

1 hadn't found all the lesions on the trees around the focus.

2 Q. Okay. Is there any indication as to how
3 successful these efforts were?

4 A. The success seemed to have been based on the fact
5 that the nursery inspections were carried out very
6 thoroughly, and by 1916, through proper inspection and
7 regulation the authorities were preventing any further
8 infected nursery trees from reaching the orchards. And
9 very quickly, the number of trees found with canker in the
10 groves after that time diminished very, very rapidly, in a
11 matter of one or two years. And then they found a few
12 remnants in following years, and the last discovery was
13 about 1927.

14 Q. Okay. When was the next outbreak after that?

15 A. The next outbreak was -- of true canker, not the
16 one that was in the nurseries discovered in 1984, the next
17 discovery was in 19 -- now, this is where -- this is where
18 you have to consider the history. It was really 1984, but
19 it was not identified as such until 1986.

20 Apparently in 1984 a resident in St. Petersburg did
21 inform the Department of Agriculture that he had some
22 citrus that showed symptoms very similar to what he had
23 seen in the local newspaper. The local newspaper was
24 giving a lot of publicity at canker at that time because of
25 the discovery of so-called canker in Florida nurseries.

1 He sent specimens or had -- I don't know what the
 2 logistics was, but anyway, specimens were received by the
 3 DPI from that location and the disease was dismissed as not
 4 being canker. Two years later, further samples were
 5 received from that same resident, and it was again stated
 6 that -- they again concluded that it was not canker.

7 And this is where I became involved, because the chief
 8 plant pathologist at that time said to me, he says, it's
 9 not canker, but with your expertise on other leaf and fruit
 10 spots, can you try and tell us what it is. So I looked at
 11 the material. It was actually brought to my lab in Lake
 12 Alfred, it was brought to my lab in Lake Alfred from
 13 Gainesville and it was examined by me and I could not find
 14 anything at that time. I wasn't even allowed to take it
 15 out of the wrapper because they said it had been next to
 16 some so-called canker specimens in Gainesville, so I
 17 wasn't -- I wasn't allowed to take it out and examine
 18 it -- examined it under the microscope, I could only look
 19 at it through the transparent package.

20 And so I said, well I think I'd like to go and look at
 21 this citrus in Pinellas County. And then when I got there,
 22 I gained a very quick impression -- I'd already seen the
 23 true canker in Argentina, and I thought, well this must be
 24 Asian canker. But again, I was told by the plant
 25 pathologist who accompanied me from DPI and by the local

1 plant inspector that it was not canker.

2 Well I was puzzled. And they said, well, we found
3 similar symptoms in dooryard trees on Anna Maria Island,
4 and that -- we visited several residences on Anna Maria
5 Island and found the same symptoms. I took some specimens
6 back to Lake Alfred believing that it was not canker,
7 properly protected, but I gave them to one of my colleagues
8 who was more knowledgeable on serological techniques, and
9 he came back to me two hours later and he said this looks
10 like canker, Asian canker.

11 And so I'm partly responsible for the discovery of
12 Asian canker on Florida's gulf coast. I'd like to think
13 that perhaps if I hadn't discovered that, it might have
14 been dismissed as just another unimportant disease.

15 Q. All right. And Doctor, the -- what year was
16 that, sir?

17 A. That was in 1986.

18 Q. Okay. You used the term, was it dooryard trees?

19 A. Well, trees in people's residential properties.

20 Q. Oh. As opposed to those in a commercial grove?

21 A. As opposed to commercial groves, right.

22 Q. Doctor, you also mentioned there was a -- a 1984
23 scare of canker. Can you describe what that was all about?

24 A. Well, that turned out not to be canker but
25 something that they subsequently described as bacterial

1 normally cause any leaf distortion because the leaves are
2 usually at least partially expanded before the infection
3 can occur. So you don't normally get any sort of crinkling
4 or distortion of the leaves, so you end up with leaf
5 spots.

