Africa Industrial Internet Programme

REPORT ON AGRICULTURE SURVEY IN AFRICA

STATISTICS SUMMATIVE

JAMES KIMANI KINYANJUI

This is a report based on "Surveys for more than 9,500 households were conducted in the growing seasons 2002/2003 or 2003/2004 in eleven African countries: Burkina Faso, Cameroon, Ghana, Niger and Senegal in western Africa; Egypt in northern Africa; Ethiopia and Kenya in eastern Africa; South Africa, Zambia and Zimbabwe in southern Africa. The data set specifies farming systems characteristics that can help inform about the importance of each system for a country's agricultural production and its ability to cope with short- and long-term climate changes or extreme weather events. Further, it informs about the location of smallholders and vulnerable systems and permits benchmarking agricultural systems characteristics."[1].

The survey and data collected was based on various well guided questions allowing for definite answers. The **variable types** identified on the questionnaire and the data collected are mainly of the numbers and strings types. Numbers are used to **quantify** various elements such as age, division of labor in days, Farming wage rates, quantity sold and amount lost due to disease among many other. On the other hand, Strings are used as **descriptive data** in the various columns such as crop types, water source, irrigation system used, Equipment ownership among others. Other variables type on the data set are **boolean** where yes/no questions are posed and **dates**.

The sampling method is the survey consisted of a **multi-stage/cascaded stratifi**ed selection based on various factors at each stage. The first one being based on region on the continent, the categories were east, west, north and the south of Africa. Countries from these regions were selected based on the willingness of the various agriculture supporting institutions. The second stage was then based on representative districts within these countries. The district authorities were used to select the 30-60 representative farms in their regions for the thirds stage, of which were to be either large or small farms having at least 5-10 representing each. This was a very appropriate method to use to represent the whole region as it had representative from all regions and representative countries in Africa. The results from this would show a balance and unbiased picture of the study in the region.

Based on this research I would base my Study the data to answer questions:

i. Does a higher income in the household relate to better yields in the farm?
ii. Does the age/period in which one has been farming relate to the yields in the farms?

My analysis would entail checking the distribution of data in the period in which a farmer has been farming and the crop and animal yield. The distribution of the data would be key to know which test to use, so I would have distribution curve of the figures on these aspects analyzed. If they were to be normal distribution and the data is independent then I would use a T-test. Based on this I would hypothesis tests would be based on this;

H_0 The period in which one has been farming has no relationship with better yields at the farm.

H_a The period one has been farming relates to better yields in their farm.

The results pointing that the period that one farms is significant to the result of the yield one has would result in a conclusion that upcoming farmers should keep close to experienced and longer practicing farmers so as to be couched and mentored on best practices. Hinting that probably skill surpasses knowledge.

The result pointing that there is no significant effect on yield with the age of a farmer in farming practice clearly would show that gaining the right knowledge in farming and harnessing it to step up the skill would result in better yields within a short time. This should encourage all interested parties to capitalize on this concept to ensure food sustainability in the continent.

Variable of number types would best be visualized using bar graphs for comparison with others also extending to pie charts to show proportions. Heatmaps would also come in handy overlaying the Africa map to the studied regions so as to visualize distribution of aspects such as diseases in animals or crops. Variables with dates would be best over-laid on line charts to show trends over time on various aspects such as the effect of temperature on crop yields from one period to another.

Data on fertilizer and pesticide and irrigated is important data to the FAO and World Bank since it would be used to compare to the average national statistics thus show the actual picture on the farms. This would help proper channeling of funds where there is lack and methods being use dare not effective as well as ensure hunger is reduced by sustaining food production.

References

1. Djurfeldt, G., Aryeetey, E. & Isinika, A. C. inAfrican smallholders. Food crops, markets and policy. Available at http://www.cabi.org/cabebooks/ebook/20113005528. 1–22 (2011).