

Disorders in Plum, Peach, and Nectarine Shipments to the New York Market, 1972-1985

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The stone fruits plum (*Prunus domestica* L.), peach (*P. persica* (L.) Batsch), and nectarine (*P. persica* (L.) Batsch var. *nectarina* (Ait.) Maxim.), typical summer commodities, are now available nearly the year around. Shipments of these fruits to the New York City market in recent years have averaged almost 60,000 t annually (15,16), with peaches being the volume leader (Table 1). Sources of peaches for the New York market are numerous, whereas California is the chief source of plums and nectarines. Chile is the main supplier of these fruits to the United States during the winter and early spring.

Stone fruits are highly perishable, and USDA inspections of their arrival condition at terminal markets frequently are requested by shippers and receivers. During 1972-1985, USDA personnel on the New York market inspected 10,006 plum, peach, and nectarine shipments containing more than 8 million packs, each with 10-17.25 kg of fruit (Table 2). While some requests for inspections were routine, most were conducted for shipments of suspect quality. Having been granted access to USDA inspection certificates by the Fresh Products Branch of the Agricultural Marketing Service, we report here on the nature and extent of disorders found in USDA inspections of plum, peach, and nectarine shipments on arrival at the New York market. This report is another in a series (1-3,6-12) providing the fresh produce industry with useful information for feasible planning to reduce losses occurring during marketing.

Plums. During 1972-1985, USDA personnel inspected 4,379 shipments containing about 49,000 t of plums (Table 2), or about 18% of the volume shipped to the New York market during that period. Eight parasitic diseases, 12 physiological disorders, and nine kinds of injuries were identified or described 8,529 times, an average of two per shipment (Table 3). Unidentified decays, soft fruit, and bruise damage were reported most frequently. One-half of the parasitic disease occurrences were unidentified because grade tolerances were met, symptoms were not fully expressed, or a disease was not recognized. Soft fruit may be caused by overripeness, internal bruising, high temperatures, delays in transit, or unfavorable growing conditions. Bruise damage is more extensive than the minor bruises recorded as grade defects.

Diseases in plum shipments from the main producing areas are listed in Table 4. Diseases were more frequent in shipments from Washington and Oregon than in those from Chile. Blue mold rot (*Penicillium* sp.) was the most common disease, whereas brown rot (*Monilinia fructicola* or *M. laxa*) was uncommon. Presumably, some blue mold rot was also reported as unidentified decays. The absence of reports of green mold or *Alternaria* rot (*Alternaria* sp.) and *Cladosporium* rot (*C. herbarum*), two common market diseases of plums and fresh prunes, may indicate that inspectors failed to recognize the early stages of these diseases and probably recorded them as unidentified decays. *Mucor* rot (*Mucor* sp.) may have been reported as *Rhizopus* rot (*R. stolonifer*) in some shipments

when fruit pulp temperatures at arrival were below 6 C. The comparatively high levels of internal breakdown in shipments from Washington, Oregon, and Idaho were mostly due to the exclusive movement of Italian prunes to the New York market. These plums are commonly affected with internal browning of the flesh radiating from the pit. This internal breakdown is often related to prolonged cold storage or adverse growing conditions, or both (13,14). Except for internal breakdown, differences among cultivars appeared to be insignificant.

Additional details on plum disorders in California shipments are given (Table 5) because that state's shipments predominated in the inspections. Soft fruit was reported most often and in all incidence classes. Unidentified decays were next in frequency, but nearly all reports were in the lowest incidence class. Blue mold rot was the most damaging of the parasitic diseases, and gray mold rot (*Botrytis cinerea*) was a distant second. Brown discoloration, generally affecting the fruit surface and sometimes involving the underlying flesh, was reported in 14% of California shipments. External discoloration, reported in 6.2%, is confined to the plum surface and may sometimes be referred to as brown discoloration. Accordingly, sunken discoloration, reported in 2.1% of shipments, refers to sunken areas with dry or spongy tissue. Insufficient information in the inspection reports precludes positive identification of the cause(s) of these disorders.