6 You can also get infection of very young twigs causing
7 erumpent pustules which are not likely to effect the twig
8 itself because they are all so superficial. The leaf spots
9 themselves, if they are sufficiently numerous, may cause
10 some premature leaf drop. But normally they -- they stay
11 on the tree until they would normally drop two or three
12 years later.

13 Q. Okay. And how -- how does this effect the fruit
14 production of the tree?

15 A. I don't think that the -- from what I've seen
16 either in Florida or in Argentina, I don't think the leaf
17 damage can ever be considered sufficiently severe to effect
18 the tree as a whole. There might be certain situations in
19 certain parts of the world where the conditions are so
20 conducive to severe infection that you might get some
21 defoliation followed by die back. But this would be the
22 exception.

23 Q. What are those conditions, Doctor?

24 A. This would be in areas which are -- that have
25 high rainfall and are very exposed to high winds. And

1 infection is -- is not severe enough to cause loss of
2 fruit. So you would end up with a blemish. And of course
3 we have plenty of other things that cause blemishing of
4 citrus rind, both caused by fungi and insect pests for that
5 matter. So --

6 Q. Well, Doctor, those other things that cause
7 blemishes on grapefruit that you described other than
8 canker, to your knowledge does the Department of
9 Agriculture eradicate all trees that have those particular
10 diseases or infections?

11 A. No.

12 MR. GOLDSTEIN: Objection.

13 Q. You can go ahead and answer.

14 A. No, they don't. But of course all these
15 blemished fruit are graded out in the packing house, so
16 mostly they do not reach the fresh market.

17 Q. Doctor, have you been to the packing houses?

18 A. Not for some time. I used to go to packing
19 houses, yes.

20 Q. Did they have a reject bin or something in --

21 A. Yes. They do, yes.

22 Q. And what is contained in those?

23 A. Well, anything that's unsuitable from the point
24 of view of size, maybe too small or too large, so that's
25 graded out, and anything that is -- that is blemished.

1 Q. Okay. So the blemishes, if they occur, are
2 weeded out in that packing process?

3 A. That's right.

4 Q. Doctor, let me ask you with regard to treatment
5 methods of citrus trees. Are there ways to treat citrus
6 trees that have citrus canker?

7 A. Yes, there are. Of course you're not going to
8 eradicate it by any of those methods, but you can certainly
9 reduce the -- the severity of the symptoms, and
10 particularly on fruit.

11 Q. What are some of those methods?

12 A. The main method is to use a copper fungicide
13 spray during the first three months after the petals fall.
14 And that is the time when we put on copper fungicides
15 almost routinely in Florida for the control of other
16 blemishes.

17 Q. Are there other methods; for example, heat,
18 thermal methods?

19 A. No, not in the field. I --

20 Q. How about for the -- the house plant, you know,
21 trees associated with a home, private residential?

22 A. Well, normally a homeowner doesn't worry about
23 the blemished fruit. As long as it's not a decay, they are
24 not going to worry about discoloration of the citrus
25 surface, they'll tolerate that, and most homeowners don't

1 Q. Doctor, you mentioned earlier premature fruit
2 droppage is a possible impact of citrus canker?

3 A. Yes, you can have some premature fruit drop.

4 Q. Is that significant?

5 A. I would not think so, not based on the
6 observations in other countries.

7 Q. Are you aware of any scientific data or have you
8 observed that fruit drop increases with the age of the
9 tree?

10 A. I don't think that fruit drop is necessarily
11 related to tree age. There are lots of causes of fruit
12 drop. And even if the dropped fruit has a blemish on it,
13 it doesn't mean to say that that particular blemish was the
14 cause of the drop. So it is very difficult to obtain any
15 quantitative data on the amount of fruit drop caused by a
16 specific disease.

17 Q. So there are other things that exist in Florida,
18 whether pests or other diseases that lead to premature
19 fruit drop?

20 A. Oh, yes, certainly.

21 Q. Are there a number of things that the Department
22 of Agriculture isn't presently seeking to eradicate that
23 cause premature fruit drop?

