

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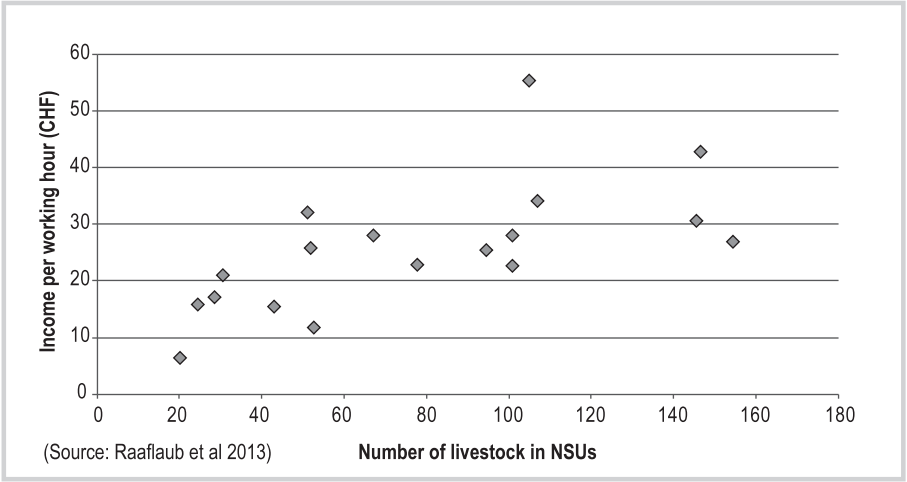
FIGURE 1 Relation of income earned per working hour to number of livestock ($R^2 = 0.37$; US$ 1 = CHF 0.95). (Source: Raaflaub et al 2013)



about 60 NSUs, although the distribution is strongly right-skewed (there are many more farms that are much smaller; see Morand 2016: 43). Blättler et al (2013) found that summer farms with many NSUs were able to generate above-average income per hour of work (Figure 1).

It is obvious that the fixed costs per animal increase if pastures are underutilized. In addition, Raaflaub et al (2013) established that, as the size of cattle herds (both dairy and beef) decreases, the corresponding decrease in production exceeds the labor savings. Larger herds of cattle allow the application of more economical production techniques (eg mechanized milking parlors). Thus, for the 18 farms examined by Blättler et al (2013) and Raaflaub (2013), labor input per NSU decreased with increasing herd size (Figure 2). A similar observation—decreasing labor input per livestock unit with increasing farm size—was reported by Gueydon (2012) for summer farms in Upper Bavaria.

In spite of these trends, it is still possible for smaller summer farms to compete with larger farms. They can do so by either optimizing labor input or maximizing the value added of their products. Increasing the productivity of milk cows is constrained, regardless of labor inputs, by topographic conditions and forage quality; hence, increasing value added is the more promising strategy. A recent survey of 262 Swiss summer farms (Böni and Seidl 2012) illustrated how this can be achieved by production of high-quality cheese and further diversification of products.

Sheep

While cattle tend to be summered on lower, higher-yielding summer farms, sheep graze the more marginal upper pastures. Werder and Eiselen (2013) concluded that in Switzerland, because of strong economies of scale, herds smaller than 100 sheep—which are quite common

FIGURE 2 Relation of work hours to number of livestock ($R^2 = 0.48$). (Source: based on Raaflaub et al 2013)

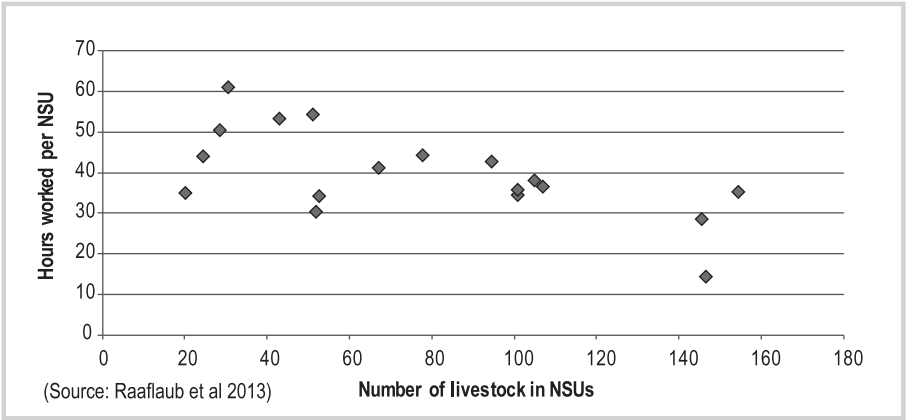


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TABLE 1 Direct payments to summer farms and year-round farms (US$ 1 = CHF 0.95).