Peaches. During 1972-1985, USDA personnel inspected 2,610 shipments containing about 29,000 t of peaches, or about 8% of the volume shipped to the New York market during that period (Tables 1 and 2). Eleven parasitic diseases, 13

Table 1. Volume of plums, peaches, and nectarines shipped to the New York market, 1972-1985

Year	Number of 45,400-kg units					
	Plums		Peaches		Nectarines	
	Rail	Truck	Rail	Truck	Rail	Truck
1972	400	30	17	426	219	21
1973	459	40	8	637	223	27
1974	498	63	12	651	209	42
1975	410	131	10	670	178	82
1976	207	106	18	592	155	88
1977	234	197	5	603	171	102
1978	176	185	4	592	82	100
1979	136	260	4	676	111	136
1980	118	315	4	730	81	193
1981	155	283	12	909	67	177
1982	100	159	10	530	121	139
1983	163	214	14	446	162	152
1984	170	288	23	554	127	158
1985	95	126	17	320	93	132
Total	3,321	2,397	158	8,336	1,999	1,549

Table 2. Shipments of plums, peaches, and nectarines inspected by the USDA on the New York market, 1972–1985

Year	Plums		Peaches		Nectarines	
	Shipments (no.)	Packs ^a (no.)	Shipments (no.)	Packs ^b (no.)	Shipments (no.)	Packs ^c (no.)
1972	370	330,773	298	183,597	118	132,750
1973	359	332,180	256	198,768	154	163,159
1974	415	431,207	198	141,303	223	232,746
1975	497	529,492	210	162,925	311	360,161
1976	343	342,537	240	203,459	298	385,473
1977	213	214,222	73	55,812	170	195,871
1978	64	36,285	89	62,448	88	57,341
1979	167	138,349	72	49,484	122	95,486
1980	192	149,313	77	49,827	118	80,964
1981	223	127,872	60	22,955	170	81,811
1982	180	83,110	155	92,146	215	112,239
1983	388	288,981	290	158,331	409	304,636
1984	500	406,040	315	205,140	278	233,061
1985	468	312,973	277	180,188	343	238,596
Total	4,379	3,723,334	2,610	1,766,383	3,017	2,674,294

^a Cartons or crates with 12.71 or 13.62 kg of fruit.

^b Two-layer cartons with 10 kg or cartons/crates with 17.25 kg of fruit.

^c Two-layer cartons with 10 kg or cartons with 11.35 kg of fruit.

Table 3. Disorders reported in USDA inspections of 4,379 plum shipments on the New York market, 1972–1985

	Shipments (no.)	Physiological disorders	Shipments (no.)	Injuries	Shipments (no.)
Unidentified decays	1,192	Soft fruit	1,749	Bruise damage	1,130
Blue mold rot	833	Shriveling	703	Cuts/punctures	573
Gray mold rot	231	Brown discoloration	478	Scarring	473
Rhizopus rot	109	External discoloration	227	Grade defects ^a	237
Brown rot	17	Internal discoloration	128	Freeze damage	167
Soft rot (yeasts)	5	Cracking	88	Insect damage	8
Coryneum blight	1	Sunken discoloration	76	Chemical residues	2
Scab	1	Misshapen fruit	53	Pulled stems	2
		Pitting	26	Sulfur dioxide injury	1
		Growth cracks	13		
		Internal breakdown	3		
		Split pits	3		

^a Minor bruises, scars, skin breaks, and unidentified defects.

physiological disorders, and seven kinds of injuries were reported in 5,582 occurrences, one-half of them injuries (Table 6). Rhizopus rot, soft fruit, and bruise damage were reported most often in their respective categories; bruise damage undoubtedly contributed to, and was often associated with, diseases caused by opportunistic fungi.

