



SWIDDEN CULTIVATION IN THE SHADOW OF THE ARCTIC CIRCLE

*Donald R. Floyd**

Currently the practice of slash and burn or swidden cultivation is confined almost exclusively to the Tropics. Such a relatively limited geographic spread has, however, by no means always been characteristic of this style of agriculture. At various times and places it has been utilized in countless instances outside the Tropics. Up until the early decades of the present century, a variety of swidden farming could still be encountered in parts of northern Sweden, while in northern Finland an occasional swidden plot was being planted as late as the mid 1950's.

Just how far back in time swidden techniques were first employed in Scandinavia is open to some question. It has been suggested that swidden practices were brought to Scandinavia by its earliest inhabitants.¹ While that is surely an overstatement, it does seem fairly clear that by 1900 swidden agriculture had been present in the North for at least four millenia. Pollen analysis of peat bogs, for example, indicates that swidden farming techniques were probably being utilized in parts of what is now Denmark as well as in the southern reaches of contemporary Norway and Sweden at least as early as 2500 B.C.²

Linguistic evidence, too, supports the notion of a lengthy, northland history for swidden farming. In Sweden alone scores

**Dr. Floyd is Professor of Geography at California Polytechnic State University, San Luis Obispo.*

of present-day place names reflect a former link to swidden farming. Much more significant, though, is the fact that all of the modern Scandinavian languages contain a variety of native words and terms to denote swidden agriculture. Apart from *svedjebrug*, *sve* or *svia*, and *svedjebruk* which are the usual Danish, Norwegian, and Swedish designation for swidden farming, it is not unusual to encounter an array of more specialized terms which denote various stages of the swidden cycle. In Varend during the 1850's, for example, a stand of forest slated for cutting and burning was termed a *dunge* or *falle-dunge*. Once trees had been felled, the resulting clearing was designated a *falla*, *rodja*, or *falle-rodja*. After a clearing had been burned the terms *brane*, *brana*, *svedja*, *svedje-falla*, *smet*, *smet-falla*, or *smet-svedja* were applicable. When planted and fenced a plot was referred to as a *lycka*, *smet-lycka*, or *svedje-lycka*. To rekindle a plot which had already produced a crop was to *bara bal*, *branna bal*, or *bal-branna*. An open field which resulted from repetitive burnings was known as a *ryd*; and when the soil in such a field became so impoverished that it bore only heather and moss, it was known as a *ljung-ryd*.³ At least one additional possibility is suggested by linguistic material. Specifically, one cannot but wonder whether swidden farming may have been introduced or, more likely, reintroduced in northern England by Scandinavians; for the term "swidden" itself apparently entered the English language as an anglicized version of *svithinn*, the past participle of the Old Norse verb *svitha*, which means to clear by burning.

Whether or not swidden farming techniques were at any time exported from Scandinavia, for several hundred years they did constitute an important component of farm technology, especially in Sweden's relatively sparsely populated northern reaches. During the first half of the eighteenth century it was recorded, for example, that around Asen in Dalarna swidden lay beside swidden in the forests nearest the village on both the east and west side of the Dal River, while from Lima and Sollero in the same province came the observation that whole

mountainsides by the villages and the summer dairies had been systematically burned off for swiddens.⁴ It might here be emphasized that, for at least the last four hundred years of its life-span, swidden cultivation in Sweden was almost invariably practiced not by people who shifted their abodes through the forest along with their fields, but rather by permanently-settled villagers who utilized this technique to expand their very limited economic horizons.

The meager economic prospects of pre-twentieth century Swedish farmers had direct environmental links. In most parts of Sweden, but especially in the north, a principal after effect of Pleistocene glaciation was a marked shortage of sedimentary soil suitable for agriculture. Actually, arable land was in such short supply that in order to survive farmers were forced to rely heavily upon a combination of crops and animal products. During summer months natural browse in forests, around marshes, and on bogs made animal maintenance relatively easy. Winter maintenance, on the other hand, was a constant and considerable problem; for the inadequate soil base made it extremely difficult, indeed, in the majority of instances all but impossible, to grow enough food *and* fodder to support the existing population of humans and animals through the long, northern winter.

