Slash-and-Burn in the History of the Swedish Forests

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Introduction

Today, the economy of Sweden is heavily dependent on forests. Trees provide 40% of all net export earnings, and Swedish companies are among the world leaders in industrial forestry. The welfare of the Swedish population has, to a very significant extent, been built on timber, wood pulp, and paper-based industries. Strict forest laws have helped foster the growth of high levels of production within the industry (moderated somewhat in recent years by the growth of the conservation lobby). The Swedish timber industry is now one of the most mechanised and industrialised in the world.

In this situation it is easily forgotten that slash-and-burn agriculture was for many centuries a central feature of Swedish forest management. Slash-and-burn had an important place in the colonisation of the North and in the development of Nordic culture and economy. It was practised in areas of central and southern Sweden well into the 20th century. For a time, such facts were neglected even by economic historians. Today, however, interest and respect for this old practice – for centuries the key to survival in the wilderness, and the most economic use of a harsh and stony land – is increasing among the Swedish population.

The Stone Age Economy

Land use in Sweden has changed dramatically over the centuries. Ten thousand years ago, at the end of the Ice Age, a barren stony landscape of lakes and bogs was revealed by the receding ice. Forests began to reappear. First, slow growing birch and willows, later pines, aspen, alder and other broadleaves, and finally, spruce. By this time, hunters were already well established in the Swedish forests, living off moose, deer and other game animals.

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The first traces of permanent agriculture in the Nordic countries date from the late Stone Age (2,500 BC). Settlements were mostly grouped along the coastline, and near to rivers and lakes. Fire was used to clear the land and improve the quality of grazing. Hunters probably also used fire to flush out wildlife and to improve the wildlife habitats. There is no clear indication of any shifting cultivation being practised in this period.

Wild fires (started by lightning) were also a normal, periodic phenomenon throughout the Nordic boreal forests, known as *'taiga'*. Archeological records show that major wild fires occurred every 100 years or less throughout the northern forests, except in wetland bogs.

The Cattle Economy

The classic phase of traditional Nordic agriculture was based on livestock, which was the best and most economical way to exploit the stony and inhospitable forested lands. Cultivation of annual cereals came later, and then only on the few plains with good soils in central and southern parts of Sweden. Cattle and sheep were grazed in the forests in the summer time, the numbers depending on the amount of fodder that could be collected for the winter feed. Again, the quality of grazing was improved by the routine use of fire. As recently as the late 19th century, the existence of vast areas of heath land along the west coast of Sweden bore testimony to the regular burning of heather to improve the grazing for sheep.

Grain was used in the subsistence economy to provide flour which was used to produce the staple food, bread. Around the homestead or the village, small fields were cleared of stones and tree stumps to grow cereals (mainly rye, with some barley and oats), turnips and (later) potatoes. Maintaining soil fertility was a major problem as animal dung was usually in short supply. Farmers therefore looked to the undisturbed forests to provide them with soils rich in nutrients. Slash-and-burn agriculture was practised throughout the period of traditional agriculture, though its intensity and incidence varied from area to area. So also did official policy towards slash-and-burn.

The Heyday of Slash-and-Burn

From the Middle Ages (9th-15th centuries) until the beginning of the 17th century (which was the beginning of Sweden's short history as a European super-power), slash-and-burn was actively encouraged by the government. The system was seen as an economical way to open vast areas of wastelands to human habitation – and thus to increase tax revenues to the Kingdom. Many writers of this period testify to the importance of slash-and-burn agriculture to the poor farmers living in the forested regions. King Gustav I (the founder of modern Sweden) put down many rebellions, the most serious one in 1543 in the highlands of southern Sweden. He wrote to his ungrateful subjects that "if you had swidden your forest instead of felling logs to hinder my troops, you would now be in better shape....".

The intensity of slash-and-burn varied according to the locality. In the hilly forested areas of southern Sweden (known as 'Smalland'), slash-and-burn was common among the poor crofters right up to the end of the 19th century. The famous botanist, Carl von Linné (Linneus) commented in a travel report written in 1741 on the frequency with which swidden lands were visible along his route. He ventured the opinion that slash-and-burn was an acceptable method for the hungry population to eke out a living and gain some bread from a poor and stony landscape that was good for little else. However, he was required by his sponsors to rip this page out of his report, as it did not correspond to the official government position at the time.

