



Commodity, container, method of airflow	Flow rate needed to cool to times indicated, cfm/lb (Pressure needed to force air through stack, inches w.c.)							
	Cooling time to 7/8ths cool downstream produce, hr*							
	1.5	2	3	4	6	9	12	18
Pear, 46-lb wrapped cartons, 5% side vent	—	—	—	—	—	0.7 (2.1)	0.4 (1.1)	0.22 (0.5)
Plum, corrugated containers, 11" × 17½" × 8" high, 4% side-area vented	—	—	1.2 (2.9)	0.8 (1.3)	0.4 (0.3)	0.25 (0.15)	0.18 NA	—
Strawberry, open crates on pallets	2.0 (0.4)	1.4 (0.20)	0.8 (0.08)	0.5 (0.04)	0.3 (0.02)	0.20 N	—	—
Tomato, corrugated containers, 10% side-area vented	NA (2.3)	2.9 (1.2)	1.6 (0.8)	1.1 (0.4)	0.6 (0.20)	0.4 (0.13)	0.25 NA	—
<b>Vertical airflow through slotted bin bottoms</b>								
Orange								
2-ft depth	—	—	1.0 (0.09)	0.6 (0.04)	0.4 (0.02)	0.20 N	0.15 N	—
3-ft depth	—	—	1.0 (0.20)	0.6 (0.10)	0.4 (0.04)	0.20 (0.02)	0.15 N	—
4-ft depth	—	—	0.9 (0.20)	0.6 (0.07)	0.20 (0.03)	0.3 (0.02)	0.15 N	—
<b>Bulk bins (47" square), airflow horizontally through slots in bin sides</b>								
Pear, wooden bins (slowest), 4' × 4' × 2', 5.2% side vent	—	—	—	—	0.7 (0.4)	0.5 (0.15)	0.3 (0.08)	0.2 (0.05)
Plum, 3% side-area vented								
Average fruit	—	—	NA (0.9)	0.7 (0.25)	0.4 (0.07)	0.20 N	0.10 N	—
Slowest-cooling fruit	—	—	—	—	1.0 (1.8)	0.6 (0.7)	0.4 (0.3)	0.20 (0.12)
Plum, 5–6% side-area vented								
Average fruit	—	—	—	0.6 (0.4)	0.3 (0.13)	0.17 NA	—	—
Slowest-cooling fruit	—	—	—	—	0.8 (0.7)	0.5 (0.25)	0.3 (0.12)	0.20 NA

Sources: Mitchell et al. 1971; Parsons, et al. 1970, 1972; Wang and Tunpun 1968.

Note: Based on calculations of seven-eighths cooling of produce. Figures compiled from laboratory and field data. Dash indicates data not available.

\* Static pressure shown is for air path through three tiers stacked in register. For other stacking, multiply static pressure by: 1 tier, 0.05; 2 tiers, 0.3; 4 tiers, 2.3; 6 tiers, 7.0. Figures without parentheses are flow rates needed to cool in time indicated. Figures in parentheses are pressures needed to force air through stack. Figures are approximate only; small differences in container venting and stacking patterns can cause large change in static pressure losses.

NA: Data not available.

N: Negligible.

## Appendix B-3

### STATIC PRESSURE, AIRFLOW, AND TIME REQUIRED TO COOL SELECTED FLOWERS

Flower	Box size (in)	Vent hole diam. (in)	Gross wt. (lb)	Static pressure					
				0.5 in		1.0 in		2.0 in	
				Airflow (cfm/box)	7/8ths cooling time (min)	Airflow (cfm/box)	7/8ths cooling time (min)	Airflow (cfm/box)	7/8ths cooling time (min)
Carnation	48 × 21 × 12	2	51	70	48	90	40	110	35
Chrysanthemum	57 × 21 × 12	2	33*	80	62	130	58	210	54
Gypsophila	42 × 21 × 12	3	—	170	10	260	8	—	—
Rose	48 × 21 × 12	2	†	140	34	200	25	290	20
Statice	42 × 21 × 12	3	75	150	40	210	18	280	13

Note: Each box has two vent holes in each end.

\*45-lb box allows 50% less air through box.

†20 bunches per box.