DEDICATION

To the soul of my father and my son Mohammed

To my lovely mother

My dear wife

My sons and daughters

To all those who work in the field of extension and rural development

Yousif
Acknowledgement

I would like to express my deep gratitude, thanks, and respect for the serious and patient supervision provided to me by the main supervisor Dr Mohammed Badawi Hussein of the Department of the Agricultural Extension and Rural Development, College of Agricultural Studies, University of Sudan for Science and Technology. I gratefully acknowledge his unlimited support, assistance, advice and encouragement to accomplish this work.

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LIST OF ABBREVIATIONS

These terms were defined to meet the study purpose as follows:

1. **Age:** It is the number of years the respondent lived from birth to the date of interview.

2. **Education:** It is the formal and informal education that completed by the respondent.

3. **Khalwa:** It is a religious education for Muslims.

4. **Family members:** It is the total number of family members who lived in one house and managed by the household head.

5. **Land tenure system:** It is a farming system by which farmer is able to use the land in farming.

6. **Ocolgom (temporary gift):** Local term used to that kind of land tenure system in which land is given to be grown for only one season.

7. **Malwa:** It is a container used mostly in measuring small amounts of crops; it weighs about 3 kg of sorghum.

8. **Mukhamas:** It is a measurement of an area which is equivalent to 1.73 feddan, equivalent to 0.5 hectare.

9. **Household income:** the annual income of the household or the respondent from farm and other sources in SDG.

10. **Comparative advantage:** the advantages of the improved sorghum varieties compared to the advantages of local sorghum varieties.

11. **Kisra:** Sudanese meal made of sorghum, millet, or wheat flour prepared by mixing it with water, fermented and made in a form of sheets.
12. **Aseida**: Sudanese meal (porridge) prepared from sorghum or millet flour added to boiled water with vigorous steering until it takes compact form.

**SKRDP**: South Kordofan rural development programme.

**GDP**: Growth domestic product.

**RAU**: Rural administrative unit.

**BS**: Bank of Sudan.
Abstract:

The study was conducted in south Kordofan, Sudan in the working area of south Kordofan rural development programme (SKRDP) for the period (2001-2008).

The main objective of the study was to determine and assess the factors affecting diffusion and adoption of some recommended packages of the improved sorghum varieties approved by concerned committees, identify some farmers socioeconomic and demographic characteristics, some relative advantages of the innovation and the extension activities that affect the process of diffusion and adoption of improved sorghum recommended packages.

The study was based on primary data collected through a social survey as research method, and questionnaire as data collection instrument.

Multi stage stratified random sampling technique, from three localities namely Kadugli, Dilling, and Rashad as strata were used. The rural administrative units were considered as strata and the extension villages were other strata. Two hundred respondents were selected systemically from village’s population records. The secondary data from the relevant sources were used too.

Statistical package for social sciences (SPSS) was used to analyze the data, presenting the results in descriptive statistics, frequency distribution and percentages to profile the sample, and Chi square test at level of significance (0.05, 0.01) were used to detect the dependency of the variables of the study (the dependent and independent variables) in affecting change of knowledge and practice of farmers towards some recommended packages of improved sorghum, and it’s affect on diffusion and adoption of these packages.
The most important findings of the study were:

– Higher percentages of farmers (adopters and non-adopters) knew about the recommended improved sorghum, especially Wad Ahmed variety which indicates the high rate of awareness.

– High literacy was recorded among respondents in the area (78%) had been obtained different levels of education, due to the religious education for Muslims in khalwa and the formal education before university.

– The majority of respondents (78%) grow crops in their own land, for home consumption.

– Unexpectedly high ratio of women headed the house holds (21%) because of civil war and high divorce incidence.

The adoption of the recommended packages of improved sorghum (seed rate, spacing, weeding) showed significant differences between the adopters and the non-adopters by the source of information on agriculture, size of the family, kind of the training obtained, comparing the local sorghum with the improved in productivity, revenues and quality of the straw as forage.

The adoption of some recommended packages of improved sorghum (spacing, seed rate, weeding) showed non significant differences between the adopters and the non-adopters by age groups, social status, level of education, comparing local sorghum with the improved in seed color, taste and making kisra and aseida.
The most important recommendations were:

- Strengthening the link between extension, research, and the farming community in a unified strategy.
- Conduct extension surveys to determine the real problems and needs of the farming community.
- Provide the extension staff with suitable training for more effective extension work.
- Apply on farm research to adapt the findings of research to the practical situation.
- Provide farmers with the farm inputs and credit at the suitable time.
- More research is needed to identify the most affecting factors on diffusion and adoption of the new ideas.
الخلاصة


الهدف الرئيسي لهذه الدراسة هو معرفة وتحديد العوامل التي تؤثر في عملية نشر وتبنٍ بعض الحزم التقنية الموصية بها من المحطات البحثية للذرة المحسنة وتحديد بعض الخصائص الاقتصادية والاجتماعية للمزارعين، الميزة النسبية للذرة المحسنة والمناشط الإرشادية التي تؤثر في عملية نشر وتبنٍ الحزم التقنية الموصية بها للذرة المحسنة.