24 A. Well they are not trying on eradicate any of
25 those diseases.

1 Q. Can you tell me why?

2 MR. GOLDSTEIN: Objection.

3 Q. Doctor, whenever Counsel objects, you can go
4 ahead and continue to answer the question unless after the
5 objection you hear me withdraw the question.

6 A. All right.

7 Q. Okay. Thank you. So --

8 A. One has to base this on field experience, both in
9 different parts of the world and where the disease is
10 severe enough to be considered an economic problem.

11 Appropriate spraying methods are used and are generally
12 sufficiently effective for the crop to remain economic.

13 Q. Okay. And is that spraying citrus with a copper
14 fungicide?

15 A. That at the present time is based essentially on
16 the application of copper fungicides during the period of
17 fruit susceptibility. And I must say that the fruit is
18 only reasonably susceptible during its first three months
19 ever existence.

20 Q. Doctor, do you know in Florida if copper
21 fungicides are used with regards to commercial citrus?

22 A. Oh, yes. Almost every grove that is being
23 utilized for fresh fruit production is sprayed with copper
24 fungicide after bloom, much so, of course presently for
25 other purposes.

1 Q. Doctor, is it your -- strike that. In your
2 professional opinion to a reasonable degree of scientific
3 probability, do you believe that citrus canker must be
4 eradicated in Florida to protect the commercial citrus
5 industry?

6 A. No, I do not.

7 Q. Thank you. Doctor, in your professional opinion
8 to a reasonable degree of scientific probability, do you
9 think that citrus canker can be eradicated through any
10 method in the State of Florida?

11 A. Not reliably. And I say that because it is very
12 difficult to see small amounts of infection, and I don't
13 see how it is possible to eradicate something that a lot of
14 the time you can hardly see.

15 Q. Are you telling us, Doctor, that you can't just
16 give somebody training for a few weeks or a few months and
17 they can't walk up to a tree and right away spot citrus
18 canker?

19 A. I couldn't do that myself, either. I did put
20 myself to the test in Argentina. I went through certain
21 groves to see if I could find any canker knowing that it
22 was already there, and I had great difficulty in finding it
23 when it was in small amounts.

24 Q. Okay. Are small amounts of citrus canker
25 typically visible to the human eye?

1 A. If you look at every leaf.

2 Q. What do you mean every leaf, Doctor?

3 A. I do mean every leaf. I mean you'd have to look
4 at the whole canker and even perhaps use a ladder to get to
5 the top of the tree.

6 Q. So you're telling us, for example, that a tree
7 can be apparently healthy based upon looking at every
8 single individual leaf, perhaps thousands of them at eye
9 level or arm level and below, yet there still may be some
10 canker evident at the top of the tree?

11 A. Yes, because in certain cases your canker symptom
12 might be obscured by other symptoms, for example, leaf
13 miner. There is plenty of that in south Florida, I know.
14 So it's very difficult to distinguish between other
15 injuries and a small canker pustule, remembering that
16 canker pustules can be as small -- even when they are fully
17 formed, they can be as small as about one millimeter in
18 diameter.

19 Q. So how is it that we believe -- or we know that
20 citrus canker reappears in Florida in the mid '80s as
21 opposed to it always being existent?

22 A. Well, this is something that one cannot prove,
23 but it seems the more logical explanation that small
24 amounts probably did persist from the '20s, remembering
25 that the inspections were curtailed after 1933. Nobody was

544

1 really looking for it in groves or -- perhaps in
 2 nurseries. They were going into nurseries for other
 3 reasons, so I think perhaps they might have noticed it
 4 there. But groves were not being inspected thoroughly
 5 enough from 1933 to 1984 for people to say that there was
 6 no canker there.

7 Q. Doctor, do you have an opinion to a reasonable
 8 degree of scientific probability as to whether canker has
 9 existed in Florida continuously since the 1915 period?

