
Interview: George Cavin

How, and how not, to fight the locusts

Retired U.S. Department of Agriculture entomologist George Cavin, who has several years' experience fighting grasshoppers and locusts, was interviewed Sept. 23 by Marjorie Mazel Hecht, managing editor of Fusion magazine. Cavin was recently in Mali as part of a U.S. Agency for International Development (AID) team.

Q: Can you tell us about your work with the U.S. Department of Agriculture and locusts?

Cavin: I went to work with the USDA in 1949 on grasshopper control in Wyoming, and I worked most of the Western states for several years. In 1955, I went to Pakistan, working primarily on desert locusts. Later I worked in Libya, Morocco, and Tunisia. Then I spent several years as an adviser to the Desert Locust Control Organization in Eastern Africa. In all, I spent at least 10 years working on locusts and grasshoppers in Africa and the Middle East.

Q: Recently you went to Mali as part of the U.S. AID fact-finding team.

Cavin: My job there was to test some insecticides to see if we had some that would be safer to use, more economical, and environmentally acceptable than the chlorinated hydrocarbon insecticides that are still in quite widespread use. . . .

Q: The main questions that I have for you concern the spraying efforts going on now in Africa, and the two different approaches to the problem of eradicating locusts and grasshoppers. The Food and Agriculture Organization has taken an approach against large-scale spraying. They are saying that there are millions of hectares infested, but they will spray only the areas near the crops in order to protect the crops. We will let the grasslands go, we won't spray there because that's too big an effort, the FAO says. . . . What do you think?

Cavin: If we take a look at the grasshopper problem in Mali, Senegal, and Burkina Faso [formerly Upper Volta] generally, if they wanted to accomplish the job satisfactorily, they must treat the insect in its larval stage before it reaches adulthood and starts to migrate. *Those larval stages generally hatch out in the grassland areas.* Although some do hatch out in the cropland, the general habitat for the larval stage is in the grassland area. That's where you are going to have to attack them if you are going to do a successful job of preventing crop damage. Once they return as adults and enter the crops, even though you treat them at that time, by the time mortality occurs to the insect, severe crop damage is going to occur.

Q: It seems to me also that by not treating the grassland, you would guarantee that next year you would have a bigger problem.

Cavin: This is correct. You've got to treat a certain amount of the total infested area to begin to get the population to go back downhill. Generally, if you treat just the cropland, it is mainly adults that you are treating and many of those adults have already laid eggs for the next year's crop. So by merely treating in the cropland areas—what we are speaking of is migratory grasshoppers—you are not doing much toward diminishing the problem for another year.

Q: All of the U.S. entomologists whom I've talked to, who have experience in treating grasshoppers in this country, absolutely agree with what you said. I know that in Burkina Faso the FAO specifically recommended spraying only one-fifth of the area that is infested; they are ignoring the infestation in the grasslands.

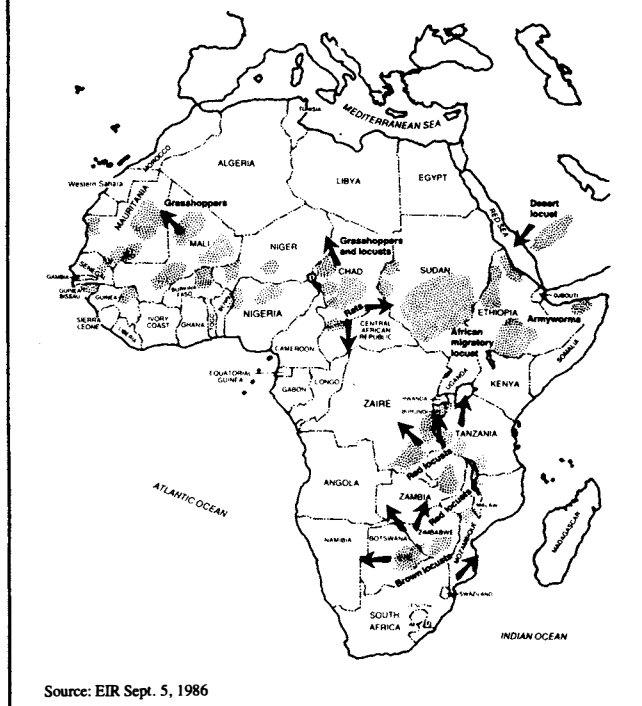
Cavin: I'm not aware of what the situation is in Burkina Faso right now. I know that they had grasshopper problems early and I'm sure that those are the migratory types of grasshoppers. They moved north, and now what they are spraying is the migratory grasshoppers coming back into Burkina Faso with the retreat of the intertropical convergence system. They are probably all adult grasshoppers, so it is likely that they have laid quite a number of eggs already. So we can expect, if conditions are favorable, that we will have grasshoppers again there next year.