	Summer farms	Year-round farms[a)]
Estimated farm area (1997)	465,000 ha	1.1 million ha
Estimated number of farms (2012)	7000	55,000
Direct payments (2000)	For summering: CHF 81 million	For ecological objectives: CHF 278 million
Direct payments, excluding payments for landscape quality (2014)	For summering: CHF 121 million For biodiversity: CHF 22 million	For cultural landscape preservation (without summering): CHF 264 million For summering, issued to the livestock owner: CHF 101 million For biodiversity: CHF 373 million
Direct payments for landscape quality (2014)[b)]	CHF 70 million	
Total agricultural subsidies (2000)[c)]	CHF 2164 million	
Total agricultural subsidies (2014)[c)]	CHF 2814 million	

[a)] Beginning in 2014, the direct payments for summering were increased significantly and are not issued to the summer farms exclusively anymore. About half the amount is now paid directly to those year-round farms that send livestock to the summer farms.
[b)] These payments are granted to projects that foster landscape quality independently of the differentiation between summering area (summer farms) and normal agricultural area (year-round farms).
[c)] Apart from the direct payments listed in this table, the total agricultural subsidies also include additional direct payments related to further objectives, such as to support particular production systems (for milk or meat) or to secure the sufficient supply of food.
Sources: BLW (2001) and BLW (2015).

because of a relatively large share of hobby farmers—can rarely be summered economically. Regularly visiting the herds, which tend to climb to high elevations and steep surfaces, to check the health of the animals can be a major expense (Raaflaub et al 2013). Large carnivores (mainly reintroduced wolves) can be a serious threat to sheep, and thus special protection by herders and dogs is required in some areas. Eiselen (2012) estimated that employing a herdsman can be profitable only with more than 1000 sheep. Up to this herd size, rotational grazing (providing the sheep a different fenced section of pasture every few days) is recommended as an alternative to the still widespread practice of maintaining autonomous herds that are checked only occasionally. Rotational grazing and herdsmen are promoted by increased direct payments (see Table 2 and the following section) to reduce damage to pastures and animals from autonomously grazing sheep herds. For small herds, however, the direct payments are often not even enough to cover the cost of visiting the herds.

Agricultural policies and subsidies affecting summer farms

As in many Western European countries, Swiss agriculture was heavily supported through product-based subsidies until the end of the 1990s. As a result of pressure from international trade organizations, and following a corresponding amendment of the federal constitution by popular referendum in 1996, a reform of agricultural policy was agreed upon (OECD 2015). It enabled the gradual conversion of product-related subsidies to direct transfers to farmers, partly adhering to the cross-compliance principle: payments were bound to farmers' compliance with environmental management requirements and other production standards. Currently, the overall sum of agricultural subsidies is about 3 billion Swiss francs (CHF). Due to the increased share of the ecological direct payments and the gradual tightening of standards, the environmental impact of Swiss agriculture has decreased somewhat since the 1990s (OECD 2015).

Direct payments for summer farms

Mountain farming in general and summer pastures in particular have long received special consideration in Swiss agricultural policy. Since 1980, the original subsidies for the improvement of summer pastures have been complemented by direct payments for summering (Bürgi et al 2013); these were originally issued to the managers of the summer farms that take care of the cattle during summer and not to the owner of the livestock. Over time, the law defining those direct payments has been amended several times, and the direct payments have continually increased. However, direct payments (CHF 121 million) for the summering area only account for a small fraction (4.3%) of all subsidies (CHF 2.8 billion) for the agricultural sector (Table 1). According to simulations conducted by Calabrese et al (2011), summering would not be profitable without these direct payments. Since 2014, direct payments for summer farms have also been complemented by direct payments to the livestock owners at the year-round farms to increase the incentive to send livestock to summer pastures.

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TABLE 2 Changes over time in direct payments for summering.

