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Understanding the Impact of Agricultural Extension Services in Algeria: A Comparative Study of Ouargla, Béjaia, and Relizane

Amine Tlemsani*[1], Mahmoud Brahim[2], Sidali Ramdane[3], Karima Aoues[4]

[1] Saad Dahlab University, Faculty of Nature and Life Sciences, Blida1 (Algeria).Laboratory of Sciences, Food Technologies and Sustainable Development, BLIDA1 University, Faculty of Natural and Life Sciences (Algeria)
[2]Ziane ACHOUR University, Faculty of Economics, Djelfa (Algeria). mahmout12@yahoo.fr
*[3]Saad Dahlab University, Faculty of Nature and Life Sciences, Blida1 (Algeria).*ramdanesidali@yahoo.fr
*[4]Saad Dahlab University, Faculty of Nature and Life Sciences, Blida1 (Algeria).*aouesk@yahoo.fr

Corresponding Author*: altelemsani@gmail.com

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Abstract

Agriculture is more thanjust a means of sustenance; it serves as a vital lifeline for manycommunitiesacross Algeria. This studydelvesinto the criticalrole agricultural extension services play in enhancingproductivity and preservingecosystems, particularlywithin the regions of Ouargla, Béjaia, and Relizane. These areas eachpresent unique challenges and opportunities for farmersstriving to adapt to modern agricultural demands.

Utilizing a mixed-methodsapproach, data werecollectedfrom 900 farmers and agricultural extension agents throughsurveys and interviews. The findingsrevealstrikingdisparities in educationallevelsamongfarmers, withapproximately 74% indicatingloweducation, whichsignificantlylimitstheir engagement with extension services. Despite the hurdles, thosewhoactivelyparticipate in extension programs demonstrateimprovedfarming practices and heightenedecologicalconsciousness, leading to enhancedproductivity and betterresource management.

To address the barriers to participation, the studyemphasizes the need for tailored training programs thatresonatewith the unique contexts of farmers. By investing in these services, Algeria can cultivate a more sustainable agricultural future thatbenefitsbothitsfarmingcommunities and the environment.

Keywords-Agricultural Extension, EcosystemPreservation, Sustainable Practices, Farmer Engagement, Algeria.

2. Why This StudyMatters

This investigation shines a spotlight on three unique regionswithin Algeria—Ouargla, Béjaia, and Relizane—to identify how agricultural extension services fosterimprovedfarming practices whilesimultaneouslysupportingecologicalsustainability.

3. Objectives

The primary objectives of thisstudy are:

1. To examine how agricultural extension services influence productivity in distinct regionalcontexts.
2. To evaluate the rolethese services play in ecosystem conservation.
3. To identify and analyze the barrierslimitingfarmer engagement with extension services.

4. Research Questions

Guidingthisresearch are the following questions:

- How do agricultural extension services influence farmers' practices and productivity?
- Whatlevel of engagement do farmersexhibitwiththese services in eachregion?
- Whatbenefitsresultfromimproved practices associatedwith extension services in terms of ecosystempreservation?

5. Insights into the Regions

5.1 Ouargla: An Oasis in the Desert

Ouargla ischaracterized by arid conditions and an agricultural focus on date palm cultivation. This section discussestheir unique challenges, such as water scarcity and educational limitations, showcasing the potential for agricultural extension services to make a significant impact.

5.2 Béjaia: A Tapestry of Agriculture

Béjaia stands out for its diverse agricultural offerings. It offers insights into how the region'sgeography and educationallevelsfoster a more engagedrelationshipwith agricultural extension services.

5.3 Relizane: The Hub of Crop Production

Relizaneisknown for itscereal and vegetable production. This section examines how thesecropsthrive in a temperateenvironmentwhilehighlighting engagement levels in extension services that lead to increasedproductivity.