Q: What is the intertropical convergence system?

Cavin: That is the weather system across Africa that moves north during the summertime and then back toward the south as it cools off in the winter. Most locust and grasshopper movement is based on the movement of the intertropical convergence.

Q: So, these grasshoppers hatch in the more southerly areas, move north as adults, and now with the change in season are coming back to the areas in which they had started out?

African locust infestations



Cavin: That's right. It's a new generation, but the same insects are coming back again.

Q: Do the grasshoppers migrate as far as the locusts do?

Cavin: No. Of course, you have to remember that all locusts are grasshoppers. These migratory grasshoppers of West Africa can move from central or southern Senegal or Mali and northern Burkina Faso up to as far as southern Mauritania and northern Mali, and then they move back again. They'll migrate several hundred kilometers. Desert locusts, the biggest and the ones that travel the farthest, in successive generations can go all the way from India to the Atlantic Coast.

Q: I've seen the maps from past plagues, and it's phenomenal to see the stretch that they travel. Some of the accounts I read from the plagues of the 1950s and 1960s show that the locusts were traveling up to 200 miles a day.

Cavin: They can, in the hot summer, fly all day and all night. It makes it very difficult for control. You said that the FAO was talking only in terms of treating cropland areas. Are they referring to all locusts and grasshoppers or just the problem that they are seeing in southern Africa and in Western Africa.

Q: FAO specifically talked about the Sahel countries, including the African migratory locust in Ethiopia and the desert locust in that area, as well as the brown locust in southern Africa. We didn't talk specifically of the red locust.

FAO said that they are just going to do the small-plane, spotty effort.

Cavin: It's hard to say how many small planes they are talking about, and overall how large an area, because normally with the desert locust you may have to treat very sizable acreages. Overall, they may not be in one location, but overall it should be very sizable acreages. So it is hard to comment on their statement unless I know just exactly what they are talking about.

Q: The FAO said that they had 1.1 million hectares to treat in the Sahel, and they had 28 small planes to do it. I calculated that the four DC-7 planes in Senegal could cover that area in just a couple of weeks, and it certainly made sense to me to use those big planes and get that area sprayed.

Cavin: I don't know where they'd get 28 small planes in the first place, because when I was in Mali there was only 1 airplane that was capable of treatment and it didn't have authority to work in Mali because it didn't have relicensing by the Dutch government. That was the only airplane that we could find in the whole country that was capable of spraying!

Q: The four DC-7s have been sitting on the ground doing nothing in Senegal since they finished spraying there more than a week ago. They could have gone to Burkina Faso, Mali, Niger—any number of countries that wanted that big plane effort, but they were not sent on. The figure of 28 small planes comes from Lukas Brader at the FAO's Emergency Center for Locust Operations in Rome. I've been having a really hard time finding out whether that meant all of the planes that had been pledged by donor nations, but weren't there yet, or just the planes that were there. I suspect that it is all of the planes that were pledged.

Cavin: Yes, because I don't know where [that number of] aircraft would be available; we know there are some available down in the Ivory Coast. . . . We could have gotten two or three out of there, but most of the planes that were present with the old locust organizations are now defunct. . . .

Q: From my understanding, most of them are virtually defunct because they don't have funds and that's part of the problem; all the infrastructure that had been established before is now inoperable. They were missing parts to planes, they just couldn't get anything off the ground.

Cavin: I think that is probably true. . . . The whole locust control organization in East Africa is probably in better shape than all of them, but it has gone downhill considerably in the last 10 years because of lack of new equipment, lack of funding. The governments there supported them to a greater extent than the other organizations, and yet they still have got a problem. Most of their equipment is old and needs a lot of replacement, they still have got a lot of old insecticides that should be disposed of, and they should start filling up the supply with some of the better, new insecticides that have much less problem of residue. So all of the organizations are

really down considerably over what they used to be. They just don't have the capabilities right now to do the job that they are supposed to do.