1980–2000	Direct payments were issued by head of livestock.
	Beginning in 1999, dairy and nondairy livestock were differentiated.
2000–2003	Direct payments were issued by NSU, thus taking duration of stocking into account. Payments were contingent on compliance with stocking targets.
As of 2003	Direct payments were issued by NSU.
	For sheep, payments were differentiated according to grazing management strategy (employment of herdsmen, rotational grazing).

The political will to provide financial support for farmers continues to be high in Switzerland despite the decreasing economic importance of the agricultural sector (Hirschi and Huber 2012). However, the justification for those payments has shifted. Originally, the direct payments for summering were primarily intended to support summer farming. Nowadays, their purpose is rather to protect and preserve the cultural landscape as it is molded by summer pastures and thus to prevent agricultural production in these areas from over- or underexploiting the meadows (Lauber, Böni, et al 2013). This goal could probably also be reached without sending livestock to the summer pastures, for example, by paying subcontractors for mowing. That would likely be much more expensive (Roeder et al 2010), so these direct payments are likely to be retained, despite their shift in purpose.

With the most recent reforms in 2014, direct payments for preserving biodiversity in summer pastures were added to the direct payments for cultural landscape quality. While biodiversity payments throughout Switzerland are based on the presence of indicator species—which are expected to depend on other species and thus indicate higher biodiversity—in the pastures, landscape quality is defined regionally and evaluated according to a multitude of indicators, many of which are location-specific. These new agri-environmental payment schemes are innovative in that they are linked to results (Oppermann 2003; Burton and Schwarz 2013), such as the degree of biodiversity a meadow exhibits, rather than to actions, such as compliance with guidelines on when and how often to cut the grass.

In comparison, the direct payments for summering are linked to actions, such as complying with stocking targets intended to regulate the intensity of pasture use (see Table 2). Tying the payments to the stocking target should prevent the overuse of the pastures (which can cause erosion, for example) as well as their underuse (which is likely to result in scrub encroachment). These targets were formulated in 2000 for each summer farm based on pasture carrying capacity. Summer farms receive the full payment if their stock levels are between 75 and 110% of the target; payment is curtailed if they exceed or fall short of that range (in terms of either number of animals or length of time in the summer pasture, both of which are taken into account in the NSU measure).

Intensity of use is also linked to the quality of the pastures, and thus direct payments are also contingent on compliance with other action-based requirements such as maintenance of pastures and fencing, limitation of herbicides, and use of supplementary forage and fertilizer. There are also result-based criteria, however, related to erosion, scrub encroachment, and soil quality.

Accuracy of stocking targets

The NSU provides a versatile and flexible way to measure livestock numbers. However, recent advancements in livestock breeding have introduced a wide diversity of breeds requiring different amounts and qualities of forage, and this is not taken into account in the NSU formula. Milk cows with a high milk yield tend to overuse pastures, leading to erosion, while less demanding suckler cows, that is, cows that feed their calves, underuse them, leading to scrub encroachment—although the stocking target is met in both cases (Lauber, Böni, et al 2013).

Understocking

As stated above, the number of cattle sent to summer pastures has not fallen dramatically, and structural change in the summering area is less pronounced than among year-round farms, which indicates that summer farms themselves are not given up easily. Schulz (2011) examined trends over time for different categories of summer farms in different regions. The analysis revealed that it has become more difficult for many summer farms in remote regions to find sufficient livestock for summering, and it is obvious that generally overstocking is not a problem anymore nowadays. In fact, an increasing share of summer farms are only minimally stocked, with many operating just slightly above the minimum stocking target (75%). While the share of those that actually fail to meet that minimum is alarming only in remote regions, it still can be concluded that under- rather than overstocking is currently the challenge to be faced.

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Implementation issues

The implementation of direct payments for summering is delegated to the cantons and regulated by the national Ordinance on Summering, which prescribes that each summer farm has to be inspected for compliance with the eligibility criteria for the direct payments only about once every 12 years. Other than that, the cantons are free to organize monitoring as they see fit. An evaluation of implementation practices in different cantons by Schulz (2011) exposed several shortcomings.

As the summer pastures of a single summer farm can be very large, checking them for eroded areas or missing fences can be time-consuming. Some of the management requirements, particularly the results-oriented criteria, are difficult to detect and not always clearly defined: for example, in the case of the requirement to contain scrub encroachment, it is often not clear which is the critical stage of scrub development that would justify sanctions, and sometimes it is not even known for how long scrub has been present on a certain surface and thus whether it can be attributed to neglect by the current summer farm manager, as aerial photography has not yet been established in all cantons as a valid source of evidence.