Rhizopus rot, reported in 25.5% of shipments, and unidentified decays, reported in 25%, accounted for more than 80% of all parasitic disease occurrences (Table 7). Rhizopus rot was the most damaging and was distributed throughout all incidence classes in substantial numbers. Gray mold rot was also distributed in all incidence classes but in fewer shipments. In contrast, 98% of the unidentified decays were in the lowest incidence class. Brown rot also affected relatively few shipments (2.5%) but was reported in all incidence classes. Peaches are normally shipped when mature but still firm. Thus, incipient brown rot infections are most likely to become visible during ripening at retail and consumer levels (4). Such common field diseases as anthracnose (*Glomerella cingulata*), bacterial spot (*Xanthomonas pruni*), and scab (*Cladosporium carpophilum*) were noted in relatively few shipments.

The leading nonparasitic disorder in peaches was bruise damage, reported in 86.9% of the shipments and in all incidence classes (Table 8). Of 2,268 shipments affected by bruise damage, 935 had more than 10% of the fruit damaged. Soft fruit was

reported less often (22.4% of shipments) but was distributed throughout all incidence classes. Brown discoloration occurred in 11.9% of shipments and was also distributed throughout all incidence classes. Grade defects were reported in almost the same number of shipments (11.7%) but were less damaging. Freeze damage and sunken discoloration were the only other disorders noted in all incidence classes, affecting 2.8 and 1% of shipments, respectively. Of the remaining nonparasitic disorders, external discoloration (2.9%) and shriveling (2.3%) probably were the most damaging, although scarring (4.8%) and misshapen fruit (3.2%) occurred more frequently.

Although peaches were shipped to the New York market from 21 states and three foreign countries during 1972–1985, more than 90% of the USDA inspections were of shipments from California, South Carolina, Georgia, Florida, New Jersey, and Chile. The frequency of common disorders in peaches from these sources is shown in Table 9. Less Rhizopus rot was reported in shipments from California and Chile than in those from the other sources. The converse was true with gray mold rot and blue mold rot. Pulp temperatures of fruit in shipments from California and Chile were below 5 or above 10 C in 34.4 and 11.2%, respectively. Peaches from South Carolina, Georgia, Florida, and New Jersey, on the other hand, arrived with pulp temperatures below 5 C in 10.6% and above 10 C in 31.8% of shipments. Higher temperatures would

Table 4. Diseases reported in USDA inspections on the New York market of plum shipments and some cultivars from main sources of supply, 1972–1985

Source Cultivar	Number of shipments	Diseases and percentages of shipments affected						
		Unidentified decays	Blue mold rot	Gray mold rot	Rhizopus rot	Internal breakdown	Brown rot	Others
California	3,079 ^a	26.2	19.1	5.2	2.0	1.2	0.3	0.3 ^b
Santa Rosa	405	30.3	22.4	6.2	2.7	0.2	0.2	0.7
La Roda	288	24.7	24.4	2.4	1.7	0.7	0	0
Friar	281	26.3	19.6	8.5	1.1	1.8	0	0
Casselman	227	26.0	27.3	8.4	1.8	1.8	0.4	0.4
Red Beaut	205	30.2	23.4	7.3	2.0	0	0	0
El Dorado	203	24.6	15.8	3.4	2.0	1.0	0.5	0
Washington	405 ^a	34.3	22.5	5.7	4.0	11.1	0	0
Italian Prune	245	34.7	21.6	4.9	4.9	13.1	0	0
President	113	33.6	31.0	6.2	1.8	7.1	0	0
Idaho	388 ^a	34.8	11.1	2.8	2.1	4.9	0	0
Italian Prune	102	31.4	9.8	5.0	2.0	13.7	0	0
President	160	35.6	7.5	0.6	0	0.6	0	0
Chile	262 ^a	17.6	16.0	7.3	4.2	1.5	0	0
President	62	16.1	8.1	3.2	0	3.2	0	0
Santa Rosa	53	18.9	9.4	1.9	1.9	0	0	0
La Roda	32	9.4	21.9	6.3	9.4	0	0	0
Oregon	154 ^a	28.6	14.3	7.8	1.3	16.2	0	0
Italian Prune	96	26.0	16.7	8.3	2.1	20.8	0	0
President	40	37.5	10.0	2.5	0	2.5	0	0

^a Complete for each source; total represents 97.9% of all plum shipments inspected.

