
Devastating Disease of Neem Trees in West Africa

We are suddenly hearing from many in our network about this disaster. Mike Bengé with USAID phoned to alert us to the problem and to say that they were sending a team to investigate. Steve Maranz in Niger writes that the neem disease has now reached all the way to Senegal. [ED: That's as far west as one can go in Africa.] "It should be noted that to the villagers here, none of the products and services rendered by neem compare to its value as a shade tree. When there is nothing in the bare landscape between you and the blazing sun, the thick shade of a neem is heavenly. So much more the loss, then, when a 20 year old neem tree dies." On a related note, Steve writes, "I saw that our cowpeas were infested with beetles (I assume the bruchid beetles one reads about). I asked our field technician if he had ever used neem oil to control these pests. His answer was interesting. He said he knew it was effective, but would rather lose half his cowpeas than have to taste neem in his food. This is from someone who eats kola nuts every day, which are as bitter as quinine."

Steve sent a copy of a letter from George Eaton, director USAID mission to Niger written to the United Nations representative in Niger (and directed toward the broader development community) concerning this disease. Because of the importance of this problem, I will quote at length.

"Early this year the Government of Niger requested assistance from USAID/Niger to carry out an investigation and determine the nature of the disease. ...an investigation was conducted by plant pathologist Dr. Paul Batra in June/July. Dr. Batra confirmed the existence of an apparently widely dispersed disease affecting large numbers of neem trees. ...[He] collected plant material and soil samples which were analyzed in the United States. The disease has been provisionally diagnosed as an infection by a soil-borne fungus." [Mike Bengé says they are still unsure what is the cause.]

"Subsequent investigations by CARE/Niger staff in the Maggia Valley have confirmed that a very high percentage (100% of their sample) of the mature pollarded neem [i. e. the tops cut off, probably to use in firewood] and over 15% of the younger neem were affected. In addition 100% of the 1991 planting stock and many private woodlots are affected, as well as neem seedlings in the Tahoua nursery. As a result, CARE/Niger has proposed no further planting of neem until further notice.

"Subsequent investigations in and around Niamey by USAID/Niger staff have confirmed a high incidence of the disease in mature trees planted around town, ... in the Niamey Greenbelt, as well as in younger trees in several urban plantations. ... it has been noticed that the outer layer of the cambium of diseased trees (just under

the bark) is bright red. This is true for trees that show external signs of the disease (e. g. a dead branch) as well as for those that do not yet show these signs. We are in the process of obtaining samples [elsewhere. If the same symptoms are present], this would provide a way of more easily diagnosing the disease at an earlier stage.”

He then explains how neem was brought from the Indian subcontinent to Sudan in 1925, from there to Nigeria in 1935, then to Senegal in 1944 and Mali in 1953. It presumably came from Nigeria to Niger in the 1940's, where it is the principal species for reforestation (currently 2 million trees). “Given the high probability that most neem planted in West Africa come from a very narrow genetic base, it is expected that little resistance to this disease is likely to be found in the local population [Ed: italics mine]. USAID, ICRISAT Sahelian Center and possibly others are continuing to study the problem.

This last statement should be expanded. Sometimes a single packet of seed planted for evaluation gives such good results that a large project develops from its offspring. Possibly every seed in that packet came from one or a few related trees. There is nothing wrong with this in itself. But if large acreages are planted and a disease or insect problem arises that seriously harms the trees, it is possible that every tree will be equally susceptible. In the tree's country of origin a lot of genetic diversity would exist, possibly including resistance to the current problem.

An example of such vulnerability might be the kiwi fruit industry in New Zealand. At the New Crops Symposium last fall a scientist from New Zealand said that kiwi fruit was introduced to his country some years ago by a missionary who brought seed from China. He said it is quite possible that every seed might have come from a single fruit. They are working now to make sure there is a broader genetic base by bringing in plants from China.

Have you had such success with a tree species that thousands of trees might someday be planted? Can all the trees be traced to a single packet of seeds? If so, you should consider obtaining additional packets from different locations, preferably from the center of origin of that tree. If you have one variety of a species that is particularly desirable, e. g. a particular kind of leucaena, it is especially likely that it has a limited genetic pool to call upon in time of need. In a case like this you should seek out additional leucaena varieties, even if some are not quite as good for your purposes as your favorite.

This is also a good time to mention again how important it is to have as wide a number of species as possible making up the core of your development efforts. The more widely used any one species becomes the greater the likelihood that an epidemic might occur and the greater the damage it can cause your program.