6. Methodology

Study Areas

This researchencompassesthreeregions: **Ouargla**, **Béjaia**, and **Relizane**, eachselected for their unique agricultural characteristics and challenges. Ouargla includesoases and emphasizes palm cultivation. Béjaiafeatures diverse cropsthanks to itsvaried altitudes and micro-climates, whileRelizanespecializes in cereals and horticultural produce.

Data Collection

Data wasamassedutilizing a mixed-methodsapproach:

- **Surveys:**Structured questionnaires distributed to 1,050 farmers (350 fromeachregion). Thesegarnered insights intodemographics, agricultural practices, engagement with extension services, and perceptions of theireffectiveness.
- **Interviews:** In-depth discussions with 30 agricultural extension agents (10 fromeachregion) to understandtheirroles, challenges, and strategiesemployed in disseminating agricultural information.

Data Analysis

The collected data wasanalyzedusingboth descriptive and inferentialstatistical techniques. Descriptive statisticssummarizeddemographic and practice-related data, whileinferentialstatisticswereemployed to explore relationshipsbetween engagement with extension services and agricultural outcomes.

7. Introduction: Farming in a Changing World

Agriculture remains a cornerstone of Algerian life, deeplyinterwovenwith the fabric of cultural identity and local economies. Yet as the pressures of climate change and economicdevelopmentmount, the necessity for effective agricultural extension services has never been clearer.

By the way, agricultural extension services are pivotal in bridging the chasmbetweenresearchadvancements and agricultural practices, particularly in regionswheretraditionalfarming techniques are prevalentyetinadequate to meet the challenges posed by modern agricultural demands. In Algeria, characterized by its diverse climatic zones and agrariansystems, effective agricultural extension has the potential to significantlyenhanceproductivitywhilesimultaneouslypreserving vital ecosystems.

The regions of Ouargla, Béjaia, and Relizaneexemplify the agricultural diversityinherentwithin Algeria. Ouargla, an arid milieu marked by oases, faces challenges in sustainablefarming due to scarce water resources and traditionalmethods. Béjaia, withitsmildclimate and variedtopography, supports a rich agricultural heritage, yetgrappleswithintegrating modern techniques. Relizane, known for itscereals, fruits, and vegetables, alsoexperiences the complexities of contemporary agricultural demands.

This studydelvesinto how agricultural extension services operatewithinthese diverse contexts, delivering training, information, and resourcesthat can lead to improvedfarming practices and ecologicalsustainability. It emphasizes the pressing need for tailored extension strategiesthatresonatewith the educationallevels and cultural contexts of the farmers.

8. Results

Farmer Demographics

The surveyrevealedsignificant insights across the regions:

- **Ouargla:** 75% of farmershadloweducationalattainment, typicallyonlyprimary-leveleducation. Most farmers (65%) reportedreliance on traditional agricultural practices with minimal modern technique usage.
- **Béjaia:**Approximately 60% hadcompletedprimaryeducation. The region'sfarmerswere more open to adopting modern practices, with 45% indicatingwillingness to change.
- **Relizane:** A mixed demographic, with 55% possessingsecondaryeducation. This group exhibitedhigher engagement with extension services, with 40% utilizing modern farming technologies.

Engagement with Extension Services

- **Ouargla:**Only 20% of farmersengagedwith extension services. Thoseengagedreportedimproved compliance (50% followingrecommendedfertilization practices vs. only 10% non-engaged).
- **Béjaia:** 35% activelyengagedwith extension services, resultingin 70% reportingimprovedfarmingknowledge. Adoption of new irrigation methodsincreasedsignificantly (up to 50%).
- **Relizane:** Engagement washigher, with 45% of farmersworkingwith extension agents, reporting a 50% rise in cropyieldsamongthosewhoadopted new practices.

Impact on EcosystemPreservation

Engagement with extension services significantlycorrelatedwithecological practices:

- In Ouargla, trainedfarmerswere 3 times more likely to adopt water conservation techniques.
- In Béjaia, 60% of engagedfarmerspracticed diversification, aidingecosystemresilience.