The delegation of implementation to the cantons has resulted in heterogeneous implementation structures. For example, implementation involves more agents and more sophisticated checks and balances in the canton of Vaud than in the cantons of Grisons and Bern: in the canton of Vaud, the summering area is divided into districts that—together with the municipalities—send a representative to an "inspection panel" that reports to the cantonal administration directly and independently from the inspectors of the cantonal agency (Figure 3; see also Schulz 2011). This results in differing implementation costs, ranging from CHF 2.5 to 10.4 per NSU or 0.8 to 3.6% of the issued payments. These shares are similar to those for comparable erosion-control and extensification schemes in German states, where implementation costs have been found to depend on state-level implementation structures (Fährmann and Grajewski 2013). Surprisingly, the lion's share of the implementation costs for the Swiss summering subsidies are incurred by data gathering and the distribution of payments, while the expenses for inspecting the summer farms in the field are only a fraction thereof (Schulz 2011).

Preventing overstocking is still considered the more important objective by the implementing agencies, and the insight that understocking is also a serious problem is only slowly gaining ground (Schulz 2015). Because understocking is generally seen as a consequence of agricultural structural change and because the incentive to maintain stock levels provided by the payments is modest at best (Mack and Flury 2008), sanctions for understocking are not very common.

As a consequence of understocking, summer farms tend to abandon marginal pastures and send their cattle only to the most productive places. Accordingly, more emphasis should be given to strictly enforcing the management requirements. However, it appears that, as is the case with understocking, stringent enforcement of management standards is not widespread: the standards are hard to monitor and are not well received by the implementing agencies and the affected farmers. The cantonal authorities thus prefer to focus on warning and educating, which they believe will be more effective than more punitive steps would be. Penalties are issued only if warnings have no effect or if the violation is too serious and obvious to warrant a delay in enforcement (Schulz 2015).

Related policies in neighboring countries

A review of policies governing direct payments for summering that was conducted by the Swiss Federal Office for Agriculture (Plattner 2008) found that in most neighboring countries, and particularly in France, Germany (Bavaria), and Italy, payments are largely linked to the surface, that is, they are dependent on the size of the pastures. Issuing payments per animal unit, as is done in Switzerland, risks providing incentives for intensification. However, the Swiss payments do take into account the length of time the animals stay on the summer pastures (the NSU is calculated in terms of 100-day increments), and stocking has to remain within both a minimum and maximum level to qualify for full direct payments. Although this design is more complex, it seems to correspond most closely to the carrying-capacity principle, assuming that forage requirement estimates are accurate.

Plattner (2008) also found that subsidies for summering livestock are paid either to the manager of the summer farm or to the owner of the livestock at the year-round farm. The latter is particularly the case in France, where virtually no summer farms exist. In Austria, part of the payments are bound to the number of animals; to a limited degree, this is also the case in Southern Tyrol, Italy (with premiums for animal health). Problematic incentives might arise if payments are bound to, for example, milk production, as is also the case in Austria and Southern Tyrol.

In some regions, additional payments are can be obtained for grazing management systems that require a herdsman, and they are issued either on the basis of the surface or even for the herdsman directly (Plattner 2008). These can be differentiated according to whether the farm has permanent personnel or not (Bavaria, Germany). Austria issues support for grazing management systems on the basis of the number and type of animals: the highest payments are made for milk cows and the lowest for sheep. In Switzerland, differentiated payments for different grazing management systems are issued for sheep only to promote rotational grazing.

