

STRAWBERRY (*Fragaria x ananassa*) Gray Mold;
Botrytis cinerea; Rhizopus fruit rot (*Rhizopus*
stolonifer)

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Evaluation of commonly grown commercial strawberry varieties for susceptibility to Gray mold and Rhizopus fruit rot, 2015 and 2016.

Nine commercially grown varieties were transplanted into non-fumigated field plots located in Santa Cruz County, CA (N 36 54' 29.86", W 121 50' 25.309") in Nov 2014 and 2015 into non-fumigated soil and grown for a period of 8-10 months in order to assess susceptibility to various foliar, crown and root rot diseases. Strawberries were planted into plots consisting of 2-row x 50 ft-long plots that were replicated four times in a randomized complete block design. Commercial standard pesticide programs were used to control powdery mildew, gray mold and spider mites. Applications were made with a spray boom with 15 nozzles (3 per bed). Products were always applied with a spreader sticker Widespread Max at 9 oz/acre. Fungicides included Rally 40 WSP at 5 oz/acre (applied in 2015 on Feb 26 and applied in 2016 on Mar 28 and Jun 16), Captan 80 WDG at 2 oz/acre (applied in 2015 on Feb 26 and applied in 2016 on Mar 28), Switch 62.5 WG at 14 oz/acre (applied in 2015 on Mar 27, May 12, June 25, and Aug 21 and applied in 2016 on Apr 6, May 13, and Jun 16), Elevate 50 WDG at 1.5 oz/acre (applied in 2015 on Apr 28 and Jun 13 and applied in 2016 on Apr 6, and Apr 27), Merivon at 11.02 oz/acre (applied in 2016 on Apr 13, and June 2), and Mettle 125 ME at 4.02 oz/acre (applied in 2015 on Apr 16 and Jul 11 and applied in 2016 on Apr 27). Insecticides and Miticides were also applied according to standard commercial production practices. In both 2015 and 2016 fruit were harvested on April 1 every 3 days and were harvested until 10 Aug in 2015 and until mid July in 2016. In 2015 three independent harvests were conducted to investigate fruit rot tolerance on May 13, June 24 and August 11. In 2016 a single harvest on Jun 29 was conducted. Twenty-five ripe fruit (entirely red receptacle) were harvested within 2 hours (external temperatures between 15-20°C) from 4 blocks of different varieties and placed in plastic crisper containers containing bubble wrap with even spacing for each fruit. Fruit were then transported to UC Cooperative Extension in Monterey County and placed in a growth chamber at 23°C in the dark for a period of 11 days. Fruit were rated daily for evidence of fungal sporulation and subsequently removed from crisper containers and discarded as to prevent spreading of fungal pathogens within crisper containers. Area under the disease progress curves (AUDPC) for fruit rot, and *Botrytis* and *Rhizopus* fruit rot percentages were calculated and statistics were analyzed using Statgraphics Centurion XVII (Statpoint Technologies, Warrenton, VA) after checking for variance. Differences were determined using a Fisher's LSD mean separation test ($p < 0.05$) by analyzing each harvest independently due to apparent differences in disease pressure at the different intervals.

In both 2015 and 2016 the incidence of *Rhizopus* fruit rot was relatively low and gray mold (caused by *Botrytis cinerea*) tended to be the predominant postharvest disease observed. In 2015, cvs. Albion, Fronteras and Sabrina were statistically the most susceptible cultivar where cvs. Grenada and San Andreas were the most tolerant based on the AUDPC and *Botrytis* (%) values. Again in 2016, cvs. Festival and Fronteras were the most susceptible cultivars where cvs. Grenada, Portola and San Andreas were the most tolerant. In general disease pressure was significantly lower for fruit rot in 2016 as opposed to 2015 and this could have been due to different timings of maintenance fungicide applications or other environmental factors. There was no statistical differences observed between cultivars for *Rhizopus* fruit rot and *Botrytis* fruit rot was the primary contributor of disease in all experiments. It should be noted that this trial also had considerable disease pressure from *Fusarium oxysporum* fsp. *fragariae* that resulted in severe decline and yield loss for certain cultivars. Observationally the most susceptible cultivars to this *Fusarium* wilt were cvs. Albion, Monterey, Radiance and Sabrina.

Cultivars	May 13 2015 Harvest			June 24 2015 Harvest			August 11 2015 Harvest			June 29 2016 Harvest		
	AUDPC days	<i>Botrytis</i> (%)	<i>Rhizopus</i> (%)	AUDPC days	<i>Botrytis</i> (%)	<i>Rhizopus</i> (%)	AUDPC days	<i>Botrytis</i> (%)	<i>Rhizopus</i> (%)	AUDPC days	<i>Botrytis</i> (%)	<i>Rhizopus</i> (%)
Albion	415 c	74 c	9 b	268 bcd	60 bc	1 a	483 bc	74 cd	11 ab	nc	nc	nc
Festival	205 b	86 c	0 a	332 de	74 cd	5 a	584 c	74 cd	24 abc	159 bc	49 c	0 a
Fronteras	403 c	87 c	1 a	395 e	88 d	0 a	583 c	49 b	43 c	217 c	63 c	2 a
Grenada	116 a	50 a	0 a	155 ab	39 ab	2 a	389 abc	25 a	41 c	55 a	18 ab	0 a
Monterey	241 b	71 bc	0 a	202 abc	60 bc	0 a	340 ab	55 bc	0 a	nc	nc	nc
Portola	235 b	52 ab	1 a	174 ab	34 a	0 a	561 c	8 a	71 d	65 a	24 ab	0 a
Radiance	206 b	80 c	0 a	289 cde	67 cd	17 b	398 abc	81 d	8 ab	116 ab	39 bc	4 a
Sabrina	369 c	89 c	0 a	252 bcd	65 c	2 a	467 bc	88 d	2 a	nc	nc	nc
San Andres	195 ab	39 a	0 a	98 a	26 a	2 a	220 a	13 a	30 bc	41 a	7 a	0 a

Cultivars that were not harvested in 2016 were denoted as 'nc for Not collected' (mainly because of high disease pressure from *Fusarium oxysporum* f. sp. *fragariae*.)