

**The USE OF INDEX BASED
AGRICULTURE INSURANCE TO
MANAGE THE RISKS OF
SMALL SCALE FARMERS IN
NIGERIA**

BY: FATONA, AYOOLA
Head of Agric & Micro Insurance/National Coordinator



LEADWAY
Assurance

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WHAT IS INDEX INSURANCE AND ITS TYPES

Index based Agricultural insurance pays out **losses or claims** on the value of an index and not the amount of losses measured in the field. The index is a variable that is **highly correlated** with losses that cannot be influenced by the insured i.e. independent of the farmer

GROUP AREA YIELD CROP INSURANCE

This product is mainly designed for cereal farmers and some selected root crops in defined ecological units or local government areas as unit areas of measure against loss of yield in the selected unit area as a result of (but not limited to):

- Adverse weather conditions
- Destruction by wild animals and pests
- Plagues
- Diseases

And any other peril which may influence the yield quantity in the insured crop in a given region or a local government area that is not human influenced.

CROP WEATHER INDEX

It is a form of parametric insurance whose pay outs are not based on **ground loss assessment** but are determined through measurement of a highly correlated index such as **rainfall, temperature, humidity, sunshine hours, evapotranspiration** etc. The losses are calculated by comparing the rainfall and other parameters recorded per growth stage of the crop with the long term average.

These insurance contracts are monitored using automated weather stations or satellite data.

Typically an insurer will offer a contract that will specify the index for example rainfall over what period and where it will be measured, the threshold, the sum insured and any indemnity limits. If the rainfall is less than the index at the specified measurement point and over the period specified in the contract, the insurer will pay out under the contract irrespective of the actual losses of the policyholder. The quantity of the pay-out is determined according to the provisions of the contract.

HOW IT IS STRUCTURED

UNIT AREA OF MEASUREMENT

To determine the level of coverage, for each farmer in a region, different unit areas of insurance or local government areas have to be selected.

A unit area of insurance refers to a;

- a. specific portion of a territory within a local government area for which expected yield and production shortfalls are determined and
- a. in which equal/similar climatic conditions apply to all producers of the insured crop.

Each farm is insured based on the conditions of the harvest history of the unit area of insurance where the farm falls.

PERIOD OF COVER

It is usually a seasonal cover categorized into DRY and WET

Wet season begins at the onset of the rains and ends at the end of the crop season when the crop is ready for harvesting **WHILE**

Dry season begins when the rain stops for farmers with irrigation water source like water body, tube wells, remnant waters, boreholes etc

BASIS OF COVER

The farmer insures the value of the expected harvest based on the long term average yield in his unit area of insurance.

The long term average yield is the average of the historical yield in the farmers unit as determined and recorded by the authorized government authority, commercial farmers, consultants etc

COVERGE LEVEL

Most covers are provided up to a maximum of 80% of the long term average yield in the unit area of insurance.
Any coverage level below that can be selected.

AREA YIELD INDEX CONTRACT DEFINITIONS

Trigger: This is the threshold below which the farmers receive pay-outs. It is also referred to as “*Threshold*” or “*Guarantee level*”

Exit: This is the threshold below which the farmers receive the maximum possible pay-out.

Total Sum Insured at EXIT: It is the maximum possible proportion of the sum insured payable

Unit Area of Insurance (UAI): Is a geographical area comprising of one or more unit(s) which can either be government boundaries such as Local Government Areas (LGA) or Agro Ecological Zones (AEZs)

Average Production History (APH): The APH is defined as a benchmark yield stated in the contract and is applied to determine if there are any pay-outs. It is calibrated from historical yields. It is also referred to as the guaranteed yield or the final long-term average

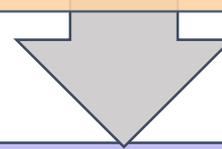
MAJOR UNDERWRITING CONSIDERATIONS

Historical data availability and quality of the data

Uniformity of the unit area of insurance

Risks to be covered

Consumer education

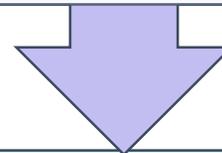


Type of Crop to be insured

Concentration of farmers

Level of coverage (65,70,75 etc)

