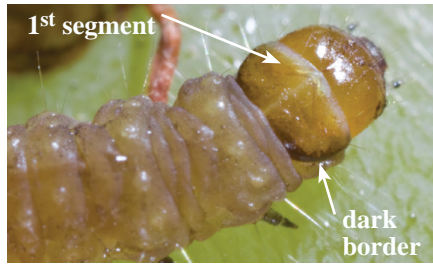


# TORTRICID MOTHS IN CALIFORNIA VINEYARDS

## European Grapevine Moth (EGVM), *Lobesia botrana*



Moth is tan-cream colored with bluish gray blotches and brown and black markings.



Larvae have a yellow-brown head. The 1<sup>st</sup> segment is yellow-brown with a dark border on the outer edge.

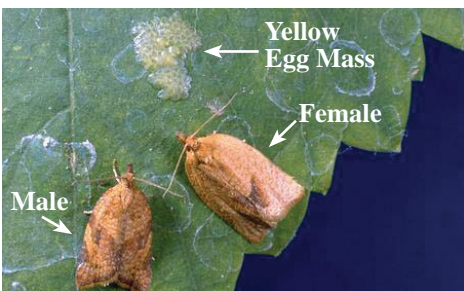


Coloration of mature larvae varies from tan to maroon.

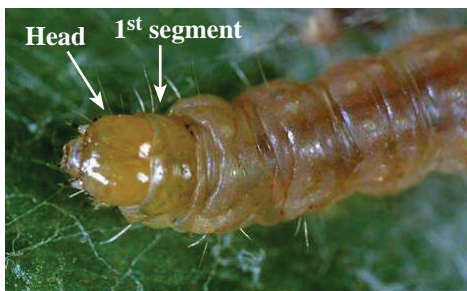


Pupa inside silken cocoon.

## Orange Tortrix (OT), *Argyrotaenia franciscana*



Moth is orange-brown with V-shaped marking.



Larva is yellow-to-straw color; the head capsule and 1<sup>st</sup> segment behind the head remain tan-colored in all larval stages.

Actual Size of Adult Male		
		body length
EGVM		7 mm
OT		10 mm
OLR		8 mm
LBAM		9 mm

## Omnivorous Leafroller (OLR), *Platynota stultana*



Adults have a snout-like mouthpart protruding forward.



Egg masses are green.

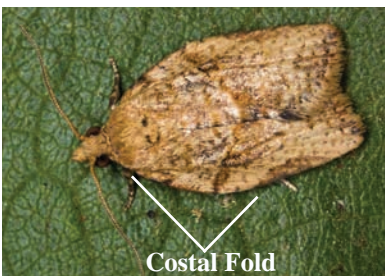


Young larval stages have a dark brown head capsule and 1<sup>st</sup> segment.



Mature stages are cream to light green color with light-to-dark brown head capsule and 1<sup>st</sup> segment.

## Light Brown Apple Moth (LBAM), *Epiphyas postvittana*



Adult male moth wing coloration and pattern is highly variable.



The male forewing has an expanded outer edge folded over as a flap (costal fold).



Larvae are pale-to-medium green; head is light yellow-brown; 1<sup>st</sup> segment is light greenish-brown.



Egg mass is laid near the leaf margin on the upper surface.

# TORTRICID MOTHS IN CALIFORNIA VINEYARDS

DISTINGUISHING CHARACTERS	EGVM	OT	OLR	LBAM
<b>Sub-Family</b>	Olethreutinae Berry feeders	Tortricinae Leafrollers		
<b>Egg color</b> Laid	White to black cap individually	Yellow overlapping mass	Green overlapping mass	Green overlapping mass
<b>Mature larva</b> Body Head Prothoracic shield (1 <sup>st</sup> segment behind head)	Tan to maroon Yellow-brown Yellow-brown with dark border on the outer edge	Yellow-to-straw Tan Tan	Cream to light green Light-to-dark brown Light-to-dark brown with dark border on the outer edge	Medium green Light yellow-brown Light greenish-brown
<b>Adult male</b> Wing coloration	Tan-cream color, with bluish-gray blotches and brown and black markings.	Light brown to orange-brown with dark V-shaped and crescent markings.	Dark rusty brown with tan tips with a V-shaped dark marking in between.	Variable, two-tone or light brown with oblique markings.
Wing length	6 mm	9 mm	7 mm	8 mm
Costal fold	Absent	Absent	Absent	Present
<b>DAMAGE</b>				
Bud break	-----	Overwintering larvae may cause feeding damage to buds.		
Flower development	Feeding on developing flower clusters may cause loss of flowers or newly set berries.			
Summer	Many larvae per cluster feeding inside individual berries. Excrement and webbing.	One to few larvae per cluster form webbing along cluster stem and feeding can damage or kill portions of the rachis. Larvae will feed on the surface of berries.		
Late summer - harvest	Damage to ripening berries increases the incidence of <i>Botrytis</i> bunch rot.			
<b>LIFE CYCLE</b>				
Generations	3	3	3-4	2-4
Habitat/climate	Inland valleys and warm coastal valleys.	Cool coastal valleys.	Inland valleys and warm coastal valleys.	Cool regions with high humidity.
Overwinter	As pupa inside a silken cocoon under the bark of cordons and trunk.	As 2 <sup>nd</sup> to 4 <sup>th</sup> stage larva under the bark of arms, inside cluster mummies and on certain weeds and cover crop plants.		
Spring and Summer	Moths emerge after bud break. 1 <sup>st</sup> generation larvae develop in the flower cluster during bloom through fruit set. 2 <sup>nd</sup> and 3 <sup>rd</sup> generation larvae develop inside individual berries.	Moths emerge in late winter and early spring. Eggs are deposited on upper side of leaf. 1 <sup>st</sup> generation larvae tie leaves together at the tip of young shoots and feed inside these "nests." 2 <sup>nd</sup> generation larvae enter the cluster as early as bloom. They form webbing along the cluster stem feeding on developing berries. 3 <sup>rd</sup> or later generation larvae feed along the cluster stem and damage berries after veraison through harvest.		
<b>MONITORING</b>				
Traps	Set traps before bud break and continue through harvest.	Set traps in December	Set traps before bud break	Set traps in December
Spring	When trap catch numbers peak for the first time monitor eggs on 100 flower clusters. After egg hatch, look for larvae and webbing in flower clusters.	In early spring monitor shoots for webbing of leaves and larvae inside the nest.		
Fruit set through harvest	Beginning one week after trapping the first moth of each flight, monitor berries for the 2 <sup>nd</sup> and 3 <sup>rd</sup> generation eggs.	Beginning at bloom through bunch closure monitor bunches for webbing and larvae.		
<b>SANITATION</b>				
	In highly infested vineyards, remove bark in fall.	Mow broadleaf or weedy cover crops before bud break. Remove cluster mummies when pruning and place them in row middles to be chopped.		