Q: What concerns me is that no one seems to be really doing that job on the scale that is required to prevent these things from coming back worse next year.

Cavin: This is, of course, one of the problems they are facing this year. And compared to former years, many of the areas that would be the most suitable for working in are very difficult to access: southern Sudan, for instance, Western Ethiopia, Eritrea, and places like the Ogaden desert in Ethiopia—places that are critical to good control operations are almost inaccessible to control at this time.

Q: If, in fact, you did mount a good effort every place else, you would still get things breeding in those areas and coming out of those areas to re-infest. I don't think that it is accidental either that most of those areas could be taken care of by the Soviets if they wanted to.

Cavin: This probably could be.

Q: But they don't contribute a penny to this effort.

Cavin: Yes.

Q: Now, I'd like to ask you what you would do to solve the problem, if you were not constrained by some of the obvious constraints: How would you attack this problem to prevent the locusts and grasshoppers from being a plague not only this year, but next year? What steps would you take?

Cavin: I think the main step is that these organizations have got to somehow be revitalized. They've got to train people. The people they've got now were trained back in the 1950s and 1960s, they've had a lot of experience on locust control, they have accomplished the job, they know how to do it. It is not a big matter of continued training. . . . In general, these people are capable of doing the job. What they need is the support materials and the financing to do it. That I would say would be the number-one thing, provide the support to these organizations in order to get them back on their feet.

Q: I find it particularly frustrating that the information the FAO has collected comes in so sporadically, and in a form where it is hard to tell just what the dimensions of the problem are.

Cavin: This is right. I saw that in Mali where there is just a very vast area of infestation and though the Mali government was doing what they could through their crop protection service, some of the people were quite frustrated because they did not have equipment to get out to really see what the situation was. They were only able to fund or support two or three of their field bases, and put people there, so they were having a very difficult time keeping an effective monitoring system going. They were trying to do the job, but they were doing it with very insufficient resources.

Q: In terms of the emergency situation today, what would you do?

Cavin: Of course, you've got a whole group of different types of grasshoppers and locusts involved here. None of them can be approached by the same methods. For instance, for the African migratory locust, they've got to get back and clean up things in the central area of Mali, and in the Lake Chad basin and along the river banks leading into Lake Chad, because that's where these locust infestations develop. Since swarms have already gone out of there, they are going to start breeding in other locations. But if you want to stop it from being on an almost continuous basis, you have to get back in there and knock them down in those locations. That would certainly be the approach you would take for the African migratory locust. The locust is pretty much the same in Tanzania and Zambia. You have got to get into the breeding areas and knock those populations down there. Eventually, the entire problem will die out if you can keep those areas under control.

Q: So you are talking about an aerial spraying effort.

Cavin: Yes, they have to work with air. These areas are almost inaccessible by other than aircraft.

Q: As far as what the FAO told me about Mali and Chad, everything is "under control."

Cavin: When I left, most of the grasshoppers had moved north, toward the Mauritania border, *and we were expecting them to return*. I left before they had started to return, so I can't tell you just exactly what the situation is now, but I know that the Norwegians were bringing in aircraft to do considerable work in west Mali which was going to help the situation.

Q: What about the grasshopper problem? Do you want to talk specifically about what you would do there?

Cavin: It's practically too late now [in West Africa], unless there are aircraft right on the ground, to really stop anything other than to try to protect the cropland at the present time, and really you're not going to be able to do much to protect the cropland sections. So many of those places are so isolated, that by the time the grasshoppers get there and the word gets out to the people who can do the control, so that they can come in and actually spray the area, the damage has already occurred. What they need to do now, is prepare for next year, and have equipment and materials and so forth on the ground in May and start treating the grasshoppers as they hatch out as the rains start in the south. They should then move north with the rains and beat them as they are being hatched or shortly after hatching. If they want to stop the infestation, I think that that is the primary means of doing it.

Q: I know that the critical time for the Sahel and West Africa was the month of September, which is almost over.

