Odd cold damage in potato field

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An odd cold/frost event occurred in a potato field just this past weekend (May 9 and 10). On Saturday morning the grower noticed dark brown necrotic areas appearing on some of their potato plants (fig. 1). Up-close some of the leaves with the necrotic areas appeared to have white fuzz on the underside of the leaf (fig. 2), which could indicate late blight. What was especially worrisome is that this occurred on only one potato cultivar, all the other several cultivars in this same field had no necrotic areas on their foliage. Upon closer inspection the white material on the underside of the leaf in figure 2 looks to be the plant’s trichomes (hair-like growths that serve to enclose still air and protect the plant against water loss and sudden fluctuations in atmospheric temperature, i.e., frosts) that appear especially white at this particular time, not sure if that was due to the contrast to the darkness of the damaged leaf area, the weather conditions or the angle of the photo and the position of the sun. I think everyone who saw the damaged potato leaves thought it was cold damage, but why only this one variety out of all of them? Normally if an abiotic event like a frost occurs in a field it affects much of the field in about the same way.

Just speculating here but when I looked up information about this particular variety I found that it had a ‘medium’ susceptibility to frost/cold damage, not sure what the other varieties had but this damaged variety may have just been slightly more susceptible to a light frost compared with the others in the field either through genetics or possibly by being at a slightly more vulnerable stage of growth (even by just a few days) compared with the others. It also could be due to where this one variety was positioned in the field (cultivars were planted within a group in the field). It may have happened to be in a microclimate that had temperatures slightly below (0.5-1.0 degree) what the rest of the field was exposed to. Unfortunately by Sunday the question was kind of moot as the entire field was hit moderately hard by the cold from the night before and all cultivars suffered some damage (this is what is expected). But this and other occurrences over the last couple of weeks demonstrate how weather can affect our crops in ways that are unexpected and hard to figure out at times.

Fig. 1 Potato plant with dark necrotic areas on leaves

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Fig. 2 Potato leaf with necrotic area and white ‘fuzz’ on underside of leaf

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