- Relizanefarmersreported 65% adoption of sustainablepest management techniques, highlighting a commitment to ecological balance.

9. Discussion

The findingsaccentuate the criticalrole of agricultural extension services in enhancingfarming practices acrossAlgeria's diverse regions. In Ouargla, the dual challenges of loweducationalattainment and traditional practices hinderprogress, illuminating a pressing need for targetededucational initiatives. In contrast, Béjaia and Relizane showcase more progressive adoption of modern techniques fosteredthrough extension service engagement.

Challenges remain, includingresource limitations, communication barriers, and the persistence of traditionalbeliefsthatmayinhibit the transition to contemporary agricultural methods. Solutions necessitate an adaptive approach to extension services, one thatconsiders the educational backgrounds of farmers and integratespracticaldemonstrations.

Farmers in Béjaia and Relizane face distinct challenges compared to those in Ouargla, primarily due to differences in climate, agricultural practices, and socio-economic conditions.

Challenges in Béjaia:

1. Diverse Agricultural Practices: Béjaia has a more diverse agricultural landscapethatincludes fruits, vegetables, and cereals. This diversityrequiresfarmers to adapt to various cultivation techniques, which can bechallengingwithoutadequate extension support.

2. HigherEducational Levels: Farmers in Béjaiagenerally have highereducationallevelscompared to those in Ouargla. Whilethis can facilitate engagement with agricultural extension services, italsoraises expectations for the quality and relevance of information provided.

3. GeographicalBarriers: The mountainous terrain in Béjaia can hinderaccess to extension services and markets, complicatinglogistics for farmers.

Challenges in Relizane:

1. Water Scarcity: Relizane faces significant water scarcity issues, impactingcropyields and sustainability practices. Farmers often struggle with irrigation management, whichiscritical for theirproductivity.

2. Dependence on Traditional Practices: Manyfarmers in Relizanestillrely on traditionalfarmingmethods due to limitedexposure to modern techniques and technologies, which can affect theirproductivity and environmentalsustainability.

3. EconomicConstraints: Economic challenges are pronounced in Relizane, wherefarmersmaylack the financialresourcesneeded to invest in modern agricultural inputs or technologies.

Comparisonwith Ouargla:

In contrast, farmers in Ouargla primarily deal withextremearid conditions thatnecessitatespecific adaptations such as oasis agriculture. The educationalbarriers are significanthere, with a high percentage of farmershavingloweducationallevels, whichlimitstheir engagement with extension services. While all threeregions face challenges related to agricultural practices and extension service effectiveness, the specific issues varybased on local conditions and farmerdemographics.

Addressingthese unique challenges throughtailored agricultural extension services is essential for improvingproductivity and sustainabilityacross all threeregions.

10. Conclusion : A Path TowardSustainable Agriculture

Agricultural extension services are indispensable in transforming agricultural productivity and ecosystempreservation in Algeria. Despiteeducationalbarriersthathinder engagement, the data illustratesthatthosewhoparticipate in extension programs reapsubstantialbenefits, both in terms of enhancedfarming practices and sustainableecologicalstrategies.

To promotesustainable agriculture across the regions of Ouargla, Béjaia, and Relizane, itis essential to amplify the effectiveness of agricultural extension programs. Implementingtargeted initiatives—catering to the specificneeds of farmers, enhancingeducationallevels, and utilizingcommunity-basedapproaches—can ensure agricultural practices evolve to meet modern demandswhilecherishing and preservingAlgeria's diverse ecosystems.

11. Future Approaches and Perspectives

Moving forward, future researchshould focus on:

- Developingstrategies to foster inclusion of undereducatedfarmers in extension programs, ensuringthatknowledgetransferis accessible and comprehensible.
- Evaluating long-term impacts of agricultural extension on productivitymetrics and ecosystemhealth to substantiate the value of these services.
- Establishing partnerships betweengovernment bodies, NGOs, and communityorganizations to mobilizeresources and createholisticstrategies for agricultural sustainability.

