

Chapter 2

AGRICULTURE IN THE NAPA MARSH AND ITS IMPACT ON THE NORTH BAY ECONOMY

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Introduction

Approximately one half of the Napa Marsh, once one of the largest wetland systems in the San Francisco Bay Area, is now in agricultural production (see Figures 1 and 2). Oat hay and its fermented derivative, oat silage, are the major products and are purchased by local dairies and ranches as a partial substitute for the more expensive alfalfa hay that cannot be grown locally (Goldman, 1977). These agricultural lands act as a buffer zone between residential, commercial, and industrial lands in Sonoma Valley and along

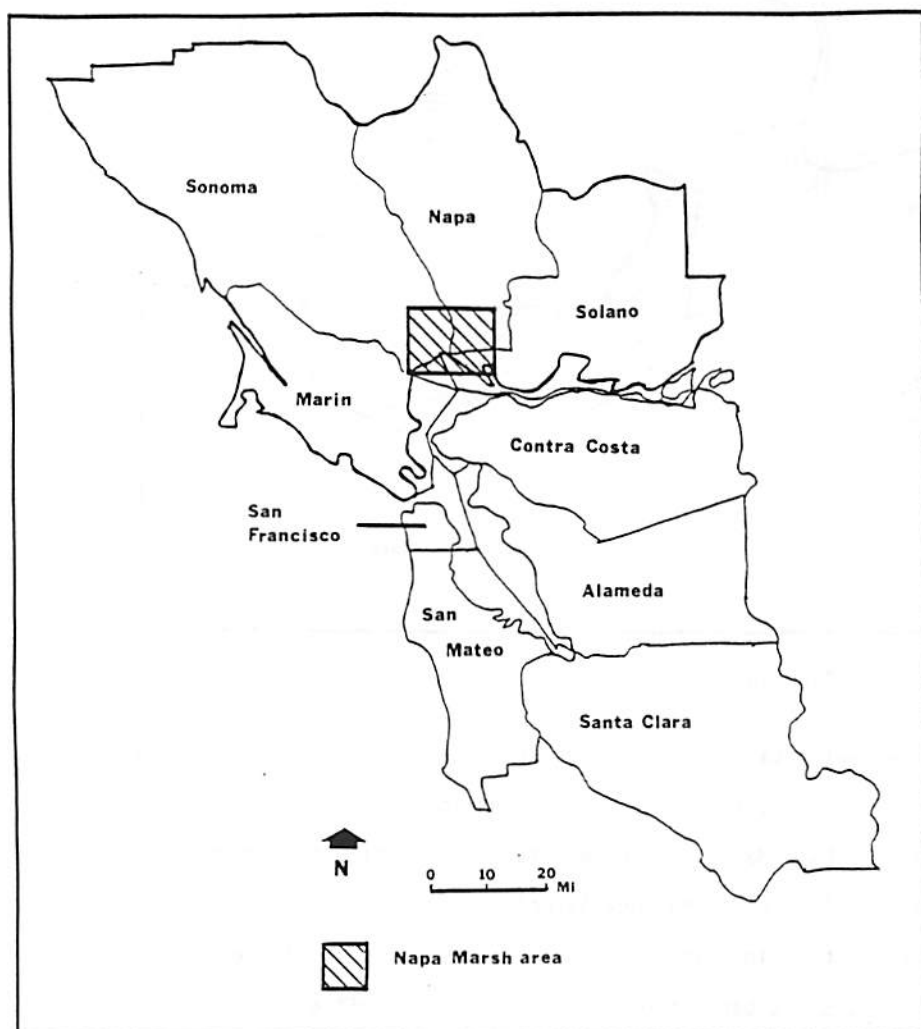


Figure 1. San Francisco Bay Area (based on ABAG, 1978).