^b *Coryneum* blight, soft rot (yeasts), and scab.

Table 5. Frequency of disorders reported in USDA inspections of 3,079 California plum shipments on the New York market, 1972–1985

Disorder	Shipments affected (%)	Number of shipments affected according to incidence class (% fruit)						
		0	1–5	6–10	11–20	21–33	34–50	> 50
Soft fruit	38.5	1,894	460	329	284	78	18	16
Unidentified decays	26.2	2,273	795	8	1	2	0	0
Bruise damage	25.7	2,289	566	142	72	8	2	0
Blue mold rot	19.9	2,466	426	154	29	2	1	1
Cuts/punctures	16.3	2,578	282	160	53	5	0	1
Brown discoloration	14.0	2,649	176	108	89	31	18	8
Shriveling	11.8	2,717	208	84	57	13	0	0
Scarring	11.7	2,718	278	83	0	0	0	0
Grade defects	7.7	2,842	147	87	2	1	0	0
External discoloration	6.2	2,887	72	65	42	8	4	1
Gray mold rot	5.2	2,920	109	28	16	3	3	0
Freeze damage	4.4	2,945	10	18	39	24	17	26
Sunken discoloration	2.1	3,015	32	13	14	1	4	0
Rhizopus rot	2.0	3,016	47	9	6	1	0	0
Misshapen fruit	1.4	3,036	43	0	0	0	0	0
Internal breakdown	1.2	3,042	14	8	11	1	2	1
Pitting	0.7	3,056	9	10	4	0	0	0
Growth cracks	0.3	3,069	7	3	0	0	0	0
Brown rot	0.3	3,070	4	3	2	0	0	0
Other diseases ^a	0.3	3,070	5	3	1	0	0	0
Miscellaneous ^b	0.4	3,068	6	3	2	0	0	0

^a *Coryneum* blight, soft rot (yeasts), and scab.

^b Insect damage, split pits, pulled stems, chemical residues, and sulfur dioxide injury.

contribute to rapid postharvest development of *Rhizopus* rot, especially when mechanical injury is common. Some instances of *Mucor* rot may have been misidentified as *Rhizopus* rot in shipments in which pulp temperatures of 4–7 C were recorded at arrival because *Rhizopus* rot is inactive at these temperatures. Gray mold rot and blue mold rot can progress, albeit slowly, at cold temperatures, especially when transit periods are lengthy or prolonged. The longer periods required for shipments from California and Chile to reach the New York market probably contributed to the shriveling of the fruit and possibly to the greater measure of external discoloration reported in these shipments.

Nectarines. During 1972–1985, USDA personnel inspected 3,017 shipments containing 2.67 million 10- or 11.35-kg cartons of nectarines. The fruit, more than 29,000 t, represented 18% of all nectarines delivered to the New York market in that period (Tables 1 and 2). California supplies New York with about 95% of its nectarines, and Chile supplies practically all of the remainder. Shipments from California (2,576) and Chile (369) accounted for 97.6% of the inspections; the remainder of the inspections were of shipments from 11 other states.

Nine parasitic diseases, 11 physiological disorders, and six kinds of injuries were reported for a total of 5,674 occurrences (Table 10). About one-half of the occurrences were injuries.

Table 6. Disorders reported in USDA inspections of 2,610 peach shipments on the New York market, 1972–1985

Parasitic diseases	Shipments (no.)	Physiological disorders	Shipments (no.)	Injuries	Shipments (no.)
Rhizopus rot	665	Soft fruit	585	Bruise damage	2,268
Unidentified decays	653	Brown discoloration	310	Grade defects ^a	305
Gray mold rot	110	Misshapen fruit	80	Scarring	125
Blue mold rot	68	External discoloration	75	Freeze damage	74
Brown rot	65	Shriveling	61	Cuts/punctures	27
Anthracnose	13	Sunken discoloration	25	Insect damage	4
Soft rot (yeasts)	12	Split pits	23	Hail damage	2
Bacterial spot	7	Cracking	7		
Scab	4	Growth cracks	3		
Alternaria rot	1	Overripe fruit	3		
Cladosporium rot	1	Internal breakdown	2		
		Shattered pits	2		
		Pitting	2		

^a Minor bruises, scars, skin breaks, and unidentified defects.

