Answers to Symptom Quiz 2

People are asked to identify the MOST probable cause of the symptoms observed in the photograph. If you know the host then it is of course easier to identify the cause. But the purpose of this exercise is to think about symptoms rather than hosts. There are several 'traps'

#	HOST	CAUSE, PROBLEM	NOTES
1	*Piper nigra*	FUNGUS. Thread blight on black pepper.	Mycelium growing over leaves. Very common on many plants in the humid tropics.
2	Chilli pepper	FUNGUS 'Velvet mould' .	Common on some plants in the tropics e.g. citrus. Not damaging.
3	*Prunus domestica*	FUNGUS Peach leaf curl. (*Taphrina deformans*).	The unusual growth is different from the galls caused by mites, for example. A common and widespread problem on peach other stone fruits.
4	*Prunus domestica*	INSECT (**not** virus) Aphid attack on peach.	The extreme curling of the leaves suggests aphids (hidden inside the curled leaves) rather than virus.
5	*Mango indifera*	INSECT Psyllid attack on mango.	These are different from the 'usual' galls seen on many plants, but it is the same principle: insect injects a chemical which stimulates unusual growth.
6	Chilli pepper	VIRUS or ?? Unconfirmed cause	The stunting and reduced overall size of leaves suggests this is something more than just lack of water or nutrients. But it could be due to poor management in one part of the nursery.
7	*Prunus domestica*	FUNGUS (or 'bacterial') Blossom blight. (*Moniliophthora* spp.), peach.	This is a known fungal disease which also attacks the fruits. However it's also reasonable to suggest that the symptoms are bacterial.
8	*Prunus domestica*	PHYTOPLASMA (or 'virus') Peach yellows.	This is NOT a nutrient disorder: if this was true the tree on the left would also be affected, and nutrient disorder cannot explain the smaller leaves and other changes in the foliage. This is a confirmed phytoplasma disease, though the symptoms might also suggest a virus on first look.
9	*Oryza sativa*	FUNGUS Bakanae disease, *Gibberella fujikori*..	The tall, thin plant on the left is the diseased one. This is a difficult disease to diagnose from only symptoms. Try eliminating causes in order to narrow the possibilities.
10	*Mango indifera*	FUNGUS Most likely anthracnose on mango	Well defined, sunken, necrotic areas suggest anthracnose rather than a bacterial disease (which you would expect to have wetter symptoms).
11	*Lactuca deliciosa*	NEMATODE Rootknot on lettuce.	Very distinctive symptom on annual crops. Some rootknots and root swellings caused by nematode are less pronounced than those shown here.
12	*Lactuca deliciosa*	FUNGUS (**not** bacterial) Sclerotinia rot on lettuce	It looks like a bacterial disease at first, but fungi also cause wet rots. If you know lettuce diseases you might recognize the sclerotia (small dots) at the base of the lettuce crown.
13	*Bambusa* sp.	HEALTHY (**not** virus; ignore minor insect feeding below if mentioned).	Absolutely nothing wrong with this. Know your healthy plant before diagnosing a problem. There could be a non-lethal virus involved. They produce unusual shapes and colours of commercial value in some plants (e.g. tulips).
14	*Theobroma cacao*	FUNGUS ?Penicillium mould on cacao pod.	The furry appearance suggests only one cause – a fungus. This can be confirmed with a handlens.
15	*Piper nigra*	VIRUS (**not** nutrient disorder) Pepper yellow mosaic virus	Distinctive patterns on leaf and slight distortion suggest that this is not a nutrient disorder, though these are tricky symptoms to analyse. Hence the importance of sending samples to the lab.