Cavin: You have two times to get them. You either get them as they start in the south to move north, or you get them at the northern terminus where a new generation occurs before they start to move south again. That would have been early September, when they started hatching out in that second or third generation.

Q: So for this area, we are now talking about May 1987 as the next critical point.

Cavin: That's right. When all of these new generation eggs will have wintered and carry over in the egg stage until the rains come in May or early June. They will then hatch, and the hatch keeps occurring as the rains move northward with the intertropical convergence. So you start at the south end where the rains begin and just move your control effort toward the north following the rains. . . .

Q: In the United States, in the 1930s, when the normal control procedures for grasshopper control were stopped because of the depression, the grasshoppers multiplied, eating right down to the roots of the vegetation. This destruction of the vegetation throughout the rangeland is partly what led to the dustbowl.

Cavin: This is one of the problems that hasn't been taken into consideration sufficiently in the Sahel—the damage that these things do to the grasslands themselves. They certainly contribute to the desertification of the Sahel.

Q: That is what I found particularly shocking: You have an area where the desert is encroaching anyway, and not to widely spray in the grasslands is just a gift to the desert. Also, it cuts out your source of protein; grazing animals are still a livelihood and source of meat in much of that area.

Cavin: Goats and cattle are still very important in that area. They still have large herds.

Q: So if you get rid of your grassland, even 60% of the vegetation on the grasslands, you really have nothing to feed your livestock.

Cavin: There's not very much left, that's right.

Q: On that basis alone, it seems to me that the FAO's prescription for the area is one that is bound to fail and cause a lot more starvation.

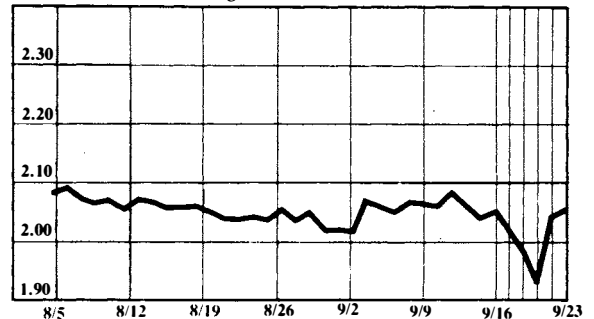
Cavin: This whole area, the Sahel, is a very, very fragile ecological zone in the first place. Anything like that tends to disrupt it; it can have a really severe effect on it.

I just think that the situation is getting to the point over there where definite action has to be taken, and it needs coordination of the governments that are assisting and so forth, because it looks like what we saw in the early 1950s, except then we really only had one problem, and that was the desert locust. This time we have several locusts plus the grasshoppers, so the situation is even much more alarming.

Currency Rates

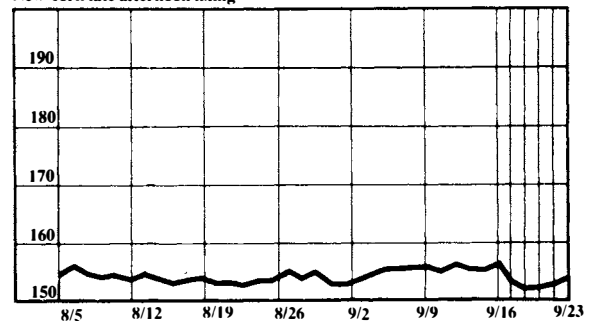
The dollar in deutschmarks

New York late afternoon fixing



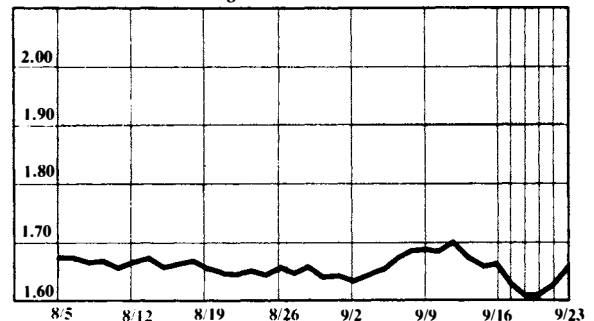
The dollar in yen

New York late afternoon fixing



The dollar in Swiss francs

New York late afternoon fixing



The British pound in dollars

New York late afternoon fixing