Table 7. Frequency of parasitic diseases reported in USDA inspections of 2,610 peach shipments on the New York market, 1972–1985

Disorder	Shipments affected (%)	Number of shipments affected according to incidence class (% fruit)						
		0	1–5	6–10	11–20	21–33	34–50	> 50
Rhizopus rot	25.5	1,945	333	163	88	35	26	20
Unidentified decays	25.0	1,957	641	7	4	1	0	0
Gray mold rot	4.2	2,500	51	27	20	4	3	5
Blue mold rot	2.6	2,542	43	17	5	1	0	2
Brown rot	2.5	2,545	40	12	3	5	4	1
Anthracnose	0.5	2,597	7	2	2	1	1	0
Soft rot (yeasts)	0.5	2,598	5	6	1	0	0	0
Bacterial spot	0.3	2,603	4	3	0	0	0	0
Scab	0.2	2,606	3	1	0	0	0	0
Alternaria rot	0.1	2,609	0	0	0	1	0	0
Cladosporium rot	0.1	2,609	1	0	0	0	0	0

Table 8. Frequency of nonparasitic disorders reported in USDA inspections of 2,610 peach shipments on the New York market, 1972–1985

Disorder	Shipments affected (%)	Number of shipments affected according to incidence class (% fruit)						
		0	1–5	6–10	11–20	21–33	34–50	> 50
Bruise damage	86.9	342	731	602	763	147	21	4
Soft fruit	22.4	2,025	263	156	125	27	8	6
Brown discoloration	11.9	2,300	110	87	85	20	5	3
Grade defects	11.7	2,305	148	140	14	3	0	0
Scarring	4.8	2,485	112	13	0	0	0	0
Misshapen fruit	3.2	2,527	69	13	0	1	0	0
External discoloration	2.9	2,535	20	28	20	5	2	0
Freeze damage	2.8	2,536	1	9	19	16	11	18
Shriveling	2.3	2,549	30	18	11	2	0	0
Cuts/punctures	1.0	2,583	27	0	0	0	0	0
Sunken discoloration	1.0	2,585	10	6	6	1	1	1
Split pits	0.9	2,587	16	4	1	2	0	0
Cracking	0.3	2,603	7	0	0	0	0	0
Insect damage	0.2	2,606	3	1	0	0	0	0
Overripe fruit	0.1	2,607	2	0	1	0	0	0
Growth cracks	0.1	2,607	3	0	0	0	0	0
Shattered pits	0.1	2,608	0	2	0	0	0	0
Hail damage	0.1	2,608	1	0	1	0	0	0
Pitting	0.1	2,608	1	1	0	0	0	0
Internal breakdown	0.1	2,608	0	1	0	0	0	1

Rhizopus rot was the most frequent parasitic disease, although unidentified decays were reported more often. As in the peach inspections, soft fruit and bruise damage were the leading disorders in their respective categories.

California shipments of nectarines had more bruise damage

and brown discoloration and less shriveling than Chile shipments (Table 11). Overall, differences in amount of decay between these two main sources of supply were small. Some differences in the incidence of a few disorders were noted among cultivars from the same source.

Table 9. Frequency of common disorders reported in USDA inspections of peach shipments on the New York market from main sources of supply, 1972–1985

