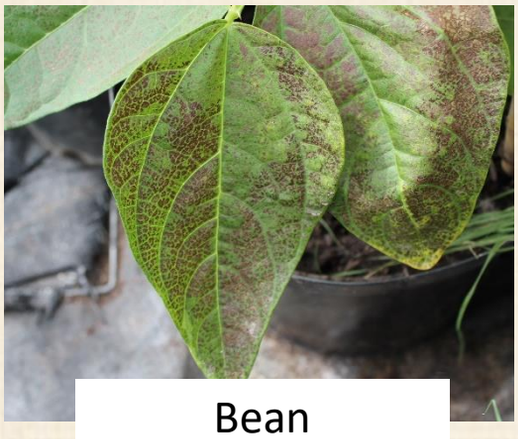
Ozone visible leaf injury on tropical crops

Ground-level ozone is a threat to food production as it has a negative impact on the appearance, yield and quality of sensitive crop species. Ozone is formed in sunlight from reactions between air pollutants emitted from industry, vehicles and biomass burning. High concentrations are found in rural and upland areas, some distance downwind of cities and other areas where the pollutants are emitted.

Amaranth (pygmy torch)

Finger millet



Bean

Pearl millet

Chickpea

Mandarin orange

Peanut

When ozone enters a leaf, it causes localised cell death visible on the leaf as small spots of variable colour (white, yellow, bronze or purple, depending on crop species). In severe cases, these spots can join together to cover large areas of the leaf surface. This may lead to a reduction in crop yield or quality. Yield can also be reduced without the presence of visible leaf injury. Here we show some examples ozone-induced visible injury on tropical crops. Ozone injury appears between the leaf veins.

If you have seen these symptoms, let us know using our smart-phone App for ozone injury or website
https://icpvegetation.ceh.ac.uk/get-involved/ozone-injury/record

Please be aware that other causes of leaf damage can be mistaken for ozone injury, for example damage due to leaf biting insects, red spider mites, leaf viruses and diseases. Ozone injury appears between leaf veins, occurring first on the upper leaf surface and then spreading to both sides. Older leaves are usually more affected.

Kenyan wheat

Low Medium High Ozone

Low High Ozone

Bean

Crop breeding programmes should included the development of more ozone resistant varieties. Crop management strategies should consider ways of reducing ozone uptake into crops, for example by reducing irrigation during ozone episodes.

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