





## THE EFFECT OF FARMERS' SOCIAL NETWORKS ON SUSTAINABLE AGRICULTURAL PRACTICES ADOPTION: A SCOPING REVIEW PROTOCOL

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### ABSTRACT

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Agriculture as practiced for decades had a considerable negative impact on the environment. To fulfill the needs of the growing population, the yield had been increased by the use of more land, fertilizer, and pesticides. The consequences were the destruction of the forest, the loss of biodiversity, irrigation problems, the pollution, and so on. To remedy this, a new form of agriculture has emerged: sustainable agriculture. The goal is “to meet society’s food and textile needs in the present without compromising the ability of future generations to meet their own needs”. Adoption of adequate agricultural practices is the best way to implement sustainable agriculture. Many factors have been found to affect farmers in their decision to effectively adopt sustainable agricultural practices. External factors, such as farmers’ social networks, have increasingly captured the interest of researchers. In this paper, we will be presenting a scoping review protocol under the structure recommended by Arksey and O’Malley (2005) by answering the following questions: 1-What do we currently know about the influence of farmers’ social networks in their decision to adopt sustainable agricultural practices? 2-What are the theories/methods used by researchers to study this effect? 3- What are the major knowledge gaps? We used five electronic databases to conduct this scoping review: Web of Science, Sciences Direct, Wiley Online Library, SpringerLink, and EBSCO host.

**Contribution/Originality:** To the best of our knowledge, this scoping review protocol is the first to focus only on the influence of farmers' social networks in their adoption of sustainable agricultural practices. The evidence produced from the review will therefore be important in driving future research on the topic.

### 1. INTRODUCTION

The Oxford dictionary defines agriculture as “the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products”. It is the backbone of the world’s economy and the most vital activity for the livelihoods of the human being as well as of its descendants. Not only does it provide food and raw materials for the industrial sector, but it also provides a significant percentage of the population with jobs both directly and indirectly. Although it is necessary for the survival of humanity, agriculture can also have major impacts on the environment (Tilman et al., 2001), such as deforestation,

soil degradation, climate change, irrigation problems, waste, and pollutants (Fuentes & Saba, 2016). Given the importance of the sector, it has prompted an urgent call for action across the globe. So, one of the most critical issues of this century is to develop sustainable agriculture. Sustainable agriculture refers to integrated technological systems through which plant and animal production practices uphold environmental quality which is critical in satisfying food and fiber necessities for humans (Manda, Alene, Gardebroek, Kassie, & Tembo, 2016). According to the FAO (Food Agricultural Organization) “The goal of sustainable agriculture is to meet society’s food and textile needs in the present without compromising the ability of future generations to meet their own needs”. It is in this attempt that sustainable agricultural practices (SAPs) have been developed. The practices entail the use of agricultural methods that enhance the utilization of agricultural resources for the benefit of both present and future generations. Sustainable agriculture practices use local resources and the expertise and skills of farmers to boost productivity, develop local system resilience, preserve environmental quality, and improve household food security (Acharya, 2006). These include expansions of irrigation, rotational grazing, agroforestry systems, green compost, integrated pest management, cropping systems, drought-tolerant varieties, biological controls, improved livestock breeds, manure application, laser land leveling, crop diversification, and water conservation measures (Van Thanh & Yapwattanaphun, 2015). Many factors have been found to affect farmers in their decision to effectively adopt sustainable agricultural practices. Some of those factors include existence and connection to a market, the level of the farmers' knowledge and skills, policies relating to agriculture, available regulations, available resources, the geography of the farm, social, economic, and conservation motivations (Kabii & Horwitz, 2006). Among those factors, external factors like farmers' social networks have increasingly attracted the attention of researchers (Albizua, Bennett, Pascual, & Larocque, 2020; Amare & Simane, 2017; Baur, 2020). A social network is a set of connections amongst people with various social relationships where information and other social processes flow (Skaalsveen, Ingram, & Urquhart, 2020) In fact, communities incorporate different types of networks, inside which, individuals are related to institutions or individuals through relational ties. According to Monge, Hartwich, and Halgin (2008) social networks affect the diffusion of innovations through social learning, joint evaluation, social influence, and collective action processes. Farmers’ social networks have been found to play a critical role in farmers’ inclination towards the adoption of SAPs (Chaudhuri, Roy, McDonald, & Emendack, 2020; Guo & Marchand, 2019). This paper presents a protocol of a scoping review that aims to provide a qualitative synthesis of the state of knowledge related to the influence of farmers' social networks on the adoption of sustainable agricultural practices.

## 2. METHODOLOGY

We conduct a systematic scoping review to identify and map the literature evidence concerning the influence of farmers' social networks on sustainable agricultural practices adoption. A scoping analysis is a meticulous but efficient way of defining and synthesizing the most important information available on a given subject (Kennedy et al., 2020).

