



CALIFORNIA STRAWBERRY ADVISORY BOARD

UNDER AUTHORITY OF THE DIRECTOR OF AGRICULTURE, STATE OF CALIFORNIA

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STRAWBERRY NEWS BULLETIN

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"LYGUS BUGS, THRIPS and CATFACED STRAWBERRIES" is the subject of this bulletin from William W. Allen, Department of Entomology, University of California, Berkeley:

Irregular or misshapen (catfaced) strawberries are unsuitable for use as fresh market or frozen berries. When the incidence of catfacing is high a significant proportion of the fruit must be discarded in the ditches. Since the production of catfaced berries stresses plants as much as normal fruit, the discarded fruit must be viewed as lost production that cannot be retrieved during the rest of the growing season.

Catfacing occurs when the young seeds (achenes) fail to stimulate the fruit (receptacle) to grow. If none of the seeds stimulate development the entire fruit fails to develop. On the other hand, if one seed fails to stimulate development, the surrounding seeds will provide sufficient stimulation to produce a marketable berry. Catfacing occurs when a number of achenes adjacent to each other fail to stimulate fruit enlargement in a restricted area. The type of catfacing depends on whether the faulty seeds are on the end or side of the berry, and the severity of catfacing depends on the number of seeds that are affected.

There are two basically different causes of catfaced strawberries. One is lack of pollination and the other is destruction of the seeds by frost or insects before the seeds have had time to stimulate development of the fruit. Pollination must occur after the blossoms open and before the petals fall. Insects can destroy the achenes while the flowers are open and for about 10 days after the petals fall. After that time the seeds become hard and are much less prone to injury.

Catfacing caused by lack of pollination involves the pollen producing ability of strawberry varieties and the weather conditions that influence pollen production and pollination. Cold damp weather and the development of varieties are both beyond the jurisdiction of an entomologist. However, insects may aid in pollination, but I am not aware of any studies which have shown that honeybees can be used to reduce the incidence of catfacing in our strawberry varieties.

Let us just say that early season catfacing nearly always results from poor pollination and insect control will not correct the problem. To confirm that lack of pollination is the cause of deformity one must look at the seeds in the depressed areas. When pollination is the problem all of the seeds will be small, because they cannot enlarge without pollination.

Lygus bugs are the only insects that have been demonstrated to cause catfacing of strawberries. They do this by puncturing the achenes both before and after petal fall with their long sucking mouth parts. When achenes are destroyed after petal fall they have already started to enlarge. As a consequence, when enlarged seeds remain closely packed together in a depressed area, it can be assumed that lygus bugs were the cause of the damage. When such seeds are cut open with a sharp knife or razor blade, they will be brown and hollow inside.

Lygus bugs go through the winter as adults on various type of weeds and crops such as alfalfa and
over

sugar beets. They do not overwinter in strawberry fields. It is not until the wild vegetation begins to dry up or crops are harvested that lygus bugs are forced to move into strawberries. However, once in strawberries they will reproduce and increase in numbers.

Lygus bugs are relatively difficult to detect in strawberries for several reasons. In the first place they move rapidly and actually hide when disturbed. In addition, relatively low numbers are sufficient to cause a significant amount of catfacing. It has been found that a vacuum sampling device (D-Vac^(R)) can effectively collect lygus bugs in strawberries, and thus provide an effective means of sampling lygus bug populations. In time we hope to have data that will show how much catfacing can be expected from various population levels of lygus. Both damsel bugs (Nabidae) and big eyed bugs (Geocoris) are predators on lygus bugs in strawberries and can become abundant enough to bring about control. However, the predators usually build up considerably after the lygus bugs, so withholding of controls can result in significant berry loss.

At the present time malathion and Phosdrin^(R) are used for lygus bug control. Since both are short residual insecticides, they are somewhat less effective than is desirable. It must be kept in mind that lygus bugs insert their eggs inside plant tissues where they are protected from the activity of insecticides. For most effective control an insecticide is needed with residual activity to kill the nymphs when they hatch. It would also be desirable to have an insecticide that would not harm damsel bugs and big eyed bugs, but such selectivity may be difficult to find.

Thrips are often associated with catfaced strawberries because they can be found in the flowers when the fruit is misshaper. They can also be found in flowers when the fruit is well developed. In extensive tests when thrips were caged on strawberry blossoms there was no evidence of increased catfacing. This does not prove thrips cannot cause fruit deformity, but it strongly suggests they are not an important cause of catfacing.

From information available at the present time it appears low numbers of thrips have no effect on the yield or quality of strawberries. Higher numbers can cause discoloration of the fruit beneath the caps (calyxes) and very high numbers can cause the fruit to be dull and off color. To prevent fruit discoloration thrips populations should not be allowed to go above 10 thrips per blossom.

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