Intensive slash-and-burn was also carried out over vast areas of central Sweden, especially in the sparsely populated western areas of Värmland and Dalecarlia, except where mining dominated the economy. These areas attracted the real specialists in slash-and-burn agriculture – the Finns. Migrants from Eastern Finland (Finland was part of Sweden until 1809) moved into this sparsely populated area during the hundred year Little Ice Age which commenced in the 1580s. Initially, their immigration was encouraged by the Swedish government. Although there was some conflict between the indigenous population and the immigrants, there was also cooperation. Local people benefited from the clearance by the Finns of areas of private or village forests for their annual crops, as these newly opened-up areas eventually reverted to the original landowners.

The Finns struggled to survive in the harsh conditions. Slash-and-burn agriculture for cereal production was not sufficient on its own to maintain the farm family and

had to be supported by animal husbandry (using lands already opened up in previous swidden cycles), as well as by hunting, fishing and berry picking. Besides the main homestead, with its gardens and permanent settlement, each family built a small temporary house on the swidden plot in the depths of the forest, much as tropical forest cultivators do today.

Slash-and-burn agriculture was thus the prime means for the colonization of the vast and inhospitable Nordic *taiga*.

The Role of Forests in the Mining Industry

Sweden's rise as an industrial power was based on its mining industry. Iron and copper production introduced new pressures on the forests and consumed immense quantities of wood. Firewood was used for cracking rock, charcoal was used for smelting and forging, and timber for all kinds of buildings and construction materials.

Iron and copper (and to a lesser extent, silver) production provided the main source of national income in the expanding State. In the mining regions (mainly central Sweden), slash-and-burn began to appear as a threat to the ore industry and hence, to the income of the treasury. The government intervened, therefore, and in 1647 issued the first general forestry regulation to prohibit slash-and-burn agriculture on all State and common land.

The practice of slash-and-burn was increasingly drawn into question as forestry developed. Already, by the Middle Ages, Sweden was a major exporter to Europe of wood and wood products, such as beams and sawn wood, potash and tar (many European sailing ships were caulked with 'Stockholm tar'). But it was not until the middle of the 19th century that the forest industry really took off and established itself as the basis of the modern Swedish economy. As the value of standing forests increased, so that of slash-and-burn declined. Swidden agriculture came to be seen as a misuse of valuable land, and the small crofter was branded as the agent of its destruction. Slash-and-burn was increasingly restricted to areas of younger bush vegetation, of limited economic value.

Variations in Method

Technically, Nordic slash-and-burn methods varied according to the locality, the length of fallow, and the categories of farmer involved. Small crofters in southern Sweden operated a system of shifting agriculture, with a 20-30 year rotation, whereas the Finns exploiting the virgin conifer forests of the *taiga* in central or northern Sweden practised a frontier-type slash-and-burn system, and were unlikely ever to return to the same plot again.

Most slash-and-burn operated on a 3-4 year cycle of continuous use. The most profitable stage was the initial one, particularly when dense spruce trees were cleared from good soils for the very first time. The harvest at this stage was usually double that on the more depleted land, if not more. “My best rye and potatoes come from the forest”, the ‘smallander’ would say.

Felling was carried out in the spring or early summer, often when the ground was still covered with hard, compacted snow. The felled area was left to dry for at least a year, though two years was preferable. The size of the burn varied, from a quarter hectare to 2-3 hectares or more. The burn generally took place just before midsummer, though the exact timing depended on weather conditions. The farmer’s ideal was to burn at the end of a good dry period, just before a short period of rain, and then to sow the seed into the still warm but damp ash.

To control the spread of fire, the burn was started around the edges of the field, and then moved inward towards the centre. Sowing was carried out on the day after the burn, usually with hardy varieties of rye. In southern Sweden, an early burn might be followed by a quick summer-to-autumn rotation of turnips or potatoes, followed by a direct seeding of winter rye (or occasionally barley or oats) to be harvested the following autumn. This rye was reputed to reach twice the height of the crop in the farmers’ long established fields. There was, however, a major risk of frost damage to the winter cereals, which also had to be protected from grazing cattle by rough fencing constructed from the abundant burnt debris. Because of the speed of invasion of weeds and grass, the newly cleared field could normally be used for only one harvest of rye. The abandoned field offered good grazing for the crofter’s cattle, however, and mixed farming was thus an essential element in the farm economy.

The decline of the swidden system was marked by growing conflict between the crofters and other claimants to the land. Gradually the crofters lost out to the timber industry, which was able to use the Nordic forests in more productive ways. By the end of the 19th century, the system of slash-and-burn was almost at an end. Landowners now supported the movement for improved forestry, and swidden agriculture and the use of fire in the farm cycle soon passed into history. The last recorded use of slash-and-burn methods by a Swedish crofter was in 1937. Nowadays, slash-and-burn is an almost forgotten art.