Sources	Shipments (no.) ^a	Bruise damage (%)	Rhizopus rot (%)	Unidentified decays (%)	Soft fruit (%)	Brown discoloration (%)	Scarring (%)	Gray mold rot (%)	Misshapen fruit (%)	External discoloration (%)	Freeze damage (%)	Blue mold rot (%)	Brown rot (%)	Shriveling (%)
California	809	79.7	17.2	20.1	20.1	19.4	8.7	6.6	4.8	4.9	5.2	3.7	0.9	2.6
South Carolina	721	94.0	30.1	27.0	23.6	8.3	1.8	2.4	1.5	1.7	1.8	1.4	2.6	0
Georgia	505	94.5	31.2	31.8	22.5	12.5	1.0	2.6	0.8	1.8	1.4	1.2	3.0	0
Chile	173	62.4	22.0	20.2	17.9	6.9	9.2	8.1	4.0	5.2	4.0	6.9	1.2	23.1
Florida	140	91.4	28.6	29.3	32.1	2.9	2.9	1.4	4.3	0	0.7	0	5.0	0
New Jersey	64	79.7	26.6	17.2	7.8	9.4	3.1	4.7	3.1	1.6	1.6	0	12.5	0

^a Complete for each source; total represents 92.4% of all peach shipments inspected.

Table 10. Disorders reported in USDA inspections of 3,017 nectarine shipments on the New York market, 1972–1985

Parasitic diseases	Shipments (no.)	Physiological disorders	Shipments (no.)	Injuries	Shipments (no.)
Unidentified decays	706	Soft fruit	507	Bruise damage	2,079
Rhizopus rot	409	Brown discoloration	200	Scarring	291
Gray mold rot	302	External discoloration	116	Grade defects ^a	251
Blue mold rot	275	Shriveling	93	Freeze damage	155
Brown rot	34	Sunken discoloration	68	Cuts/punctures	87
Alternaria rot	4	Misshapen fruit	48	Insect damage	7
Soft rot (yeasts)	3	Pitting	24		
Bacterial spot	1	Internal breakdown	5		
Sour rot	1	Growth cracks	5		
		Russeting	2		
		Split pits	1		

^a Minor bruises, scars, skin breaks, and unidentified defects.

Table 11. Common disorders reported in USDA inspections on the New York market of some nectarine cultivars in California and Chile shipments, 1972–1985

Source Cultivar	Number of shipments	Disorders and percentages of shipments affected									
		Bruise damage	Unidentified decays	Rhizopus rot	Soft fruit	Gray mold rot	Blue mold rot	Brown discoloration	External discoloration	Brown rot	Shriveling
California	2,576 ^a	72.7	24.6	13.4	16.4	9.7	8.8	7.3	3.8	1.2	1.2
Sun Grand	253	68.0	19.4	11.5	22.9	7.1	9.1	1.6	0.8	2.0	0.8
Flavor Top	165	64.2	24.8	15.8	23.6	8.5	8.5	4.8	1.8	1.2	2.4
Le Grand	129	60.5	25.6	9.3	15.5	3.9	8.5	1.6	3.9	0	0
Early Grand	122	63.1	27.9	9.8	23.8	6.6	5.7	3.3	0.8	1.6	0.8
Independence	117	69.2	25.6	9.4	20.5	11.1	14.5	6.8	1.7	4.3	0.9
Autumn Grand	111	66.7	28.8	11.7	5.4	11.7	2.7	12.6	6.3	0	5.4
Flame Kist	103	71.8	27.2	9.7	6.8	13.6	6.8	28.2	11.7	0	1.9
Red Grand	96	71.9	25.0	10.4	24.0	2.1	9.4	5.2	0	1.0	3.1
Summer Grand	95	76.8	20.0	18.9	23.2	8.4	5.3	4.2	4.2	1.1	1.1
Other ^b	920	77.7	25.7	15.9	14.2	12.9	9.5	8.7	4.2	1.0	0.9
Chile	369 ^b	40.7	13.3	14.1	17.1	12.2	10.3	2.4	5.1	0.3	16.3
Le Grand	111	31.5	9.9	11.7	11.7	10.8	5.4	0	5.4	0.9	12.6
Sun Grand	56	46.4	16.1	12.5	17.9	16.1	10.7	0	3.6	0	10.7
Arm King	21	61.9	9.5	38.1	38.1	19.0	28.6	4.8	0	0	4.8

^a Complete for each source.

^b Of the 10 cultivars in this group, Fantasia was identified most often.