10 MR. GOLDSTEIN: Objection.

11 Q. You can answer, Doctor.

12 A. Yeah, I think that one could only, shall we say
 13 speculate on this one, but there has never been, in my
 14 opinion, any clear establishment of the outbreaks, or shall
 15 we say the occurrences that have been noticed since the
 16 1984. There is no logical explanation for the canker on
 17 Florida's west coast. There probably is no logical
 18 explanation for the appearance of canker in south Florida.
 19 I know that people talk about it jumping over the airport
 20 fence, but I believe that is -- that is pure speculation.
 21 There is no evidence that it can be carried in that way.
 22 In history, the disease is known to have been moved from
 23 one country to another on infected plant material, infected
 24 citrus trees or seedlings.

25 Q. Okay. Thank you, Doctor. Doctor, do you recall

1 A. I would want to have available a uniform
2 population of the host plant of a sufficient acreage and I
3 would want to be absolutely certain that there was no stray
4 infection already existing in it within reasonable
5 probability, and I would then consider infecting a single
6 tree at some defined location within that prescribed area
7 and studying the movement of the disease symptoms
8 from -- from that point. But it would need to be a uniform
9 population, and preferably a reasonably uniformly spaced
10 population.

11 Q. Doctor, given that it's difficult to determine
12 whether trees are infected and then that if citrus canker
13 can exist just on isolated leaves, how can you make sure
14 that there would be no other infection present and that the
15 infection transmitted would be from the host tree?

16 MR. GOLDSTEIN: Objection.

17 Q. You can answer, Doctor.

18 A. One could never be sure of that. There could be
19 other reasons for that new occurrence.

20 Q. So let's assume --

21 A. Unless -- unless there the -- unless there is
22 some way of labeling the bacteria, I don't think there is
23 at the present time -- you'd have to ask -- ask others
24 about that -- but unless you could actually label the
25 bacteria at their source, I don't see how you could ever be

1 certain that outbreaks or occurrences beyond that point
2 would be due to the same bacterial population.

3 Q. Are you talking, for example, by using a
4 radioactive light source?

5 A. Well as I say, I'm not too sure that's feasible
6 in this case.

7 Q. Thank you, Doctor. If you have a study that
8 shows where the infected tree is and then draw a radius out
9 to 1900 feet and come to the conclusion that any trees 1900
10 feet out that are showing symptoms were infected by the
11 identified tree 1900 feet away, is that a reasonable
12 conclusion?

13 MR. GOLDSTEIN: Objection.

14 Q. You can answer, Doctor.

15 A. I'm not going to refer specifically to 1900
16 feet. I would say that in any situation if you found the
17 disease far removed from the original source -- original
18 tree, one could never be sure that the organism had
19 necessarily jumped from the original tree to the -- to the
20 outside tree. I don't see how you could ever be sure of
21 that, because there could be other ways of contaminating a
22 tree.

23 Q. But Doctor, let's talk about those other ways.
24 Could there be another tree closer, for example, that would
25 contain citrus canker that just had not been identified?

1 A. I think it depends on how many inspectors you
2 have. If you don't have very many inspectors, you may not
3 find it.

4 Q. Okay. Could citrus canker, in your professional
5 opinion, be eradicated in Florida except through the
6 removal of all citrus trees?

7 MR. GOLDSTEIN: Objection.

8 Q. You can answer, Doctor.

9 A. Not with certainty, no. I do believe though that
10 one could probably make sure that all the nurseries are
11 canker free by strict sanitation, et cetera.

12 THE REPORTER: Mr. Meyers.

13 MR. MEYERS: Yes, sir.

14 THE REPORTER: This is the court reporter. I
15 need to switch videotapes real quick.

16 MR. MEYERS: Okay. Go ahead.

17 (The videotape was changed)

18 THE REPORTER: Okay. We're back on the record.

19 MR. MEYERS: Thank you. Actually, we are done
20 with our direct examination, and unless there is a
21 cross, we're done with the depo.

22 MR. GOLDSTEIN: No. We have a cross.

23 MR. MEYERS: Okay. We may be redirecting
24 afterwards, but we're going to turn it over to the
25 defendants to do cross-examination.