The constancy as well as the severity of the food/fodder problem faced by farmers can hardly be overstressed. The rural people of Varmland, by no means the most hard pressed in Sweden, were so often faced with some degree of grain shortfall that they devised at least a dozen varieties of so-called famine bread (*nodbrod*). To stretch a typically inadequate flour supply through the winter, straw, chaff, moss, sallow leaves, linseed hulls, tree bark, bone, unthreshed grain spikes, or any of several grass varieties could be ground and blended with flour to make bread. Commonly, as much as 50 percent, or even more, of the total content of a loaf might consist of some type of filler material.⁵ That winter food for farm animals was normally as scarce as that for humans can be partially

demonstrated by pointing out that forest-region farmers, in the mere hope of acquiring sufficient winter fodder, regularly stripped the leaves from deciduous trees and cropped vegetation from every bog and marsh fringe within reasonable distance of farm or village. "Reasonable distance," by the way, could sometimes involve a stretch of fifty to sixty miles.

In this economy of semi-perpetual need, swidden plots played a useful even if somewhat controversial role. There is scant indication that government took any kind of stand on swidden cultivation until post-Viking times. From the eleventh or twelfth century until the present, though, virtually every government assumed a stance on swidden farming. Occasionally this stance was supportive. More often it involved mild, modest, or even severe restrictions, including heavy fines for violators of official policy. By the end of the second decade of the present century, government's full recognition that timber constituted an increasingly valuable and far from inexhaustible national resource, had led to an outright ban on all swidden farming techniques.⁶ Whatever the official government stance, however, right up to the early years of this century most forest-region farmers continued to view swidden plots as an absolutely essential element in their economy. Plots were deemed valuable because they could be utilized to ease the all too frequent grain short-falls, to expand fodder production and increase the extent of pasturage, and, in some instances, to increase the extent of arable land. In actual farm practice swidden plots normally occupied a niche between permanently tilled fields and permanent summer dairies (*fabodar*); and the manner in which they filled this niche, as well their relation to the overall economic system, at this point might well be enhanced by an overview of a typical swidden cycle. The cycle described will be based primarily upon the form of swidden farming practiced in Dalarna during the early nineteenth century. Techniques employed there are thought to be markedly similar to those of earlier times, but some variation of technique did occur in different parts of the country.

The northern swidden cycle involved essentially the same steps encountered in present-day tropical cycles. Accordingly, site selection, clearing, burning, planting, and harvesting were as significant in the North as they still are in the Tropics. In Dalarna, as throughout Sweden, swidden cultivation was largely confined to shallow, rocky, moranic soils that were covered by predominantly coniferous vegetation. Within this particular milieu, the location of swidden plots was linked to considerations of both site and situation. Ideally, a potential site should be covered with a dense, brushy, moderate-sized stand of mixed forest. The presence of some deciduous trees on a site was considered a sign of suitable soil. Further, a good site would be relatively stone free and would lie on a south-facing slope where snow melted early and there was adequate drainage. Marshy or low-lying sites, which were difficult to dry and burn, seldom were selected; for a poor burn meant a poor yield. Too, frost risk was somewhat less on high or sloping ground.⁷ Normally, only when a potentially suitable site was situated in reasonable proximity to water as well as an individual farm, a village, or a summer dairy, would a swidden plot be cleared and planted. Preferably, plots would be cleared within a few miles of a given farmstead, village, or dairy, though in some instances farmers did clear plots at distances as great as sixty miles.

Sites selected for swidden plots were sometimes cleared as early as April or May. In most instances, though, clearing occurred in June, during the two or three weeks prior to midsummer. Depending upon plot size anywhere from one to a dozen or more workers might take part in the actual process of clearing a swidden. Working in a line from one side of the plot, woodcutters felled trees one over another in the same direction so that the whole area would be covered with a fairly even layer of vegetation. Around a plot rim trees were felled inwards to make a fire break. Frequently, trees were left just as they fell; occasionally, branches, especially from larger trees, might be removed and spread about to make a more even layer

of vegetation. Regardless of plot size, axes and, in some cases, the *kassara*, a special knife for branch removal, were the only tools used. Upon completion of clearing, vegetation on the plot normally was allowed to dry for at least a full year and not uncommonly for two years; for it was widely held that results would be better if vegetation had actually begun to decay a bit before burning.⁸

Most swiddens were burned in the two or three weeks following midsummer. This relatively narrow time span resulted primarily from the circumstance that throughout Sweden this tends to be the driest period of summer, but it had the additional advantage of allowing labor on swidden plots to be expended at a time of otherwise light work loads prior to the onset of harvest from permanent fields. According to Bannbers the firing of a swidden plot could be a most noteworthy spectacle.⁹ In virtually all instances, however, such firings were very carefully planned and executed events. Preferably, burns were conducted on windless, sunny days. Alternatively, a plot might be lit late in the evening or even after sundown, for generally there was less wind at those times than during daylight hours. Before any fire was lit several safety precautions were observed. The fire break around the plot was cleared of debris; in some instances it might even be widened on the side toward which the wind blew; the fire break itself was thoroughly wetted down; and extra buckets of water were placed at various points around the plot.¹⁰

