

UVM Scientists Identify Eco-Friendly Tool for Fighting Wheat Blight
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BURLINGTON — At a time when U.S. military forces are struggling against growing insurgencies in Iraq and Afghanistan, two researchers from the University of Vermont are making major strides against a different kind of threat in those war-torn countries: a destructive wheat blight found in many parts of the Middle East, Asia and central Europe. The research promises to dramatically improve food-crop harvests, and it could go a long way toward rebuilding trust among people otherwise wary of American intentions in the region.

UVM entomologists Bruce Parker and Margaret Skinner, working in conjunction with a scientist in Syria, have isolated an insect-killing fungus that can be used to fend off the Sunn pest, an insect that for centuries has been decimating wheat and barley crops in Turkey, Syria, Iraq, Iran, Afghanistan and the former Soviet republics. The Sunn pest has reduced barley harvests in some areas by as much as 30 percent; wheat harvests have been wiped out entirely. Parker calls the insect the biggest obstacle to wheat production in the Middle East.

The Sunn pest is particularly insidious for farmers, Parker explains. As the insect feeds on the wheat spike, it injects the grain with a chemical that destroys the gluten. As a result, livestock won't eat it; bread made from the grain doesn't rise properly, burns easily and has an unpleasant taste. Moreover, seeds from an infected crop won't germinate the following year. Minimal Sunn pest contamination — just 3 percent — spoils an entire crop.

The Middle Eastern partner of Parker and Skinner is Mustapha El Bouhssini, a researcher with Syria's International Center for Agricultural Research in Dry Areas. As a trio, the scientists have been helping farmers throughout the Middle East reduce or eliminate their need for dangerous, costly and ecologically destructive chemical pesticides. In the past, many Middle Eastern governments not only purchased the chemicals for farmers but also decided how and



SUNN PEST FEEDING ON
WHEAT SPIKES
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BREAD MADE FROM
INFECTED WHEAT

where they should be applied. Often, this approach resulted in the indiscriminate aerial spraying of chemicals that pose serious risks to human health, kill beneficial species and increase resistance among the targeted insects.

As a result of the scientists' lobbying, the insect-killing fungus is now being used as part of broader, integrated pest-management programs, which are more economical and less harmful to people, property and the environment. In some countries, such as Turkey, the government is now allowing farmers to decide when and how to use these eco-friendly techniques. At least 3 million hectares — or 300 million acres — of farmland have already been affected by these policy changes.

Parker and Skinner's research earned them the Innovative Marketplace Award at last month's annual meeting of the Consultative Group on International Agricultural Research in Washington, D.C. The award included a \$30,000 prize to further their research — a small but important financial incentive, considering that this research competes on the global stage with the interests of the multibillion-dollar chemical pesticide industry.

The war in Iraq has made travel to that country impossible, and the conflict in Afghanistan has left some regions of that country inaccessible. Skinner also notes that the U.S. government won't allow them to bring their own computers to Syria when they conduct research there. Both UVM scientists insist, however, that the current geopolitical situation has not dramatically hampered their research work. They do point out, though, that many of the farmers who are now benefiting from this research, which is still in an experimental phase, live in areas where positive attitudes about Americans are in short supply.

"The science that we're doing is incredibly important," says Skinner. "But sometimes I think that even more so, it's those bridges we're building, so they know there are people in *this* country who care about them as people. In that regard, it's heartening to me."

The Sunn pest is not yet a problem in the United States, but it is on the U.S. Department of Agriculture's watch list, which means that American farmers may one day also benefit from Parker and Skinner's work. "There is no reason why it could not become at some point a significant pest of wheat in this country," says Parker. "The climates where wheat is grown here are not that different from the climates that we find in the range of this insect."