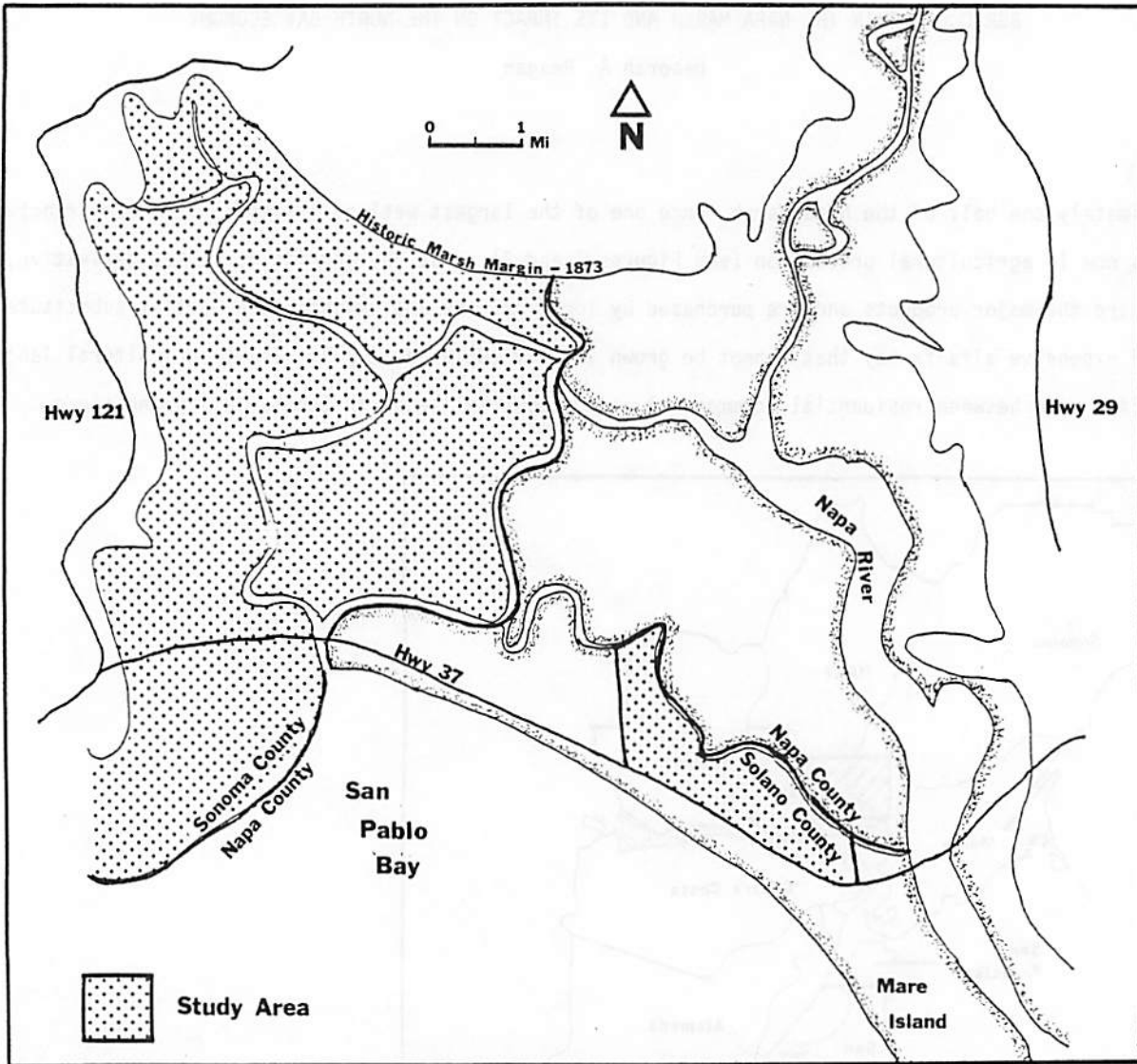


Figure 2. Napa Marsh (based on Madrone Associates, 1977).

the Napa River and the less-developed wetlands and sloughs bordering San Pablo Bay (Madrone Associates, 1977). In addition, these lands provide habitat for a variety of resident birds, rodents and reptiles. Some tracts of agricultural land in the Napa Marsh are subject to seasonal flooding and provide a temporary habitat for migratory waterfowl as well (Madrone Associates, 1977).

Within the last 20 years there has been increasing pressure to develop some of these agricultural lands for residential and commercial uses. Urbanization pressures are greatest around the margins of the marsh because of their proximity to transportation routes and urban centers. Most of the diked agricultural land, 18,711 acres, lies in Sonoma County, but one important 1600-acre agricultural tract remains in Solano County (BCDC, 1983).

Historically, management decisions for wetlands have been made on the basis of what is most profitable for the owner (Batie and Shabman, 1982). Agricultural land in the Napa Marsh is appraised at approximately \$600 per acre, but it sells for as high as \$3,000 to \$4,000 per acre for development purposes (Joan Vilms, pers. comm., 1985). These extremely inflated property values can be a problem for farmers in the marsh because most of them lease their land from absentee landlords who often have little incentive to keep the land in agricultural production when offered such large sums (Madrone Associates, 1977).