In addition to these logical precautions, folk literature indicates that considerable reliance might be accorded to custom or procedure that would supposedly hinder the spread of fire. The following examples, from the provinces of Ostergotland and Smaland, serve not only to illustrate the point, but also to confirm the use of swidden techniques in Sweden's southern forest regions:

- (1) In Godegard *askvigg* or *govigg* was the usual name for stone axes.* I believe they were called *goviggs* most of the time. They were hurled to

earth by Goen (Thor), according to the oldsters. From what I heard the oldsters had—perhaps not the most elderly of my time, but in any case their parents—worshipped *goviggs* as some sort of divinity, and I heard that Thor was named in connection with the *viggs*...everyone who had *goviggs* was so careful with them that they kept them locked up in cupboards. When a forest clearing was to be burned, someone first walked around the clearing with a *vigg* for safety's sake. At least that is the way it was done in Godegard and in neighboring parishes of both Narke and Ostergotland. I myself participated only once in the burning of a forest clearing. I was only a boy then, and my job was to watch the fire. I had no *govigge* for assistance; instead we had to rely on ourselves. They probably had to do that anyway, even on those occasions when they walked around clearings with their *goviggs*. I believe that in my grandparents time hardly anyone around dared to light a clearing without taking Goen (a lightning wedge) along to help guard the fire (that is, keep it from spreading). But then who knows how it was on the occasion that I participated. There were many [there] who believed in superstition, but they would only practice it on the sly.¹¹

**Torsvigg*, *govigg*, and *askvigg* are all terms used by the folk to refer to old stone weapons, that is, to stone axe heads, flint axe heads, flint chisels, and the like. According to folk belief every time lightning struck it hurled such an axe head down to earth, where it penetrated to a depth of seven arm spans (approximately forty-two feet). Thereafter the *vigg* was assumed to slowly work its way back to the surface. The rate of resurfacing for *viggs* ranged from one arm span per year to one arm span per decade. Anyone who managed to locate a *vigg* when it surfaced was thought to possess an object of great magical power. *Viggs* could only be acquired after they had surfaced. Those who sought to dig up a *vigg* at the point of a lightning strike never succeeded, for the *vigg* would sink into the earth to a depth equal to each spade of earth removed.

- (2) In Godegard it looks different than it did in my childhood during the late 1850's and early 1860's. It was common practice then for people to burn the forest and sow rye in the ashes, [or] sometimes grass seed if it was better suited. The rye which grew on the burnt lands, the clearing rye, was really first rate, with big kernels in large spikes. It sometimes happened that the fire could spread beyond the clearing and go into the forest. But most people were in the habit of walking around a clearing with a lightning wedge before lighting a fire. Further than [where] the lightning wedge [had been] the heat would not go. If there was someone who had been born with a caul, people used to lead him or her around the clearing, and a better way to arrest the heat did not exist. I never participated in burning a clearing, but I heard how it was done many times. On several occasions I did see how people walked around [a clearing] with a lightning wedge, and one time I witnessed the very best medium for preventing forest fire. There was no adult in the district who'd been born with a caul. But a woman had recently given birth to a child with a caul. It wasn't feasible to take the child to the clearing; so instead they forced the caul over the mother's head and led her around the clearing; and it didn't prove a failure, for where she walked, the heat stopped. It was exactly like clipping off a thread.¹²

Accounts such as these which tell of the efficacy of *askviggs* and cauls in limiting the spread of fires are not at all uncommon in the folk literature of Sweden; and while there is no particular reason to doubt that many informants did indeed see fires stop along the margins or routes traversed by persons who carried a *vigg*, a caul, a horseshoe, or some other object,¹³ large numbers of informants failed to mention a rather significant aspect of preparing a forest field for burning:

- (3) In order to avoid forest fires when swidden land is burned, the circumference of [the swidden] should first be cleared and cleaned, after which one should drag a Thor wedge on the ground around the margin of the clearing and every twentieth step strew a little crushed charcoal from a lightning fire, over which no forest fire can make its way.¹⁴

This brief notation to the effect that the margin of a swidden should be "cleared and cleaned" dates from the early 1800's, and without doubt it was the general observance of this advice which lent credence to folk belief in the power of lightning wedges, cauls, and their ilk to limit the spread of swidden fires.

