

FIGHTING MALARIA IN NORTHERN PERU

Changing irrigation practices to combat malaria in Northern Peru

POSTED BY BRIAN OWENS ON NOVEMBER 17, 2015

When large-scale irrigation came to Peru's north coast in the 1960s and 1970s it brought with it an explosion in agriculture, in particular rice cultivation. But it also brought a new disease to the area — malaria.

“The north coast is a semi-arid area, the only reason there is malaria there is because of irrigation,” says Andrés Sánchez, a senior program specialist with Canada's International Development Research Centre, which is supporting a project in the region that could help eliminate the deadly disease. “It's a man-made problem.”

Fortunately, there's also a man-made solution. Research from the past 15 years has shown that by changing irrigation practices, farmers can prevent the breeding of malaria mosquitoes in their own fields. Instead of keeping fields flooded throughout the growing season, farmers can alternate between flooding and drying their rice paddies. This breaks the life cycle of the mosquitoes that carry the malaria parasite and drastically reduces their numbers.

“When farmers practiced intermittent irrigation, there was an 85 per cent decrease in malaria-infected mosquito larvae in rice paddies, which contributed to a reduction in disease transmission in parts of the Jequetepeque valley,” says Elena Ogusuku, an entomologist at Peru's Ministry of Health who is leading the project that's investigating ways to encourage the practice.

Previous attempts to deal with the problem met with little success. In one jurisdiction, for example, rice paddies are not allowed within 500 metres of villages, but that still leaves farm workers exposed to infected mosquitoes. And eradication efforts using pesticides just led to increased resistance to the chemicals among the mosquitoes. Intermittent irrigation is much more effective, but needs to be taken up more widely to really make a dent in malaria transmission in northern Peru. “The mosquitoes can fly from field to field, so the trick is to do it on a mass scale,” says Sanchez.

The advantages of controlling irrigation go beyond tackling malaria transmission. Intermittent irrigation can reduce water use by between 20 to 30 per cent, an important consideration in the dry region, where water allocation is a constant source of tension and where 15,000 hectares of arable land lie unused because of a lack of water, says Ogusuku.

It also makes economic sense. The intermittent drying kills off common rice pests, reducing the need for expensive pesticides, and allows more oxygen to reach the plants' roots, boosting yields by as much as 25 per cent.

With so many advantages, you might think converting the entire region to intermittent irrigation would be an easy sell, but that has not proven to be the case.



A member of the intermittent irrigation project team (left) helps a local farmer conduct a test to measure rice yields near the town of Guadalupe in Northern Peru. (Photo: Esther Montalvan)

Local farmers are conservative and risk-averse, and can be reluctant to try new techniques — especially since there's no support from the government to cover any extra costs, so the farmers must invest their own time and money to take part in the project. There are also no agricultural extension programs to help spread new farming methods or technologies, so Ogusuku is working with local farmers and NGOs to provide technical assistance and share local experience.

There's also bureaucracy and inertia to overcome. Getting the three government ministries that have an interest in the project — agriculture, environment and health — to work together has proven challenging, and there are strong vested interests involved in the allocation and distribution of water resources. “Water is power,” says Sanchez.

But there are some signs of progress. The farmer-led irrigation authority in the Jequetepeque valley, representing 15,000 farmers, has financed a technology-transfer workshop to test the adoption of the technique, showing growing acceptance of the idea by farmers.

The government is also coming around. In 2014 the president of Peru declared that it was in the national interest to adopt intermittent irrigation throughout the north coast (a decree with no real legal force behind it, but symbolically powerful nonetheless). And earlier this year, the government established a commission involving representatives from the ministries of agriculture, health and environment, as well as three regional governments, to promote and track progress on implementing the technique. The National Agricultural Research Institute is now planning to run commercial demonstration fields to test large-scale intermittent irrigation in the next growing season.

“It's working,” says Sanchez, “but slowly.”

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READING AS THINKING

Answer the following in complete sentences.

1. Identify the main idea of the article.

2. Why is malaria a man-made problem on Peru's north coast?

3. Who does this issue affect, both directly and indirectly? How might they be a part of the solution?

4. Previous attempts to control malaria have not been successful. Describe these attempts. Judge which man-made solution is most beneficial for the health of farm workers.

5. The article states that local farmers have been reluctant to try new techniques. Design a newspaper headline encouraging farmers to adopt intermittent irrigation.

6. Despite the identified challenges to the large-scale adoption of intermittent irrigation, the article discusses signs of progress. Sanchez is quoted at the end of the article as saying "It's working, but slowly." Evaluate the significance of the quotation.

