

Annex

Intelligent Design of Index Insurance for Smallholder Farmers and Pastoralists

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Figure 1 illustrates how the Normalized Difference Vegetation Index (NDVI)—a satellite-based measure of vegetation density—works. The diagrams on the left side of the figure display actual NDVI data for West Africa using a brown-to-green color spectrum, with browner colors signaling low vegetative growth and greener colors high vegetative growth. The insert in each diagram shows the individual 8-km square pixels for the region surrounding the village of Silgey in Burkina Faso. The dot on the insert is the pixel where the village is located.

The charts on the right side of the figure show NDVI and independently measured grain yields and rainfall for Silgey. Impressionistically, it is clear that the three measures track each other. More careful analysis ratifies this impression, showing that the predictive power of NDVI is equivalent to an area yield contract implemented at a village level and is actually superior to the village rainfall gauge.

Figure 1—Comparing NDVI, yield data, and rainfall data, Burkina Faso