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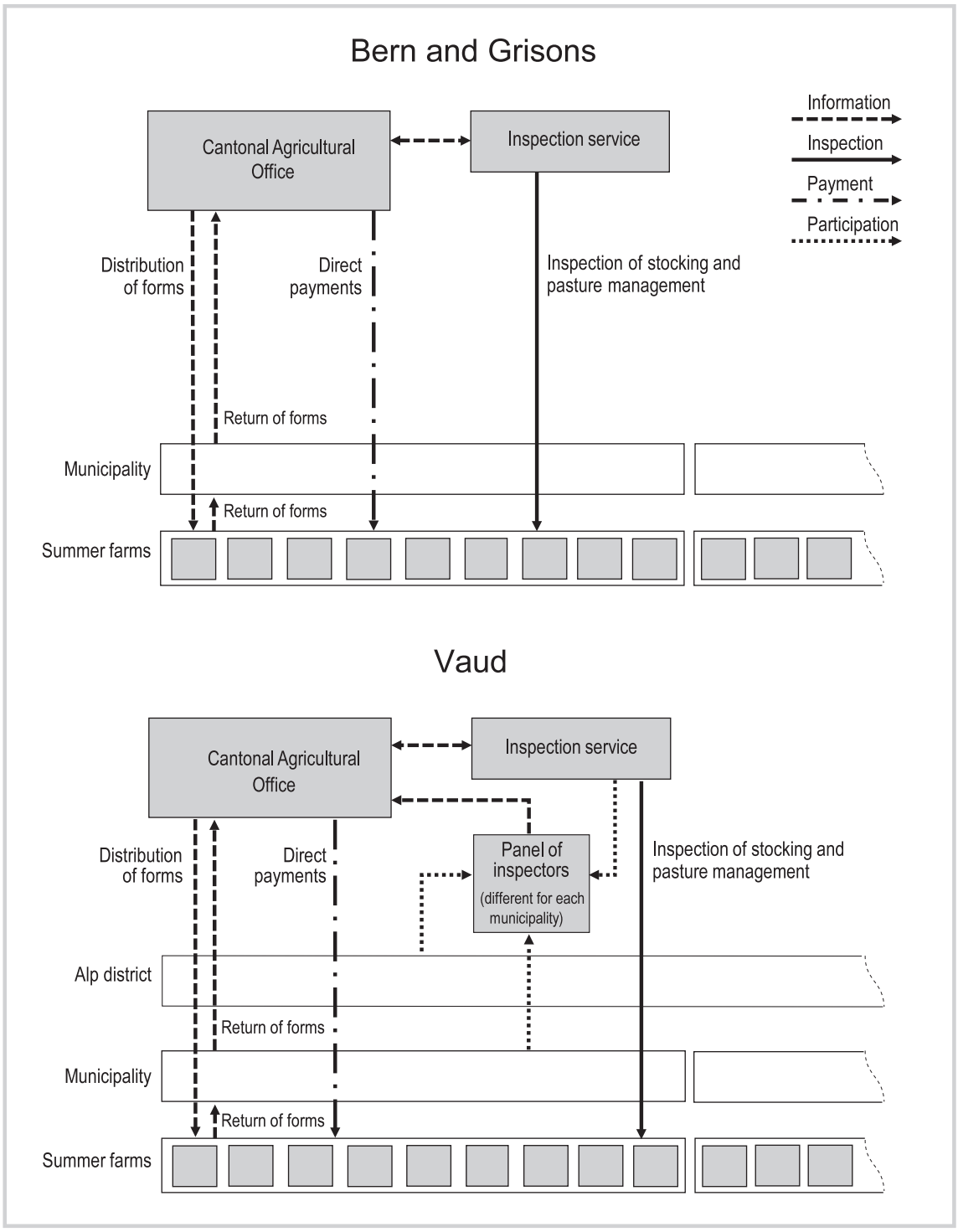
FIGURE 3 Implementation of direct payments for summering in 3 cantons. (Adapted from Lauber, Böni et al 2013)



Increasing focus on results

The comparison presented in the previous section reveals that until recently, result-oriented criteria for direct payments for pastoralism have not been very common in the region, although they are believed to better target environmental quality, which is becoming more important as a justification for such subsidies (see Kerven and Behnke 2011) and to enable flexibility and innovation.

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Details about the design of such early schemes have been given by Wittig et al (2006), who examined the applicability of indicator species approach in northern Saxony. Matzdorf and Lorenz (2010) reported on a first evaluation of such a scheme for Baden-Württemberg in Germany. A results-oriented agri-environmental scheme, the Flowered Meadows program (De Sainte Marie 2014), was also implemented in France. However, as a recent evaluation showed, it has not yet led to a substantive adaption of management practices (Fleury et al 2015). Nomura et al (2013) also studied the design of such a program for Japan and emphasized the need to provide incentives for participation.

