

**1. May I know what methods you will adopt for measuring the quality of soil?**

We don't really use some very special methods. The AFCD will carry out a soil test after gathering some soil sample from our farm annually. Several elements are included in the test, for example, nitrate, potassium and phosphate ions.

**2. Do you think it is enough to conduct the measurement once a year?**

Of course not. Since the elements required for every crops are different. If your biosensor works, we can know about that and adjust the amount of fertilizers for every crops.

**3. I want to ask if you know what method the AFCD uses to conduct the test annually.**

No, I don't know. It is better for you to ask them.

**4. How long is the waiting time usually?**

Around one to two weeks. Their approach is really slow.

**5. We wonder if they will carry out the test inside the laboratory. Even though it is done in the laboratory, every laboratory has their own practice. Thus, we can hardly tell**

**how they do it.....**

Yes, they are. I can show you which unit in the AFCD is responsible for this to see if you can guess from it.

**6. The microbial biosensors that we are building in the laboratory may only be able to measure nitrate, potassium and phosphate rather than the total amount. As yours is an organic farm, would you prefer to know the total forms of an element or just one specific amount of an element?**

Not really. Take tomatoes as an example. When one of the elements lacks, we will add some fertilizers for supplementary.

**7. According to a farmer whom we interviewed few days before, he would like to know the amount of each form of element rather than that of the total of it. What is your opinion?**

Being organic farmers, we usually buy the special fertilisers with the known amount of nutrients. However, requirements of nutrients vary according to the species of the plants. We have to know so that we can provide what they need. Therefore, the information of the amount of each form of the elements will be useful as I can predict how much they lack by myself.

**8. What do you think about the development of microbial biosensors in Hong Kong?**

The future of microbial biosensors will certainly be positive since we need them. By the way, it is better if it is able to measure conductivity.

**9. What make you choose microbial biosensors?**

As you say, it should be cheap. Not all farmers are able to understand the theory behind the system. It is better to keep it as easy as possible. At least, we know how to plug it into the soil. Most essentially, accuracy will be highly considered.

**10. Its accuracy can reach micromolar.**

Oh, it is quite good. Do we need to keep the soil dry or wet when we are going to exert it?

**11. The humidity will not affect the accuracy of the device.**

So you mean we don't have to contemplate this factor. Then, do we need to consider the depth for it to be inserted?

**Explaining for the microbial biosensors in the laboratory right now.**

**13. What is the acceptable time range for you to wait for the results?**

Around several minutes.

**14. Would you prefer colour indications or number indications for the result?**

I prefer using data.

**15. Since we are using bacteria as the detector, there maybe some risks in applying the microbial biosensors, such as contamination of the soil. Will you still use it?**

As you mentioned before, it won't need a lot of soil, so it is possible to resolve this problem by putting the detector into one bucket of soil in order to avoid contaminating large area of the farmland. I just don't know if it meets the requirements of the Organic Standard and Certification System.

**16. Explaining the risks of microbial biosensors.(just hypothesis)**

If there are so much uncertainties, I believe not many organic farmers are willing to use it.

**17. Do you know whether there are any governmental organisations to authorise the usages of the microbial biosensors?**

I don't know.

**18. In fact, those risks are not likely to occur. Do you think it can be broadly used?How is its accuracy?** Since those in the market currently are electrical devices, if microbial biosensor succeeds, it will create a huge change. Due to the cost of the test and the size of our farm, it will be expensive to conduct the measurement. It will be helpful for us owing to its cost and usages. We don't have to guess the actual amount by experience anymore. For the time being, our usual practice is adding the nutrients at different time periods so as to know if the amount is sufficient or not but it will waste our time and money.(nutrients->wait for around two weeks->observe their growth->decide to add more fertilizers or not)

**19. Do you ask for the laboratory to carry out the test?**

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