Once precaution and custom had been given their due, workers stationed themselves at strategic points around the plot; and fire was set at the point where risk of spread beyond the clearing seemed greatest. Then, workers all around the plot extended the fire so that it burned inward from plot margins turning most vegetation into ash. When the fire burned down, so-called *smetved*, i.e., any material which had not burned completely, was sometimes gathered and rendered to ash at a second burning. Alternatively, charred trunks and branches might be used either to fence a plot or to build a rack upon which to dry plot crops. When not utilized for one of these purposes, such wood might be taken home and used for firewood. On occasion, especially in the mining districts, it would be made into charcoal which, until replaced by coal in the early 1800's, served as the principal energy source for iron-making and smelting.¹⁶

Planting of swiddens often took place within less than twenty-four hours following a burn. It was, in fact, not uncommon for a field to be seeded even before its ash layer had fully cooled. Here and there the surface of a newly burned plot might be partially worked with a snaggle-ended stick called a *kratta*. Rarely, it might even be lightly plowed with a forked stick or primitive wooden plow. Much more frequently, though, the moranic soil of swidden plots was too shallow and

too stony to work or plow, and planting proceeded with no soil preparation whatsoever. It was in the unworked fields that farmers felt compelled to plant as quickly as possible; for if rain fell before seeding, a crust formed on the ash. When this happened it meant extra work, as the crust then had to be pulverized before seeding.¹⁷

In marked contrast to tropical swiddens, which often contain a dozen or more different crops all growing at the same time, northland swiddens were often seeded with but a single crop. During the eighteenth and nineteenth centuries, rye was by far the most common swidden product. Hay and turnips, too, were frequently planted, while barley, oats, flax, and potatoes occurred more sporadically. The rye produced in swiddens was not ordinary field rye, but rather a special variety known variously as Finn, winter, or swidden rye. It grew in tufts, was especially well-suited to rooting in unworked soil, and generally produced an abundant yield of high-quality grain.¹⁸ In the fall it was not uncommon for farmers to allow some of their animals to graze briefly on the by then well-established green rye. This not only provided an extra bit of forage for livestock, but also served to thin out the rye and thereby minimize the possibility that snow mold might cause it to rot in the following spring.¹⁹ Swidden turnips, which were grown mainly for human consumption, are sometimes described as being uncommonly large and sweet,²⁰ elsewhere as small, round, bluish, hard-skinned, and sweet-tasting.²¹ Though an entire field might be set in turnips, more often they occupied only a small portion of a field sown with rye or hay.²² Especially on those swiddens situated near summer dairies, hay might be the only crop sown.²³ More commonly, hay or grass was sown on swiddens only after an initial harvest of rye and/or turnips.

Again, in marked contrast to tropical swiddens, where harvest activity may occur over a period of months, the actual harvest of northland swiddens was usually completed within a few days. Typically, late in the summer of the year after planting, rye would be cut before it had become too ripe; and it was

then either hung on racks or laid in shocks for a period of three to four weeks to ripen thoroughly. To protect fully ripened grain from being damaged by weather and forest animals, a temporary structure, called a *lotak*, might be erected to house shocks until winter, when they would be loaded on sleds and driven home for threshing.²⁴ Alternatively, only a wooden floor might be laid, upon which grain shocks could be stacked and then covered with straw or some other material until winter snows made it possible to sledge the harvest home.²⁵ Similar procedures were followed in reaping hay, oats, and barley. However, because the rough and stony surface of swidden plots made the use of scythes impractical, the only tool used in harvesting grain or hay was a hand-held sickle.

Once a swidden had produced its initial crop, usually grain, it might continue to be utilized in some fashion over a ten- to twenty-year period. Seldom was a plot simply abandoned after only one, two, or three years. In rare instances an especially well-situated swidden on better than average soil might gradually be cleared of stones and stumps and turned into a permanent field. Normally, a different course was followed, and a second or even a third grain crop might be sown. Where this was not done, a first harvest of grain might be followed by seeding with grass or hay. Often no seeding at all occurred.²⁶ Yet seeded or unseeded, a plot usually remained fenced for an additional two or three years, during which time any forage it produced was harvested for winter fodder. Custom decreed that after three years, swidden fences should be removed in order that livestock might graze on the grass and other herbaceous vegetation growing on the cleared land. Through the years, of course, both grass and herbaceous vegetation would gradually give way to forest, first deciduous birch and alder, and eventually a blend of deciduous and coniferous. While deciduous trees were dominant, the former plot still yielded winter fodder in the form of an annual "leaf harvest"; and once the pines and spruce had again become fully established, the swidden cycle could be commenced anew.