By addressingthese areas, agricultural extension services can become a transformative force, nurturingboth the economicviability of farmers and the health of Algeria'srichecosystems. This comprehensiveframeworkis vital for guiding future agricultural practices towardsustainability and resilience in the face of environmental changes.

Referencies :

1. ABOUALI, A. (1994). La relation entre la vulgarisation agricole et la recherche agronomique dans l'expérience jordanienne. Cahiers Options Méditerranéennes, CIHEAM, 2(3), 3-9.
2. ALBARELLO, L., Digneffe, F., Hiernaux, J. P., Maroy, C., Ruckoy, D., & Saint-Georges, P. (1995). Pratiques et méthodes de recherche en sciences sociales. Ed. Armand Colin, Paris.
3. AL-RIMAWI, A. S. (2003). Les attitudes des agents de vulgarisation jordanienne envers la gestion de l'exploitation commerciale et leurs besoins en formation. Journal d'Education International et de Vulgarisation, 10(2), 7-15.
4. AMEUR, C. (1993). Vulgarisation agricole, approche et orientation. Rome.
5. ANONYME. (2004). Publication semestrielle éditée par l'institut national de la vulgarisation. INVA, Alger.
6. ANONYME. (2009). La vulgarisation agricole en Algérie. INVA, Alger.
7. ANONYME. (2011). Vulgarisation agricole en action : stratégie et politique d'intervention. Sous-Direction de la vulgarisation.
8. ANONYME. (2015). Stratégie et politique de vulgarisation agricole pour la période (2010-2014). Direction de la Formation de la Recherche et de la Vulgarisation.
9. BAGNOLS, F., & GAUSSEN, H. (1953). Saison sèche et indice xérothermique, Volume I. Doc. Carte des productions végétales, art. 8, Toulouse.
10. BARKAT, S. (2005). Maîtrise de l'acte de vulgarisation. Agriculture et développement, 1, 3-4.
11. BEDRANI, S. (1981). L'agriculture algérienne depuis 1966. Ed. OPU, Alger.
12. BEDRANI, S. (1993). La vulgarisation agricole au Maghreb : essai de synthèse d'un séminaire. Cahiers Options Méditerranéennes, CIHEAM, 2(1), 3-11.

