Collards Can Protect Cabbage From Diamondback Caterpillars

Martin L. Price

The diamondback caterpillar, *Plutella xylostella*, (larva of a moth) is a very serious pest of cabbage and other crops. Farmers in the USA spend up to $168 per acre on pesticides to grow cabbage *(Brassica oleracea Capitata Group)*. The diamondback moth is gray, about 1/3 inch (8mm) long with a row of three light colored diamond shaped markings on its back. The larva is small, greenish, rarely over 1/3 inch long. They eat numerous holes in the leaves of cabbage collards and other cole crops.

Adult diamondback moth

Diamondback moth larvae

Recently the caterpillars have begun to develop resistance to the "organic" pesticide, *Bacillus thuringiensis*, better known as Bt.

Dr. Everett Mitchell, a researcher with the U. S. Department of Agriculture, has found a way to produce cabbage with little or no spraying. He found that when highly fertilized collard greens *(B. oleracea, Acephala Group)*, a related vegetable, are planted completely around a field, moths lay their eggs on the collards rather than on the adjacent cabbage plants. As long as the collards stay green, the insects remain on the collard plants and do not move into the cabbage like you might expect. This is an example of what is called a "trap crop." Using the trap crop allows farmers to use 75-100% fewer sprays.

The yield and quality of the cabbage equaled that from fields sprayed in the normal way. "It is important that you plant collards completely around the field. If you leave gaps, the bugs will move in just like you've opened a gate."

ECHO asked Dr. Mitchell to clarify a few points for us.

Editor: Is the diamondback month likely to be a problem in tropical countries? Dr. Mitchell: The diamondback moth is a universal pest, occurring virtually everywhere that cabbage and other cruciferous crops are grown. It is highly resistant to most pesticides including biological insecticides. The wide distribution of the diamondback moth, its destructiveness to the harvestable portion of the crop, and its resistance to most pesticides rank it among the most serious pests worldwide.

Editor: For what shape and size of field does this work? Dr. Mitchell: The fields vary in shape from rectangular to almost square. Typically growers plant two rows of collards along the edges of the field. The collards (variety 'Vates' or 'Georgia') are transplanted at the same time as the cabbage transplants. The only difference is that the first and last two rows are dedicated to collards instead of cabbage. In addition, seven collard plants are planted at the end of each row. The rows in northeast Florida are typically 40 inches (100 cm) apart, so the seven plants at each end occupy the same amount of space as the two rows on the edges of the field.

Actually just one row seems to work as well. It is important that the collards are planted completely around the field.

The system has performed beyond our expectations on areas as small as 10 acres up to 50 acres (4-20 ha). We have not found it necessary to add additional rows of collards in any fields up to 50 acres (20 ha). Beyond that we do not know.

Editor: The article specifies "highly fertilized" collard greens. Many small farmers in tropical counties cannot afford much fertilizer. Do you think it would still work? Dr. Mitchell: The collards are fertilized at the same rate as the cabbage. Since commercial cabbage in Florida is highly fertilized, so were the collards. In my opinion the collards should get whatever fertilizer is given to the cabbage, with no special treatment.

Editor: What research will you pursue next? Dr. Mitchell: There might be other crops that could be used instead of collards. One large grower from Mexico inquired if cauliflower might be similarly used around broccoli fields, because he has observed that cauliflower is preferred over broccoli in his location. I don't know. But I plan to try cauliflower with cabbage next year. But the main advantage of the collards is that they continue to grow throughout the season of the cabbage crop.

We are now in the third year of our program, and the number of growers adopting the system is increasing each year. Most of the spraying of insecticides for diamondback moth control has been eliminated. However, the cabbage looper remains a pest and growers usually spray 1-3 times to control it.

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ECHO can send a trial packet of collard seed to our overseas network. It is a common vegetable in many tropical countries because of its tolerance to warm weather. For example, in Kenya I am told that collards and cabbage are the primary year-round vegetables. Please request seed from ECHO only if collard seed is not available in your country.