Conclusions

In retrospect it does seem that swidden plots partially fulfilled the principal functions which prompted forest-region farmers to clear and plant them. Sown with rye or barley they helped to ease, though not eliminate, persistent grain shortfalls; and whether cropped for hay or utilized for grazing, they eased, but did not eliminate, the problem of winter fodder shortage. Though in recent centuries swidden farming led to only a miniscule increment in permanently tilled fields, prior to 1600 it played a somewhat larger role in this respect, most notably in conjunction with the advance of settlement into frontier areas.

Swidden agriculture died out in Sweden not because the government finally outlawed it shortly after World War I, but rather because the social and economic environments that had once made it a virtual necessity had been dramatically transformed. During the first two decades of the present century the introduction of new forage crops, the widespread expansion of cooperative creameries, and an improved system of transportation combined to render obsolete the age-old summer dairy and subsistence agricultural system. This, in combination with a series of industrial sector changes which commenced in the 1850's when the steam saw was introduced into Scandinavia, helped to usher in an era in which Sweden's forest resources have been utilized primarily for timber and pulp, rather than as fertilizer for catch crops of rye and hay.

NOTES

1. Gunnar Olof Hylten-Cavallius, *Warend och Wirdarne: ett forsok i Svensk Ethnologi* (Stockholm: P.A. Norstedt & soner, 1864-1869), p. 102.
2. Jorgen Bukdahl, *et al* (eds.), *Scandinavia Past and Present* (Odense: Andelsbogtrykkeriet, 1959), Vol. I, p. 41.
3. Hylten-Cavallius, *op. cit.*, p. 102.
4. Lars Levander, *Ovre Dalarnes bondekultur under 1800-*

- talets forra halft* (Stockholm: Skrifter utgivna av Kungl. Gustav Adolfs Akademien för folklivsforskningen, 1943), Vol. I. p. 333.
5. Bertil Boethius, *Ur de stora skogarnas historia* (Stockholm: Albert Bonniers forlag, 1917), p. 67.
 6. Sigvard Montelius, "The Burning of Forest Land for Cultivation of Crops: 'Svedjebruk' in Central Sweden." *Geografiska Annaler*, XXXV (1953), pp. 44-77.
 7. Ola Bannbers, "Skogen brukas: svedjebruksbilder från västerdalarna," *Svenska kulturbilder*, I (1934), pp. 65-66; Levander op. cit., pp. 335-336; Montelius, op. cit., pp. 41-42.
 8. Bannbers, op. cit., pp. 66-67; Levander, op. cit., pp. 366-368; Montelius, op. cit., p. 42.
 9. Bannbers, op. cit., p. 68.
 10. Bannbers, op. cit., pp. 68-69; Levander, op. cit., pp. 338-339.
 11. Donald R. Floyd, *Attitudes toward Nature in Swedish Folklore* (Mountain View, Calif.: The Gibson Press, 1976), pp. 181-182.
 12. *Ibid.*, pp. 182-183.
 13. Arvid Ernvik, *Folkminnen från Glaskogen: sagen, tro och sed i västvarmlandska skogsbygder* (Uppsala: Skrifter utgivna genom landsmåls och folkminnesarkivet i Uppsala, Series B:12, 1966), pp. 114-115.
 14. Floyd, op. cit., p. 183.
 15. A.T. Byberg, "Varmlandskt svedjebruk vid tiden omkring 1860," *Fataburen* (1928), p. 165; Levander, op. cit., p. 339.
 16. Carl-Herman Tillhagen, *Järnet och människorna* (Stockholm: LTs forlag, 1981), pp. 15-57, but especially pp. 49-51.
 17. Bannbers, op. cit., p. 71.
 18. Bannbers, op. cit., p. 71; Byberg, op. cit., pp. 165-168; Levander, op. cit., p. 341; Montelius, op. cit., p. 43.
 19. Levander, op. cit., p. 341.

20. Carl von Linne, *Skanska resa* (Stockholm: Natur och kultur, 1963), p. 385.
21. Eric Modin, *Gamla Tasjo* (Tandsbyn: Tandsbyns tryckeri AB, 1961), pp. 185-189; Levander, op. cit., p. 347.
22. Modin, op. cit., p. 188.
23. Yngve Nilsson, *Bygd och naringsliv i norra Varmland: en kulturgeografiska studie* (Lund: Meddelanden fran Lund universitets geografiska institution, avhandlingar, XVIII, 1950), pp. 108-110.
24. Bannbers, op. cit., pp. 81-85.
25. Byberg, op. cit., pp. 171-174.
26. Ibid., p. 174.