A more comprehensive report of parasitic diseases observed in inspections of nectarine shipments from California is given in Table 12. Rhizopus rot, gray mold rot, blue mold rot, and unidentified decays were most damaging. Unidentified decays were noted in 24.6% of shipments, but most occurrences were in the lowest incidence class. Occurrences of Rhizopus rot and gray mold rot were distributed throughout all incidence classes. Reports of brown rot were relatively few, and the number of other rots observed was negligible.

Bruise damage was reported in 72.7% of the 2,576 shipments of nectarines from California (Table 13). Although about one-half of the reports placed the bruise damage in the 1–5% incidence class, more than 10% of the fruit in 398 shipments was damaged by bruises. Other damaging nonparasitic disorders were soft fruit (16.4% of shipments) and freeze damage (5.7%); both were reported throughout all incidence classes. Brown, external, and sunken discolorations were the other disorders of note. Scarring and grade defects were reported in 9.5 and 9% of

Table 12. Frequency of parasitic diseases reported in USDA inspections of 2,576 California nectarine shipments on the New York market, 1972–1985

Disease	Shipments affected (%)	Number of shipments affected according to incidence class (% fruit)						
		0	1–5	6–10	11–20	21–33	34–50	> 50
Unidentified decays	24.6	1,942	610	16	5	2	1	0
Rhizopus rot	13.4	2,231	209	80	42	10	2	2
Gray mold rot	9.7	2,325	154	57	23	12	2	3
Blue mold rot	8.8	2,349	160	48	16	3	0	0
Brown rot	1.2	2,546	21	8	0	1	0	0
Alternaria rot	0.2	2,572	3	0	1	0	0	0
Soft rot (yeasts)	0.1	2,573	1	2	0	0	0	0
Sour rot	<0.1	2,575	0	1	0	0	0	0

Table 13. Frequency of nonparasitic disorders reported in USDA inspections of 2,576 California nectarine shipments on the New York market, 1972–1985

Disorder	Shipments affected (%)	Number of shipments affected according to incidence class (% fruit)						
		0	1–5	6–10	11–20	21–33	34–50	> 50
Bruise damage	72.7	704	975	499	357	35	5	1
Soft fruit	16.4	2,153	238	112	54	16	2	1
Scarring	9.5	2,331	197	48	0	0	0	0
Grade defects	9.0	2,344	172	59	1	0	0	0
Brown discoloration	7.3	2,388	104	49	25	9	0	1
Freeze damage	5.7	2,428	17	26	41	17	20	27
External discoloration	3.8	2,479	49	28	18	2	0	0
Cuts/punctures	3.2	2,493	73	7	3	0	0	0
Sunken discoloration	2.4	2,513	33	13	10	4	1	2
Misshapen fruit	1.5	2,538	38	0	0	0	0	0
Shriveling	1.2	2,544	26	5	1	0	0	0
Pitting	0.9	2,554	12	5	3	1	1	0
Insect damage	0.2	2,571	3	2	0	0	0	0
Internal breakdown	0.2	2,572	1	1	0	0	1	1
Miscellaneous ^a	0.2	2,572	3	1	0	0	0	0

^a Growth cracks, split pits, and russetting.

shipments, respectively, but most occurrences were in the lowest incidence class. The other disorders either occurred infrequently or were restricted to low incidence classes.

Summary. USDA personnel examined 60,000 or more boxes of fruit (minimum six boxes per shipment) to certify the arrival condition of 10,006 shipments of plums, peaches, and nectarines to the New York market during the course of 14 years. Admittedly, the inspection reports are not truly indicative of the arrival condition of these stone fruits because the market inspections were more selective than representative. However, the profiles of disease and other damaging disorders provide a fairly accurate overview of specific problems that affect quality and cause physical loss of these commodities. Furthermore, some of the disorders will worsen and cause additional losses at retail and consumer levels (4,5). The inspection data should be useful in formulating practices to improve quality and reduce market losses of these fruits.

ACKNOWLEDGMENT

We thank the New York office of the USDA Fresh Fruit and Vegetable Inspection, Fresh Products Branch of the Agricultural Marketing Service for making available the inspection certificates from which the data for this report were obtained.

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