Size of cultivated land



Homogeneity of farm practices

Willingness to pay the appropriate premium

Yield evaluation process

WHAT HAPPENS AT HARVEST



THE CROP CUT EXERCISE

- The crop cutting experiment is a process used to estimate the overall yield of the unit area of insurance.
- It is the most important steps in the group area yield index insurance contract as the values obtained in these areas form the basis of any claims payments.
- Crop cuttings are regularly conducted in order to obtain a fair precise and accurate estimate yield of the insured crop.
- This exercise is conducted following a laid down protocol at the inception of the contract through stratified random sampling by field enumerators.
- Farmers are expected to notify the insurer 2 weeks before harvest is initiated for the placement of boxes.
- Farmers must cooperate with these enumerators and make their job seamless.

HOW DO WE CALCULATE WHAT WE PAY TO FARMERS



The size of a rice farm	= 3 hectares
The expected yield per ton	= 3 tones (based on the APH of the farm for 5yrs)
Farm gate price per ton of rice	= N100,000.00
The value of expected harvest (S.I)	= 3 X 3 X N100,000.00 = N900,000.00
Hypothetical Premium rate	= 10%
Premium payable	= N900,000 X 10% = N90,000.00

If the farmer had chosen a 70% level of coverage, with the under listed harvests on the basis of crop cuts across three local government areas, how will the indemnity be calculated.

- The yield of 2.7 ton per hectare
- The yield of 2.1 ton per hectare.
- The yield of 2.0 ton per hectare

SCENERIO 1

The farmer will not receive any pay-out as compensation beacuse his yield is greater than the guaranteed yield level in the AYI contract.
70% of 3 tons is 2.1 tons

SCENERIO 2
Same as scenario 1. No pay-outs.

SCENERIO 3

The indemnity will be calculated thus:

$$\frac{\text{Guaranteed Yield} - \text{Actual Yield}}{\text{Guaranteed yield}} \times \frac{\text{Sum Insured}}{1}$$

$$\frac{2.1 - 2.0}{2.1} \times \text{N900,000}$$

$$= \text{N42,857.14}$$

LIVESTOCK MORTALITY INDEX INSURANCE

This contract implements a methodology for using satellite based information to create assets insurance contracts

Objectively measured satellite based vegetation data available in near real time is combined with household level herd data to create a livelihood focused contract that minimizes basis risks and that seems to find a ready demand among pastoral households using the Normalized Difference Vegetation Index.(NDVI)

The Normalized Difference Vegetation index (NDVI) sometimes referred to as greenness maps – is a satellite based derived indicator of the amount of vigour vegetation based on the observed level of photosynthetic activity.

Because pastoralist routinely graze animals beyond their residential areas, grazing range are defined for each aggregate locations within which NDVI observations are averaged for each period – by identifying the rectangle encompasses the residential location and all common animal water points used by herders in that community.

In bad years not observed in the survey pastoralists may travel further still but their need to do so should be reflected in past time conditions within the normal grazing range.

NDVI data are commonly used to compare the current stage of vegetation against the long term average condition in order to detect anomalies and to anticipate drought.

When forage is plentiful, disease and predator pressures are typically low and water nutrients are adequate to prevent premature significant herd mortality.

By contrast, when forage is scarce whether due to overstocking, poor rainfall, excessive competition from wildlife or other pressures, die offs become frequent. Thus a vegetation index make sense conceptually.

WHY INDEX INSURANCE?

The area yield index insurance contract covers multiple perils that can lead to low yield

The risk of adverse selection and moral hazard that is inherent in the traditional multiple peril crop insurance cover is eliminated.

The pay-out under the policy is determined by the actual yield in the local government area regardless of what happens in the individual farms.

The administrative cost of administering the policy is drastically reduced as there is no need to visit the individual farmers for pre-insurance inspection, monitoring and loss assessment.

The pay-out is determined based on sampled farms already selected to determine the local government area yield. For example under the current CBN ABP and NIRSAL Area yield index insurance policy, 25 farmers were chosen from each local government area selected at random.

Thank You



LEAVE NOTHING TO CHANCE

