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AMERICAN AND EUROPEAN FOULBROOD IN COLONIES OF HONEY BEES IN CONNECTICUT

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American and European Foulbrood In Colonies of Honey Bees In Connecticut

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The Office of the State Entomologist, in accordance with Section 22-89 of the General Statutes, inspects colonies of the honey bee, *Apis mellifera* L., for diseases, the most important of which are the bacterial diseases commonly known as foulbroods. Inspections have been carried out yearly since 1910. In this Bulletin the incidence of foulbrood in 1974 is compared with the incidence in previous years.

METHODS

Bacillus larvae, which causes American foulbrood, kills mature larvae and young pupae after the brood cells have been sealed. *Streptococcus pluton* which causes European foulbrood usually kills young larvae.

In 1974, 6% of the registered colonies, selected at random in each county, were examined. Infections were identified by characteristic odors and were verified microscopically. Samples of brood comb were taken to the laboratory for examination. Dead larvae were examined for spores of *B. larvae*.

During the period 1910-1973 as many colonies as possible were examined by the inspectors. All known colonies were inspected from 1941-1946 and possibly in 1949. In the other years between 1910 and 1973 the inspectors tended to inspect colonies in areas where foulbrood was known to occur. Thus the disease incidence recorded for these years is higher than the actual level throughout the state.

RESULTS

In 1974, less than 1% of the colonies examined were found infected with American foulbrood (Table 1). This incidence was similar to rates of infection

Table 1. Incidence of American Foulbrood in Connecticut, 1974

County	No. of colonies	
	Examined	Infected
Litchfield	68	0
Hartford	78	0
Windham	28	0
Tolland	27	2
Fairfield	66	0
New Haven	64	0
Middlesex	26	0
New London	66	2
Total	423	4

recorded in previous years (Table 2). Infected colonies were encountered in the 1974 random sample of hives only in Tolland and New London counties although American foulbrood occurs in all counties in Connecticut.

European foulbrood was prevalent at the time the inspection service was initiated in 1910 (Table 2). However, the disease declined rapidly until 1% or less of the inspected colonies were infected in 1921

Table 2. Incidence of American and European Foulbrood in Connecticut, 1910-1973*

Year	Apiaries			Colonies			Year	Apiaries			Colonies		
	No. inspected	% infected		No. inspected	% infected			No. inspected	% infected		No. inspected	% infected	
		EFB	AFB		EFB	AFB			EFB	AFB		EFB	AFB
1910	208	76	0	1595	50	0	1943	2635	0	7	14903	0	3
1911	162	52	0	1571	27	0	1944	2451	< 0.1	8	12360	< 0.1	3
1912	153	48	0	1431	24	0	1945	2589	< 0.1	6	13353	< 0.1	2
1913	189	44	0	1500	25	0	1946	2827	0	6	11920	0	2
1914	463	33	1	3882	14	1	1947	1925	0	6	9648	0	3
1915	494	26	1	4241	10	0.2	1948	2165	< 0.1	7	11837	0.1	2
1916	467	19	1	3898	7	0.2	1949	2423	0	8	13416	0	3
1917	473	17	0.4	4506	5	0.2	1950	2277	< 0.1	7	12899	< 0.1	2
1918	395	10	1	3047	3	0.3	1951	2632	0	4	13895	0	1
1919	723	7	3	6070	1	1	1952	2299	0.1	6	9691	< 0.1	3
1920	762	4	1	4797	2	0.3	1953	2324	0	6	11406	0	3
1921	751	4	2.5	6972	1	1	1954	2201	0	5	11605	0	2
1922	797	4	1	8007	1	0.3	1955	—	—	—	13166	—	1
1923	725	2	1	6802	0.4	0.3	1956	2316	0.1	3	9294	< 0.1	1
1924	953	2	1	8929	1	0.2	1957	2355	< 0.1	3	9253	< 0.1	1
1925	766	2	3	8257	1	0.5	1958	2218	0.1	4	9712	0.1	1
1926	814	3	2	7923	1	0.3	1959	2409	0	3	10146	0	1
1927	803	1	3	8133	0.3	1	1960	2425	< 0.1	3	9517	< 0.1	1
1928	852	1	4	8023	0.3	1	1961	1720	0	1	7013	0	0.5
1929	990	0.2	5	9559	< 0.1	1	1962	1702	0	3	7186	0	1
1930	1059	0.3	5	10335	< 0.1	1	1963	1737	0	3	7371	0	1
1931	1232	0.1	3	10678	< 0.1	1	1964	1583	0	3	7198	0	1
1932	1397	0	4	11459	0	1	1965	1700	0	3	7572	0	1
1933	1342	0	2	10927	0	0.5	1966	1690	0	3	7179	0	1
1934	1429	0.1	2	7128	< 0.1	1	1967	2073	< 0.1	3	7800	< 0.1	1
1935	1333	0	6	8855	0	2	1968	1655	0	4	6668	0	2
1936	1438	0.1	6	9278	< 0.1	2	1969	1520	0	4	7241	0	2
1937	1438	0	7	10253	0	2	1970	1396	0	3	4983	0	2
1938	1609	0	8	10705	0	2	1971	1592	0	3	6157	0	1
1939	1627	0	5	8936	0	2	1972	1301	0	3	5184	0	1
1940	1719	0	9	8552	0	4	1973	651	0.2	7	3013	< 0.1	3
1941	2222	0	8	10720	0	4							
1942	2354	0	10	13777	0	4							

*Data taken from the annual report of the Office of the State Entomologist.

and thereafter. European foulbrood was not found in the random sample of colonies.

American foulbrood was first found in Connecticut in 1914 (Table 2). Incidence of colony infection rose to 4% in the 1940s, but has fluctuated from less than 1% to 3% since then. The percentage of American foulbrood-infected apiaries reached as high as 10% in 1942, although in more recent years the incidence has averaged 4%.

Table 3 shows the average annual incidence of foulbrood in Connecticut by county from 1910-73. Incidence was highest in Fairfield County and lowest in Windham and Tolland Counties.

It is apparent that the incidence of American foulbrood has not increased in the past 30 or more years, although the disease is present in all parts of the state and is a potential hazard to beekeepers. European foulbrood is now rarely encountered in Connecticut.

Table 3. Average Annual Incidence of American Foulbrood in Connecticut Colonies of Honey Bees, 1914-1973, by County.

County	Percent infected	
	Apiaries	Colonies
Litchfield	3.9	1.4
Hartford	3.4	1.2
Windham	2.3	0.8
Tolland	2.1	1.0
Fairfield	7.3	2.3
New Haven	6.4	2.0
Middlesex	3.7	1.3
New London	6.3	1.8

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