Difference between night vision and thermal imaging:

Thermal imaging detects IR radiation. Night vision amplifies the incoming visible light.

This idea could be combined with a machine learning/ image detection algorithm in order to notify the shepherds when a sheep is detected through the camera.

Downsides to night vision is that it contains sensitive equipment that can be damaged in daytime, so thermal imagery is a better option

Thermal imaging technology has been used by hunters to detect deer. <https://www.flir.ca/discover/ots/outdoor/thermal-imaging-cameras-used-for-deer-management/#:~:text=A%20thermal%20imaging%20camera%20allows,image%20looking%20through%20the%20trees>. The technology is out there. This device highlights animal heat signatures in bright red. It would be really easy to find deer/sheep using this camera since you just look around till you see red.

Thermal imaging still works on hot days because the sheep will be against the background of the air. Air doesn’t emit too much IR radiation so it would provide a good contrast. This actually means it might be better to not have the IR camera up high, as it would make detection hard since we are comparing sheep against an equally hot ground background.

We can design a handheld infrared camera that uses machine learning algorithms to highlight animal heat signatures in bright red. This allows shepherds to easily scan more ground in order to find their sheep on the pastures.

Things we need to prototype/provide research in order to show that it is feasible:

Image recognition on raspberry pi? Can these small portable devices handle image detection to highlight animals.

How much to IR lens cost? Also a display is needed. Luckily, we don’t have to tag every single sheep so this may be cheaper than tracking solutions

Can all of this equipment fit in a handheld device?... Probably there are similar things out there