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16	*Piper nigra*	FUNGUS Most likely Phytophthora root rot, though not confirmed	Difficult to diagnose. Not all wilts are as dramatic as bacterial wilt on tomatoes or potatoes. Drooping leaves could be due to lack of water. In this case shaking the support tree causes the leaves to fall off – a sign that the plant is in permanent rather than temporary decline.
17	*Manihot esculenta*	FUNGUS Leaf spot, cassava.	These well-defined leaf spots also have small black dots on the surface (use handlens). These are often a sign of a fungus.
18	*Dimocarpus longan*	ABIOTIC? Unknown decline on rambutan	Unless you know the host and you have definite symptoms you can visually identify (e.g. gummosis, rotting roots) always treat dieback with suspicion. It could be due to generally poor growing conditions. Apparent dieback could be healthy – check to see if branches are green below bark). This looks more like waterlogging or some other abiotic cause.
19	*Coffea robusta*	FUNGUS Possibly anthracnose, coffee.	The shape and general appearance of the spots suggests a fungus disease. More general (abiotic) causes are unlikely to produce such distinct lesions.
20	*Acer pseudoplatanus*	MAMMAL (**not** fungus or bacterium) Bark eaten by squirrels..	At first this looks like a systemic pathogen, possible a fungus or bacterium. But these are secondary symptoms caused by an animal eating the bark. Monkeys and other mammals also strip bark..
21	*Saccharum* sp.	INSECT Possibly mealybugs, sugarcane.	Use a handlens to examine 'powders' and other deposits on leaves and stems. This will quickly show if an insect or fungus is responsible.
22	*Carica papaya*	VIRUS Papaya ringspot virus.	Note the subtle symptoms on the fruit (small rings). If you know papaya, these are typical of a virus disease. If not, it is difficult at first to work out a possible cause – until you use the elimination method for identifying a cause..
23	*Citrus* sp.	ABIOTIC (powder!) Bordeaux mixture applied to citrus	At first it looks like a mildew, but note there is a higher concentration of the 'powder' at the base than above. Someone has recently applied bordeaux mixture.
24	*Citrus* sp.	APHID (**not** virus) Curled leaves, unknown cause.	It looks like a virus disease, but with experience you should be able to distinguish aphid attack with the more extreme curling and distortion that many viruses incite. Citrus has many pest and non-pest problems and symptoms and if you are not an expert it suggests caution when attempting to do a field diagnosis.
25	*Lichee sinensis*	MITES (possibly a fungus) Rust mite galls on lychee	Compare with photo 27 where you can see the underside of the swellings. Since you cannot see below this could be a fungus attack.
26	*Dimocarpus longan*	INSECT (though looks like a fungus) Vein borer of lychee.	Be careful when trying to diagnose leaf symptoms. The first thought is to suggest a fungus, but in this example the boring larva feeds along the central vein and produces a spreading necrosis (presumably because of some sort of toxin).
27	*Lichee sinensis*	MITES (**not** a rust fungus) Rust mite galls on lychee	The reverse of photo 27. The furry surface might suggest a rust fungus, but it's not quite right. Use a handlens to see if spore are present, or if the furriness is due to unusual growths from the leaf itself.
28	*Malus domestica*	FUNGUS/INSECT Fruit rot of apple.	Fungus can be seen fruiting on the outside of the fruit though this may be a secondary invader; there is a large insect (entry) hole.
29	*Laurus nobilis*	ABIOTIC + FUNGUS (stress?) Unconfirmed cause of canker on bay tree	This is a pot plant in a garden that was irregularly watered. The canker appears stress-related, perhaps starting with a stem crack and then entry of a secondary fungus. Plant is still healthy and growing well (because it is regularly watered).
30	*Passiflora edulis*	VIRUS Passion fruit woodiness virus	The unusual or diseased fruit is on the right; it's difficult to say what's happening but any unusual growth or form could be due to insects, virus or phytoplasma. Shorten the options by elimination. This is a confirmed virus disease.

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31	Unknown host	INSECT (not fungus) Insect feeding on leaf surface.	Definitely not fungal! Look at how the surface has been scraped away – this suggests insects feeding.
32	*Pterocarpus indicus*	FUNGUS (but could be bacterial) *Fusarium oxysporum*, sandragon tree.	Staining in vascular tissue suggests fungi or bacteria (though there are few rare exceptions. Note that the red 'blood' is a normal exudation for this tree.
33	*Aphanomixis polymixa*	PHYTOPLASMA (**not** nutrient disorder) Little leaf disease.	Note the very clear separation of unusual growth above and healthy below. This should suggest immediately that this is not a nutrient disorder. Small leaves, more growth, compact shape and change in colour indicate a possible phytoplasma disease – which was confirmed later.
34	Unknown herb	INSECT (**not** virus) Unknown insect feeding	Wrinkling caused by an unknown insect. If it was a virus, you would expect colour changes, possible mosaic, rings or other distinct symptoms.
35	Palm	INSECT Scales on palm	Small black bodies can mean many things. If they can be peeled off in the finger they are insects and not fungi..
36	Unknown weed	VIRUS (probably) Yellowing and reduced size leaves.	Unconfirmed cause, but the symptoms include changes in form, suggesting something inside the plant altering growth, rather than an insect feeding on leaves and stems.

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