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Think-Pair-Share

7. *Think* Images can allow us to make powerful observations and inferences. Examine the image in the article. Record your observations below. You can use the 5Ws to guide you: who, what, where, when and why.

5Ws	Observations
Who	
What	
Where	
When	
Why	

PAIR

An inference is a conclusion drawn from evidence. Based on your observations from the picture and the information in the article, what inference can you and a partner make about why this picture may have been chosen?

SHARE

Share and discuss your inference during a classroom discussion.

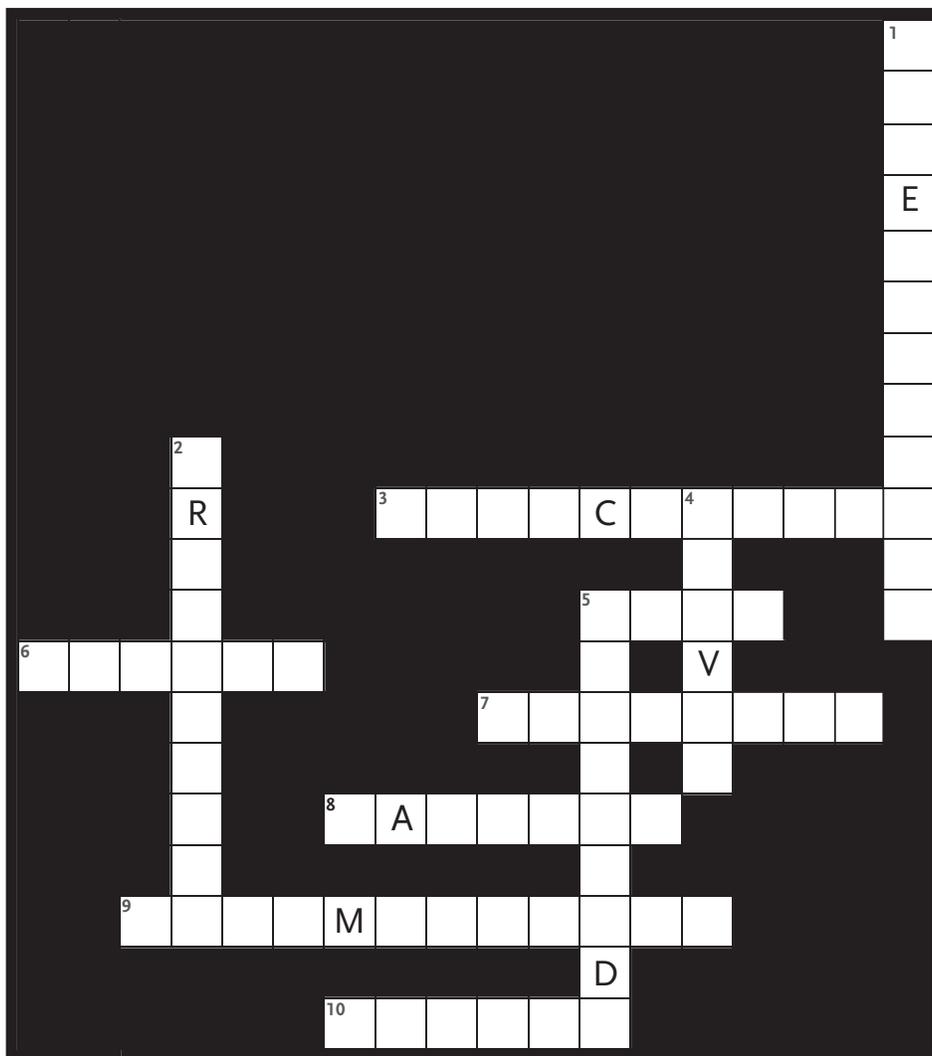
ONLINE

Are there instances of irrigation increasing malaria in other parts of the world? What has been done to remedy the problem? Show how the situations are more similar than different.

- To find out more you can visit [The Health and Environment Linkages Initiative](#) or [this article from the University of Michigan](#).
- Find out more about the [International Development Research Centre](#).
- Visit PBS and view the video "[Water](#)."
- View a short video from PBS Newshour called "[How maps packed with data help scientists fight malaria](#)."
- Explore Northern Peru on [Google Maps](#).
- Find out more about [irrigation in Canada](#).

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CROSSWORD:

Across

3. A government ministry interested in the project
5. A South American country fighting malaria
6. Intermittent drying allows more _____ to reach the plants' roots
7. Canada's International Development _____ Centre
8. A disease caused by the bite of an infected mosquito
9. Scientist who studies insects
10. Land that is suitable for growing crops

Down

1. Irrigation reducing water usage
2. Method of watering crops
4. Malaria-infected mosquito _____
5. A chemical substance used to kill mosquitoes