### 2.1. Study Design

This review is based on the framework developed by Arksey and O'Malley (2005) which included 5 stages:

Stage 1: identifying the research question.

Stage 2: identifying relevant studies.

Stage 3: study selection.

Stage 4: charting the data.

Stage 5: collating, summarizing, and reporting the results.

The reporting method for this review follows the recommendations from the PRISMA extension for scoping reviews (PRISMA-ScR) (Tricco et al., 2018).

## 2.2. Research Questions

This scoping review focuses on three research questions to establish what is known about the effect of farmers' social networks on sustainable practices adoption.

- 1- What do we currently know about the influence of farmers' social networks in their decision to adopt sustainable agricultural practices?
- 2- What are the theories/ methodologies used by researchers to study this effect?
- 3- What are the major knowledge gaps?

## 2.3. Information Sources

The searches for the literature review were done on five databases: Web Of Sciences, ScienceDirect, SpringerLink, EBSCOhost, and Wiley Online Library. These databases were selected because they include various Agricultural journals and they are accessible from our institution.

## 2.4. Search Strategy

To proceed with the search, the following combination of terms have been used: (adoption OR decision OR acquisition OR choice OR acceptance) AND (sustainable agricultural practice OR sustainable practice OR conservation agricultural practice OR conservation agriculture OR best management practice OR good agricultural practice OR sustainable farming practice) AND (Social network OR social connection OR networking OR social relation). The general query was adapted considering the searching guidelines of each electronic database. Duplicated publications from different databases were removed using a citation management system (Mendeley) and manually.

## 2.5. Inclusion and Exclusion Criteria

The concept of inclusion and exclusion of data in a systematic scoping review “provides a basis on which the reviewer draws valid and reliable conclusions regarding his topic” (Meline, 2006).

The inclusion criteria to select the articles for this scoping review are as follows:

- Published between 2010 and 2020.
- Peer-review journals including original research
- Paper in English only.
- Validation of studies on real settings.
- Provide evidence of the effect of social networks on sustainable agricultural practice adoption.

Articles on the following criteria are excluded:

- Non-English.
- Non-focus on the effect of farmer social network
- Review papers, Book reviews, technical reports, opinion papers, thesis, posters, commentaries, or editorial reviews.

## 2.6. Screening

A research team was formed and trained to acquire the skills and expertise required to implement the methodology stages based on the framework developed by Arksey and O'Malley (2005). All records obtained from the searches were exported to the Mendeley referencing database. Duplicate records were removed and the number of unique records was identified (n = 3127). Then, following the pre-defined inclusion and exclusion criteria above, two researchers screened the study title and abstract which enable us to select studies that effectively mentioned the effect of social networks on the adoption of sustainable agricultural practices. We will then independently review

the full texts of potentially eligible studies for inclusion. The PRISMA flow diagram is used to report all stages of the flow of the study selection.

### 2.7. Data Extraction/Charting

A list of studies will be generated after the screening process. A standardized excel spreadsheet will be used to record: author(s), paper title, year of publication, study location, type of sustainable agricultural practices, aims of the study, the theories used, methods, outcomes, and key findings, and identified gaps. Data extraction will be performed independently by two researchers and compared by a third researcher. The third researcher will be consulted to resolve any discrepancies in data extraction relating to each study.

**Table-1.** Repartition of task and planning

Stage	Task	Date	Status	Responsible
1	Identifying the research question	06/2020	Done	PC, JD, FD, AG
2	Identifying relevant studies	17/08/2020	Done	PC, JD, FD, AG
3	Study selection	03/09/2020	In process	PC, FD, AG
4	Charting the data		Open	PC, FD
5	Collecting, summarizing, and reporting the results		Non-open	PC, JD, FD, AG

### 2.8. Collating, Summarizing, and Reporting Results

The unique purpose of a scoping review is to aggregate the findings and present an overview rather than a meta-synthesis reporting results on narrowly defined questions (Halas et al., 2015). Following data extraction, a narrative synthesis of study characteristics will be completed. Studies will be described concerning theory used, methods, outcomes and key findings, and identified gaps. However, the study selection was established according to quality criteria such as study design and validation in real settings. The write-up overview will provide a quantitative and qualitative description according to the themes identified in the studies.

## 3. DISCUSSION

Farmers' social networks have become essential to increase the adoption rate of sustainable agricultural practices (Chaudhuri et al., 2020). Agricultural information and knowledge are often transferred through social interactions (Pratiwi & Suzuki, 2017). Therefore, it is imperative to know where we are concerning knowledge about how social networks affect farmers in their decision about sustainable agricultural practices to provide an adequate base for future research which will lead to better policies. However, to our knowledge, there are no studies that provide this big picture of knowledge. This scoping review will conduct a methodologically rigorous study providing this overview, mapping, summarizing the evidence, and highlighting the knowledge gap for future research.

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