



Food Security and Crop Protection



Mini-Documentary: [Pick of the Crop](#)

It is estimated that by the year 2050, the global population will reach 9 billion people. The towering challenge of feeding the world's burgeoning population presents a range of complexities from logistics to humanitarian concerns to security.

Studies show that during the years 2000-2010 worldwide crop consumption increased at a rate of 23%. During the same time period, however, the number of harvested acres increased at a meager nine percent, far less than half the rate of consumption.

“My work is to identify pests like the *Tuta absoluta* tomato pest and find the most suitable methods of control.”

Marcelo C. Picanço, Ph.D.
Associate Professor, Dept. of Animal Biology,
Viçosa University, Brazil

There are a finite number of arable acres worldwide, yet consumption increases. In order for supply to meet the growing demand, growers need to maximize their yield from every acre. Innovative crop protection becomes a vital element in the science behind increasing crop yields. Much of the growth in yields is going to come from the developing world, where it is estimated that 20-40% of crops are lost due to pests.

Ensuring food security for the growing population is one of the greatest global challenges of the 21st century. For farmers in Spain, as seen in the mini documentary, “Pick of the Crop,” one voracious pest like *Tuta absoluta*, a member of the lepidoptera species, can decimate a primary crop like tomatoes, causing complete crop devastation and economic distress.



World's Favorite Crop

Imagine a pest so voracious that it can destroy 100% of the crops it feeds upon. Now imagine that crop being the world's most popular fruit, the tomato. A staple in nearly every cuisine and culture, tomatoes are produced 60 million tons of tomatoes are produced worldwide each year.

As seen in the mini documentary, "Pick of the Crop," Spain's tomato industry was nearly brought to a standstill because of one voracious pest, *Tuta absoluta*. Also known as the tomato leafminer or tomato borer, this member of the lepidoptera species was able to decimate Spain's tomato crops, causing economic distress to this critical industry.

Originally from South America, *Tuta absoluta* began devastating tomato crops in Spain in 2006 and the next year rapidly invaded the entire Mediterranean region. Since then, it has continued to spread and infest crops in North Africa, Europe and the Middle East.

This pest's rapid reproduction —reproducing 10-12 generations in a year with each female able to lay 250-300 eggs in her 30-35 day lifecycle — leads to its devastating effect on crops. This extremely aggressive pest is nocturnal, hiding between leaves during daytime and feeding at night, attacking tomato crops at all stages of growth, causing 100% crop destruction in open fields as well as in protected environments such as greenhouses.

Once infested, *Tuta absoluta* can be spread via seedlings, infested vines, within the fruit, and in used packing containers. Along the supply chain, other vulnerable areas for infestations are vegetable repacking and distribution centers and outdoor markets. The infestation of *tuta absoluta* has also been reported on potatoes, peppers, eggplant and common beans.

The scientific discovery team at DuPont is focused on developing new crop protection solutions by working with growers to address their changing needs and advance agriculture so they can deliver the highest yields from their crops.



Tuta absoluta consuming a tomato plant

Featured in "Pick of the Crop," DuPont™ Altacor®, powered by DuPont™ Rynaxypyr®, is from a new class of chemistry, the anthranilic diamides, controlling almost all economically important lepidoptera and selected other species. When used early in the pest life cycle, Rynaxypyr® prevents the build-up of pest populations to help maximize yield potential. The rapid cessation of feeding, strong residual activity and excellent rainfast properties of Rynaxypyr® deliver nearly-immediate and long-lasting plant protection under a range of growing conditions.

With remarkably low toxicity to mammals, fish and birds and high insecticidal potency, Rynaxypyr® significantly boosts Integrated Pest Management (IPM) programs, making it a sound choice for growers, farm workers and the environment. Rynaxypyr® is advanced chemistry that optimizes the potential to produce high-quality, high-yielding crops and represents a new horizon in insect control solutions.