An important issue that is often overlooked in arguments concerning conversion of agricultural lands is the extent of contribution of the agricultural products to the local economy. The link between hay producers in the Napa Marsh and consumers in the surrounding area is well known qualitatively (BCDC, 1982; Goldman, 1977; Madrone Associates, 1977). What is not well-documented is the quantitative value of the agricultural products of the Napa Marsh to the consumers and dependent industries of the North Bay. For this study, the North Bay is defined as an area encompassing Marin, Napa, Solano and Sonoma counties (see Figure 1).

This study attempts to trace the flow of agricultural products from the Napa Marsh and to assess their impact on the North Bay economy. It focuses on the oat hay and silage produced in two areas of the marsh that are under pressure for further development (see Figure 2). The first site is Cullinan Ranch in Solano County, lying north of Highway 37 and west of Mare Island; a residential project has been proposed for this site. The second area is the diked land in Sonoma County lying north of Highway 37 and east of Highway 121. This area is coming under increasing pressure for "parcelization," a process in which large tracts of rural land are subdivided into smaller parcels that are primarily used for rural estates or "ranchettes."

Past Studies

Only one study has been done that specifically focuses on the Napa Marsh. Madrone Associates (1977) includes a section on natural resources and land use and one on conflicts between those who value the marsh as a wetland and those who see the marsh as potential site for development. Goldman (1977) is a general input-output analysis of the Sonoma County economy with a valuable section on hayfarming. The format of the questionnaires used in the present report are based upon the ones found in Goldman (1977). Other studies provide useful background material. San Francisco Bay Conservation and Development Commission (1982a, 1982b and 1983) contain figures and maps of the amount and location of diked baylands around San Francisco Bay. Goldman and Strong (1983) has an excellent discussion of alternative land management techniques that are designed to encourage continued use of Sonoma County land for agriculture. Finally, a valuable general report on the need for agricultural conservation in the Bay Area is People for Open Space (1980).

Methodology

The data in this study come from questionnaires sent to farmers owning or leasing land in the two study areas. The farmers were initially contacted by telephone; an attempt was made to contact all of the known farmers in the study area. The data from the questionnaires were pooled and used to answer the following questions for 1984 and 1985:

- What fraction of the agricultural land in the Napa Marsh was surveyed?
- What percentage of the surveyed land was leased?
- How many acres were devoted to oat hay production?
- What was the size of the harvest?
- How many acres were devoted to the production of oat silage? What was the size of the harvest?
- How many acres were devoted to the production of other crops?
- How many tons of oat hay were sold within the North Bay? Outside the North Bay? Not sold?
- How many tons of silage were sold within the North Bay? Outside the North Bay? Not sold?
- To whom were the oat hay and silage sold?

The answers to these questions were then extrapolated to all of the agricultural land in the Napa Marsh to estimate the contribution of the Napa Marsh agricultural products to the North Bay. Information on the price of oat hay was used to estimate the amount of income that it generates. The prices of silage and alfalfa were used to estimate the substitution value of silage for alfalfa as a dairy feed.

Results

There was not a large variation between the results for 1984 and 1985. Seven farms provided data for 1985. Six of these seven farms also included data for 1984. Comparison of the total acreage surveyed for each year with a California Department of Fish and Game estimate of 20,881 total acres of agricultural land in the Napa Marsh (Madrone Associates, 1977), indicates that approximately 50 percent of the agricultural land in the Napa Marsh was surveyed in both years.

Table 1 illustrates the different uses of the surveyed land as well as the total number of acres surveyed. The most prevalent use for both years was the production of oat hay. Other uses of the surveyed land shifted in their relative importance between 1984 and 1985.

	Total Number Acres Surveyed	Oat Hay		Silage		Other Crops		Fallow	
		Number Acres	Percent Acreage	# Acres	%	# Acres	%	# Acres	%
1984	10,310	8,750	85	400	4	564	5	596	5.5
1985	10,770	8,460	78.5	1,030	9.5	685	6.5	596	5.5

Table 1. Crop Acreage.

Table 2 presents data on the amount of oat hay and silage produced in 1984 and 1985 along with the average price received per ton for these products. Table 2 also breaks down the acreage devoted to oat hay and silage production into the number of acres owned and the number of acres leased. Acres listed as fallow by the farmers were not included in the calculations. Oat hay and silage were not the only agricultural products coming from the marsh; other crops such as wheat, sorghum and grapes are grown there as well. However, these crops were not quantitatively investigated in this study.

