

# [Analyzing domestic product (cohen et al., 2006) use](https://assignbuster.com/analyzing-domestic-product-cohen-et-al-2006-use/)

Analyzingthe Adoption of Improved Maize Kenya Production Technologies among SmallholderFarmers in Kericho County,  MATACHO MATTHEW ROBLEA87/31260/2014EMAIL: [email protected] SUPERVISOR: DR. DAVID JAKINDADepartment of AgriculturalEconomicsUniversityof Nairobi, Kenya JANUARY, 2018              ABSTRACTThisstudy assessed on adoption of technology to increase maize productivity inKericho parts of Kenya. Based on the results show that 74% of farmers have adoptedthe use of improved technologies in maize production. The main findings thatwere found to be significant influence on farmer’s adoption of improvedtechnology arefertilizer applications on use of these technologies to improvedyields, the accessibility of creditand information on improved technologies thatinfluences the technology adoption among small holder farmers. Most studies havefocused on the agronomic factors and diseases for maize production with only afew looking at the technological and practices in maize production. However, this study will address in the little knowledge of some of the technologiesused in maize production.

The study is important in that it will provideinformation on adoption of farming techniques by smallholder farmers. This studyinterviewed 80 smallholder maize farmers in Kericho County. A structuredquestionnaires will be used to collect primary data. Data will be analyzedusing descriptive methods including bar graphs, cross tabs and tables. Dataentry, cleaning and analyses will be done in SPSS version 21.

Key words: Technology Adoption; Maize Productivity; Smallholder Farmers; Kenya. 1. 0  NTRODUCTIONInSub-Saharan Africa, about 70% of the poor live in rural areas. They greatly dependenton their natural resource base, particularly soil and its productive capacity. Themain physical asset of most poor farmers is land, and its contribution to the incomethat is far more important than its physical capital. Land degradation in theform of soil erosion and nutrient depletion pose a threat to food security andthe sustainability of agricultural production. In Kenya, the magnitude of the soilerosion losses to the economy has been estimated as equivalent to US$390million annually or 3. 8% of gross domestic product (Cohen et al.

, 2006)Use of certified seeds amongsmallholder maize farmers has not resulted in corresponding increases inproduction despite the fact that about three quarters of smallholder maize farmershave adopted improved seed. Sub-Saharan Africa’s agriculturalperformance has variably called the world’s foremost global challenge (UnitedNations, 1997) and as “ still very far behind” the rest of Africa (Odulaja andKiros, 1996 p. 86). Moreover, the continent’s population is increasing, and isexpected to account for30% of the underdeveloped world by the year 2010. A recent study by Tegemeo Instituteof Agricultural Policy and Development and the University of California foundthat by targeting the right variety which can be grown in the area, maizeproductivity will increase by 40%. Therefore, challenges remain in gettingfarmers to adopt such technologies.

Many farmers cannot afford the higher costof improved seed and fertilizer and have no access to financing. Some cannotafford fertilizer to maximize yields, while some plots with poor soils do notrespond to fertilizer. Others simply do not have access to verifiable certifiedseed and fertilizer in the local stores. First, farmers need to learn about thenew varieties. Information about these varieties is often scanty which resultedin farmers having unmet expectations that may result in failure to adopt thesetechnologies. Secondly, farmers should use complementary inputs to therecommended levels. Although technological innovation has been proven toincrease yields for key produce, combined use of fertilizer and improved seed remainstill low.

The study found that although farmers use the correct seed rate forhybrid seeds (a farmer should plant between 8-10 kilograms of seed per acre), farmers use slightly above the recommended rate for fertilizer. Farmers should ensurethe fertilizer used enriches the soil. Arecent study by KALRO in 2015 showed that majority of soils in themaize-growing region are acidic. Therefore, farmers should use fertilizers thatare blended with the required nutrients and trace minerals to maximize theiroutput. Key to getting farmers to increase use of fertilizer is providinginnovative financing option to farmers, and improving knowledge and access torequired mix of nutrients. Thirdly, farmers should be able to get the knowledgein a way that is easily understandable for them to make the necessarydecisions. The present study contributes to theliterature by analyzing the adoption of technology on maize productivity bysmallholder farmers in Kericho parts of Kenya.

The specific objectives of the studyis to determine whether access to information affects farmers in adoption ofmaize improvement technology, examines current maize-farmingpractices; and to analyze farmer characteristics towards modern farmingtechniques that influenced adoption in Kericho, KenyaThestudy uses farm-household survey data and descriptive methods. This providesinsights for strengthening the national extension systems that are now underthe county governments. Increasing the food available per capita requires aparadigm shift to overcome yield stagnation. This entails policy interventionsthat will operationalize the promotion of technology bundles that complementeach other to boost crop yields, diversify technology options, and addressliquidity and investment constraints. Technology adoption is a function of bothsmallholder farmer demand and the markets available to them. By increasinginvestments in research and development can lead to well-tailored innovationssuch as certified seeds and fertilizers that can overcome pest and diseases inmid-altitude areas. Improving access to credit and markets would help ensure thatinnovations in seed systems are truly profitable for smallholder farmers. Withpersistent pressure onavailable land resources and the generally risky nature of the sector, there isno doubt that farmers will rely more on technological innovations to boostproductivity.