اعتمدت الدراسة على المعلومات الأولية التي جمعت من خلال الزيارة الدقية التي تم اعتمادها كطريقة بحث.

استخدمت الدراسة طريقة الاستبيان على المزارعين ورشاد على اعتبار أنها طريقة لإدارة بعض المحليات كطريقة وervals الإعدادات بهذه المحليات كطريقة والآرئي الإرشادية بالإجراءات كطريقة. وتم اختيار عدد ملائمي مجموعات من سجلات تعداد عائلي (أرباب)، الابن بالرقي الإرشادية بالطريقة المنظمة حسب الكثافة السكانية للقري وكذلك تم استخدام البيانات الثانوية من المصادر ذات الصلة.

استخدمت الدراسة طريقة التحليل الإحصائي للعلوم الاجتماعية لتحليل البيانات وعرضها وصفياً على شكل تكرارات ونسبة متوقعة لإعطاء موجبات عامه للدراسة، ومن ثم استخدم مربع كأي عند مستوى معنوية (0.05) و (0.01) لمعرفة الفروقات المعنوية بين متغريات الدراسة (التابعه والمستقلة) في مدي اعتمادية التابعه على المستوى في عملية تغيير المعلومات والممارسة للمزارعين تجاه الحزم التقنية الموصية بها للذرة المحسنة وتأثرها في عملية نشر وتبنٍ هذه الحزم.

من أهم النتائج التي توصلت إليها الدراسة:

- هناك نسبة عالية من الوعي بوجود حزم تقنية موصية بها للذرة المحسنة وسط المزارعين (90%) (متبنٍ وغير متبنٍ) ونسبة (82%) حصولاً على خدمه الإرشاد مما يعكس النسبة العالية من الإثبات للفكرة الجديدة.
هنالك نسبة عالية من التعليم وسط المبحوثين في منطقة الدراسة (78%) حصلو على نسب مختلفة من التعليم مما يعني ذلك للتعليم الديني للمسلمين بالتخلو أو التعليم النظامي قبل الجامعي.

معظم المبحوثين ملاك للأراضي (78%) يزرون المحاصيل في أراضهم إلا أن زراعتهم لغرض الإستهلاك المنزل أكثر من غيره التجارة.

هنالك نسبة عالية غير متوقعة من النساء عائلات للأسر (21%) وقد يعوي ذلك للوضع الاجتماعي للأسر بالمنطقة كارتفاع نسبة الأرامل لظروف الحرب الأهلية أو ارتفاع نسبة الطلائي.

أظهرت نتائج تبني بعض الحزم التقنية الموصية بها لذرة المحسنة (كمية البذور، المسافات الزراعية وعدد الحشات) حيث أظهرت نتائج معنوية بين المبحوثين (المتبني وغير المتبنيين) بالنسبة لمصدر المعلومات عن الزراعة، حجم الأسرة ونوع التدريب المتحصل عليه وذلك مقارنة الذرة البلدية مع المحسنة من حيث الإنتاجية، العائد ونوعية العلف. بينما أظهرت الدراسة نتائج تبني بعض الحزم التقنية (كمية البذور، مسافات الزراعة وعدد الحشات) نتائج غير معنوية بين المبحوثين (المتبني وغير المتبنيين) بالنسبة للمجموعات العمرية، الحالة الاجتماعية، المستوى التعليمي، وممارسة الذرة المحسنة مع البلدية من حيث لون البذرة، الطعم ومن حيث صناعة الكسرة والعصيدة.

أهم التوصيات التي توصلت إليها الدراسة:

1. تقوية العلاقة بين الإرشاد، البحوث ومجموعات الزراعة في استراتيجية موحدة.

2. عمل مسوح إرشادية لتحديد المشكلات والإحتياجات الفعلية للمجتمعات الزراعية.
3. توفير التدريب المناسب للعالمين بالإرشاد الزراعي لتفعيل العمل الإرشادي.

4. تنفيذ البحوث التطبيقية والتجارب في حقول الزراع بغرض توطين النتائج البحثية.

5. توفير مدخلات الإنتاج والتمويل للزراعة في الوقت المناسب.

6. إجراء مزيد من البحوث من أجل تحديد العوامل التي تؤثر في نشر وتبنى التقنيات الجديدة.