		Number Acres		Percent Acreage		Size of Harvest (tons)	Price Rec'd (per ton)	Tons Acre
		owned	leased	owned	leased			
1984	oat hay	1,400	7,350	16	84	18,875	\$55	2.2
	silage	400	-	100	-	4,200	\$15	10.5
1985	oat hay	810	7,650	10	90	18,730	\$55	2.2
	silage	500	530	49	51	13,000	\$15	12.6

Table 2. Oat hay and silage production.

Table 3 details the distribution of oat hay and silage among various groups in the North Bay. All of the figures represent direct purchases from the farmer. Dairies and wholesale brokers are the two groups that make the largest direct purchases from haygrowers in the Napa Marsh. Cattle ranches and horse ranches also buy significant amounts of oat hay directly from haygrowers. Feed stores, primarily retail outlets that do not sell in bulk quantities, do not buy as much oat hay from hay growers. Instead they buy a large amount of their oat hay from the brokers. Over 99 percent of the oat hay was either sold to consumers in the North Bay or used on-farm in 1984. In 1985, this figure increased to 100 percent. All of the silage from both 1984 and 1985 was used within the North Bay.

		Dairies'		Cattle Ranches		Horse Ranches		Feed Stores		Brokers		Not Sold	
		Number Tons Purchased	Percent Total Production	# Tons	%	# Tons	%	# Tons	%	# Tons	%	# Tons	%
1984	oat hay	6,780	36	1,605	8	1,750	9	1,000	5	5,565	30	2,175	12
	silage	4,200	100	-	-	-	-	-	-	-	-	-	-
1985	oat hay	6,360	34	1,045	6	1,542	8	510	3	7,038	37	2,235	12
	silage	8,791	68	-	-	-	-	-	-	-	-	4,209	32

Table 3. Purchases of oat hay and silage by consumer group.

Multiplying the number of tons of oat hay actually sold by the price received per ton gives the amount of income generated by oat hay sales for a particular year. Thus, \$918,500 of income was generated in 1984 and approximately \$907,200 of income was generated in 1985. These figures do not include transportation costs that are around \$10 to \$12 per ton.

Extrapolation of the data to the entire Napa Marsh requires the multiplication of the above numbers by a factor of 2 because, as stated earlier, approximately one half of the Napa Marsh agricultural land was surveyed in each year. Performing this extrapolation results in approximately \$1,840,000 and \$1,810,000 of income generated in 1984 and 1985, respectively.

It is more difficult to extrapolate the amount of income that oat silage generates directly because much of it never leaves the farm. However, its value as a substitute feed for alfalfa is important to the dairy industry and is somewhat easier to estimate. Based on informal conversations with several dairymen, it was determined that the amount of alfalfa feed a lactating cow requires varies but is approximately 6 to 7 tons per year. Alfalfa prices fluctuate throughout the year; the quoted price in February 1986 was \$140 per ton, cubed and delivered to Sonoma County (California Alfalfa Cube Co., 1986). In comparison, the oat silage sold for about \$15 per ton (plus transportation costs), and it can substitute for up to 70 percent of the alfalfa needs of a dairy cow.

Discussion

One of the most unexpected results of this study is the discovery that all of the oat hay and silage produced in the surveyed area was either sold or used within the North Bay. Aside from the reduction in transportation costs associated with purchasing locally-grown hay, the money spent on local hay remains in the North Bay longer than if it were spent on imported hay.

The fact that the agricultural products from the Napa Marsh are also being used within the North Bay tends to reinforce the links between the industries and consumer groups indicated in Figure 3.

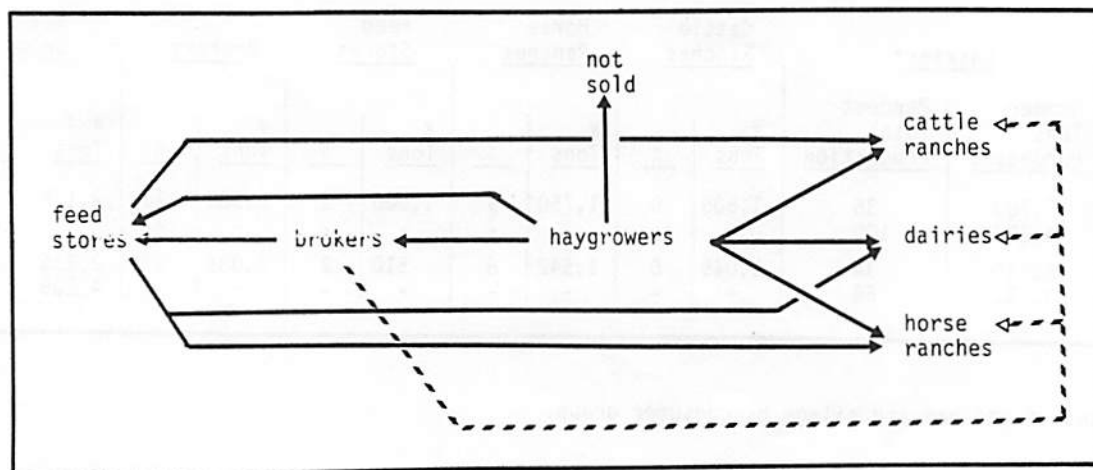


Figure 3. Flow of Hay from Producer to Consumer.