This should enable smallholder farmers to harness arisingopportunities for improved household welfare from participating in the market. 2. 0  METHODOLOGY2.

1  STUDY AREAThestudy was conducted in three sub-counties namely Kipkelion East, Kipkelion Westand Sigowet Sion constituencies in Kericho County which are the representativeof maize growing areas by small holder farmers. According to Kenya Census 2009, the total population of people living in Kericho County were 758, 339 with 381, 980 and 376, 359 male and female respectively.  2. 2DATA SAMPLING AND COLLECTIONThe data was collected throughhousehold survey using a structured questionnaire. This was administeredthrough face-to-face interviews. The probability sampling methods can be usedto ensure representatives in this study for small holder farmers in Kenya. A total of 80 small holder farmers wereinterviewed.

The systematic random sampling was used onan individual households for the study for a given constituency/ location. Thismethod is convenient in a scattered population over a large population size.     2. 3 DATA ANALYSIS           Table1: Descriptive statistics from the survey Variable Descriptive statistics  N= 80 Natural hazards present(% yes) 56 View on Hybrid seeds (% yes) 73 Fertilizer application (% yes) 74 Access to credit  (% yes) 66 Farming as a primary activity (% yes) 68 Average maize yields (Bags) 3. 72                              Average Age (Years) 3.

44 Average Years of schooling (Years) 3. 84 Average Size of the land (acres) Average Income (KSH) 2. 14 3. 55                    Table2: Partial Correlation    GENDER AGE MARSTATUS LAND SIZE EDUCATION INCOME GENDER 1 -0. 035 0. 035 0.

081 0. 019 0. 145 AGE -0. 035 1 0.

312 0. 419 0. 371 0. 256 MARSTATUS 0.

081 0. 419 1 0. 365 0. 129 0. 334 LAND SIZE 0. 019 0. 37 0.

365 1 0. 089 0. 410 EDUCATION 0. 125 -0. 069 0. 129 0.

089 1 0. 292 INCOME 0. 237 0. 168 0. 249 . 0. 418 0. 113 1                           3.

0  RESULTS AND DISCUSSION  A.   APPLICATIONOF FERTILZER ON MAIZE PRODUCTIVITY Table3. Fertilizer application on Maize productivityTheresults reported in Table 3 above show that most farmers have adopted the useof fertilizer application to increase maize productivity. This implies thatmaize productivity increases with the use of fertilizers on farms. Inaddition, the study showed (See Table 1) that 74% of farmers have adopted theuse of improved fertilizers on their farms.

Indicating that fertilizers have apositive impact on productivity.      B.    FORMALCREDIT ON MAIZE PRODUCTIVITYAsshown in Table 4 below most farmers have access to formal credit. This isbecause of availability institutions offering credit. 66% of farmers were ableto secure a credit to increase their productivity as shown in Table 1.  Table4: Formal credit on maize productivityC.   SALEOF PRODUCEResultsfrom the household survey indicate more than60% of farmers sold their produce atnearest local market than to cooperative society and government agency. This isbecause of most farmers are able to access market and sell their produce intime.

See Table 5   Table5: Sale of produce by farmers4. 0CONCLUSION AND IMPLICATIONSFarmers’training is critical on improved technologies to improve production portfolio. Providingenough knowledge to most farmers helps to improve the current food securitysituation in Kenya.

Thereis need for increasing use of inputs such as certified seeds and inorganicfertilizers which can greatly improve productivity of maize in Kenya. Improvingaccess to credit and markets could help ensure that innovations in seed systemsare truly profitable for smallholder farmers.  Needfor researchers and policy makers be funded to measure the impact of providingformal credit on productivity.   5. 0 REFERENCESBesley, T., & Case, A. (1993).

Modeling technology adoption in developing countries. The American EconomicReview, 83(2), 396-402. FAO (Food and AgriculturalOrganization of the United Nations). 2000. ‘ Case Study: Tanzania extends theSPFS to new areas.’ http://www. fao. org/spfs/urt-e.

htm. Feder, Gershon and Roger Slade. 1984. “ The Acquisition of Information and the Adoption of NewTechnology.” American Journal of Agricultural Economics 66: 312-20GoK (Government of Kenya), 1998. Economic Survey. Government Printers, Nairobi.

Katinila, N., H. Verkuijl, W.

Mwangi, P. Anandajayasekeram and A. J. Moshi.

1998. Adoption of Maize ProductionTechnologies in Southern Tanzania. Mexico, D. F.: International Maize and Wheat Improvement Center(CIMMYT), the United Republic of Tanzania, and the Southern Africa Centre forCooperation in Agricultural Research.

Nkonya, Ephraim, Peter Xavery, Herman Akonaay, Wilfred Mwangi, PoniaAnandajayasekeram and Alfred Moshi. 1998.” Factors Affecting Adoption of Maize Production Technologies in NorthernTanzania.” Mimeo. Kansas State University. Pingali, PL, 2001. CIMMYT(International Maize and Wheat Improvement Center) 1999–2000             World Maize Facts and Trends: Meeting World Maize Needs – Technological Opportunities and Priorities for thePublic Sector.

CIMMYT, Mexico City, DF.