In Switzerland, the results orientation has been bolstered by the direct payments for biodiversity and cultural landscape quality introduced in 2014. These payments are also issued for the Swiss summering area, and they complement the standard direct payments for summering as well as other contractual schemes for nature protection. Although these programs have not yet been evaluated, it is apparent that the protection and maintenance of cultural landscapes and biodiversity in this area are now undertaken with a mix of action- and results-oriented approaches.

Mixing results- and action-oriented criteria across and within agri-environmental programs was recommended by Moxey and White (2014), who argued that the expected gains from results-oriented schemes are yet to be confirmed empirically and that impulses for innovation and flexibility also require sufficient capacities at the farm level. Moreover, as Burton and Schwarz (2013) noted, action-oriented agri-environmental schemes have value if there are multiple objectives. In particular, the traditional management practices being maintained on summer farms should be preserved in their own right because they affect large areas of marginal land and are closely adapted to this kind of natural environment (Kampmann et al 2012). Ensuring the environmental quality of such vast surfaces with a results-oriented approach exclusively would most probably also be too costly in terms of transition and transaction costs (Beaufoy et al 2012).

Recommendations and conclusions

Although the analyses of the AlpFUTUR program reveal that economies of scale can provide an advantage, it also has to be kept in mind that the maintenance of common property is more likely to be neglected on larger summer farms (Baur et al 2014) and that success also depends on how easily the common-property institutions can adapt to structural change (Landolt and Haller 2015). In Switzerland as in Germany and Austria, structural change in agriculture has not been as pronounced as in other countries, such as Italy, France, and Slovenia (Streifeneder and Ruffini 2007). Structural change is progressing even more slowly in the summer farms and is often also hampered by persistent traditions, economic structures, and topographical limitations.

More important for the summer farms than growing in size is thus to increase profitability by processing milk on site, developing additional high-value-added products (Bardsley and Bardsley 2014), and merchandizing those products directly to consumers. The ability to do this, however, hinges on the operative preconditions and capacities of the individual summer farm (Böni and Seidl 2012).

Compared to support for summer farming in neighboring countries, the Swiss direct payments for summering are a rather comprehensive action-oriented direct payment program to support high-nature-value cultivation of alpine pastures. It has become apparent, though, that the current stocking targets, which were defined nearly 20 years ago, have not kept pace with progress in livestock breeding and thus do not accurately reflect the carrying capacity of the pastures anymore. A stronger differentiation of the target with respect to livestock categories, breeds, and forage requirements might be needed sooner or later. However, care should be taken to avoid an overly complicated design, because the implementation costs of a payment scheme can be heavily affected by its complexity.

Over the last decade, the number of livestock sent to spend the summer on alpine pastures has been declining. As a result, marginal pastures continue to be abandoned and highly productive surfaces are in danger of being overused. Similar simultaneous patterns of abandonment and depletion, albeit for different reasons, have also been observed in other transhumant systems, for example, in the Asteroussia Mountains in Crete (Kizos et al 2014). This increases pressure to enforce cross-compliance and thus requires the adaptation and improvement of pasturing management plans. We thus recommend more proactive planning by the cantonal agencies. They should actively help shape the future of summer farming—for example, by distributing infrastructure support according to clearly defined regional priorities rather than to all summer farms equally. For that purpose, the cantonal agencies should encourage regional or municipal summering concepts, in which the impact of structural change in agriculture is considered and regions with higher and lower potential for summering are identified. Ideally, this would allow a controlled withdrawal of pasture farming from some regions. Regionally agreed development goals would help to ensure that marginal surfaces that are most valuable from a biodiversity-protection perspective will continue to be managed also in the future. Ideally, such regional concepts would be the result of a close cooperation among actors from public administration, agriculture, tourism, and related sectors at a regional scale.

Fleury et al (2015) and Nomura et al (2013) provided similar arguments with respect to the implementation of

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results-oriented agri-environmental schemes. Research on transhumant agro-systems in Spain has produced similar recommendations and reached rather optimistic conclusions (Oteros-Rozas et al 2013). It must be emphasized, however, that structural change at the level of the year-round farm will continue to affect summer farms in Switzerland. Maintaining an open cultural landscape across the entire summering area will not be achievable. The available resources should be targeted to surfaces for which maintenance can be best justified by reasons of forage production, biodiversity, tourism, or prevention of natural hazards, and for which cultivation is expected to remain economically feasible in the mid- to long term.

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