Conversations with various feed stores and brokers indicate that brokers sell at both the wholesale and retail level. Brokers buy Napa Marsh oat hay from both farmers and other brokers. They then sell this hay to feed stores as well as selling some hay directly to consumers such as dairies, cattle ranches and horse ranches. The ratio of feed store sales to consumer-direct sales for a broker varied widely and depended upon the company contacted.

Another surprising statistic is the amount of oat hay and silage that never leaves the farm. Several of the farmers surveyed are also dairymen and their primary purpose in farming is to provide feed for their herds. The figures in the last column of Table 3 reflect this use of oat hay and silage. This dichotomy between haygrowers and dairymen/haygrowers is important. A haygrower's primary purpose in producing oat hay is to sell it and make a profit. A dairyman/haygrower's primary purpose in growing oat hay is to provide feed for his herd. Since oat hay has little nutritional value for a lactating cow, a dairyman/haygrower usually ensiles as much of his crop as possible.

Thus, the silage statistics are especially important because of silage's value as a substitute for alfalfa. Since silage costs so much less than alfalfa hay, one might wonder why more dairies don't use as much silage as possible. There are several reasons why silage is not a widely marketed product. The main problem is that silage is extremely difficult to move. Silage is 65 percent water (Rick Bennett, pers. comm., 1986), which makes it extremely heavy, and therefore expensive, to transport. Silage also spoils quickly once the silo is opened. Therefore, large quantities of silage cannot be economically moved and re-stored. Lack of quality control and consistency in silage production used to be a problem, but is now of lesser importance with the improvement of silo construction and ensiling techniques (Woolford, 1981).

A potentially serious threat to agriculture in the Napa Marsh is the large amount of land that is leased from absentee landlords. While much of this land is currently under Williamson Act contracts and therefore protected from further development, this does not guarantee that the land will always remain in agricultural production. A contract may be cancelled at any time, and the land can then be sold nine years later (BCDC, 1982). As the profitability of development in the Napa Marsh increases, so might the rate of cancellation of Williamson Act contracts. Subsequent conversion of the agricultural land to more intensive uses would then be probable, especially if the owner had originally purchased the land for speculative purposes.

Thus, if agricultural land in the Napa Marsh is lost to more intensive development, it is easy to see that many industries and consumer groups would be affected. The group that would be most affected, other than the haygrowers themselves, would be the dairies. Smaller dairies could be forced out of business because of the increased costs associated with importing feed to replace that which was formerly purchased locally. Since North Bay dairies provide about 50 percent of the milk and milk products consumed in the Bay Area (BCDC, 1982), the loss of some dairies and increased costs at others would almost certainly

result in higher dairy product prices throughout the Bay Area. The other groups dependent on local hay (see Figure 3) would also experience higher costs, and perhaps in some cases, bankruptcy.

A reduction in the amount of local hay and silage would mean that more money formerly spent locally would be spent outside the North Bay. One of the results would be a decrease in the amount of sales tax revenues to North Bay counties. Development proponents often argue that residential developments generate more sales tax and property tax revenues per acre than agricultural land. However, they do not mention that residential developments also have higher public service and infrastructure costs per acre than agricultural land. These public costs would be an additional burden to counties already struggling to cope with the large growth rates of the past several years.

Conclusion

It has become evident in this study that the continued conversion of diked baylands that are in agricultural use to more intensive uses will have both direct and indirect impacts upon the North Bay economy. Measures need to be taken to assure that adequate land will remain in agricultural production so that the adverse impacts discussed in the previous section can be avoided. Such measures could include stricter enforcement of existing zoning, establishing agricultural districts or "preserves," implementing an income tax credit system, or creation of a purchase of development rights program (see Goldman and Strong, 1983, for a more detailed discussion of these policies). A fiscal analysis should be done on both an intra-county and regional scale. With this additional information, a clearer "dollars and cents" argument could be made for the preservation of farmland on the diked baylands of the Napa Marsh.

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