13. BEDRANI, S. (1993b). L'Etat et la vulgarisation agricole. Cahiers Options Méditerranéennes, CIHEAM, 2(4), 5-12.
14. BELATECHE, A. (2007). Le développement de la filière plasticole en Algérie. Revue ITCMI, 3, 3-4.
15. BELLALKHAL, M. (1993). Organisation de la vulgarisation en Tunisie. Cahiers Options Méditerranéennes, CIHEAM, 2(1), 35-40.
16. BENACHENHOU, A. (1970). Régime des terres et structures agraires au Maghreb. Ed. Edition Populaire de l'Armée, Alger.
17. BLANCHET, A., & GHIGLIONE, R. (1987). Les techniques d'enquête en sciences sociales. Ed. Bordas, Paris.
18. B.N.E.D.E.R. (1992). Etude du schéma directeur de développement et la mise en valeur dans la wilaya de Ouargla, hydrogéologique, Tipaza.
19. BRODHAG, C., BREUIL, F., GONDRAN, N., & OSSAMA, F. (2004). Ed. AFNOR, Paris.
20. CHAULET, C. (1993). Propos de sociologie sur la vulgarisation agricole. Cahiers Options Méditerranéennes, CIHEAM, 2(1), 13-15.
21. CUIERMOU, Y. (1994). Marchés, état et logiques paysannes en Algérie. Cahiers Sci. Hum., 30(1-2), 179-196.
22. DAUCÉ, P., & PERRIER-CORNET, P. (1986). Région et développement de l'agriculture. Cahier d'Economie et Sociologie Rurales, INRA, 2, 1-140.
23. DAOUD, Y., & HALITIM, A. (1994). Irrigation et salinisation au Sahara algérien. Sécheresse, 5(3), 151-160.
24. DE FARCY, H. (1970). Economie agricole. Ed. SIREY, Paris.
25. DELHOMME, P., & MEYER, T. (1997). *Les projets de recherche en psychologie sociale. Ed. Masson, Paris.
26. DORS, T., & SEBILLOTTE, M. (1987). Manuel didactique pour la construction de typologie fondée sur l'analyse du fonctionnement et de l'histoire des exploitations agricoles. Ed. Grignon, Paris.
27. DUBIEF, J. (1963). Le climat du Sahara. Tome II. Ed. Inst. Rech. Sah., Univ. Alger.
28. DUTIL, P. (1971). Contribution à l'étude des sols et des paléosols du Sahara. Thèse Doc. D'Etat, faculté des sciences de l'université de Strasbourg.
29. ELLOUMI, M. (1993). Vulgarisation ou développement agricole ? Le rôle des organisations professionnelles. Cahiers Options Méditerranéennes, CIHEAM, 2(1), 167-173.
30. FERRY, M., BEDRANI, S., & GREINER, D. (1999). Agroéconomie des oasis. Ed. CIRAD, Montpellier.
31. FOUAD, S. (1993). L'expérience égyptienne dans le domaine de la vulgarisation décentralisée. Cahiers Options Méditerranéennes, CIHEAM, 2(3), 21-24.
32. GILARDEAU, J. M., & JODIER, J. A. (1992). Les successions dans le monde agricole. Ed. Litec, Paris.
33. GOUSSIOS, D. (1993). La vulgarisation à la recherche des modèles de développement agricole et rural. Cahiers Options Méditerranéennes, CIHEAM, 2(2), 3-5.
34. HAMDI-AÏSSA, B. (2001). Fonctionnement actuel et passé de sols du Nord du Sahara (cuvette de Ouargla). Approches micromorphologique, géochimique et minéralogique et variabilité spatiale. Thèse Doc. Inst. Nat. Agro. Paris-Grignon.
35. HEDDADJ, D., FERROUKHI, S., & CHERFAOUI, M. L. (1993). Rôle du SNRA dans la stratégie de développement agricole en Algérie. *Cahiers Options Méditerranéennes, CIHEAM, 2(1), 87-93.
36. IDDER, M. T. (2005). Contribution à l'étude des principaux facteurs de dégradation de l'oasis de Ksar de Ouargla. Mémoire Ingéniorat Dep. Agro. Ouargla.
37. KHARAT, A. (1993). L'évolution des méthodes de travail et la relation entre la recherche, la formation et la vulgarisation dans quelques pays du Moyen-Orient. Cahiers Options Méditerranéennes, CIHEAM, 2(3), 29-31.
38. KHIATI, M. (2007). L'essentiel de la vulgarisation agricole. Ed. INRA, Alger.
39. KHIATI, M. (2009). Guide méthodologique à l'usage des vulgarisateurs agricoles. Sous-Direction de la vulgarisation, Alger.
40. LAROUSSE AGRICOLE. (1984). Ed. Librairie Larousse, Paris.
41. LE GRAND DICTIONNAIRE DE PSYCHOLOGIE. (1996). Ed. Librairie Larousse, Paris.
42. LE HOUEROU, H. N. (1995). Bioclimatologie et biogéographie des steppes arides du Nord de l'Afrique : diversité biologique, développement durable et désertisation. Options méditerranéennes, Sér. B, N°10, Montpellier.
43. MANDER, A. H. (1977). Manuel de la vulgarisation agricole. FAO, Rome.
44. MESLI, M. (1998). Les origines de la crise agricole en Algérie. Tome 1. Ed. OPU, Alger.

45. MESBAH, C. (1993). Historique et place de la vulgarisation. Cahiers Options Méditerranéennes, CIHEAM, 2(1), 31-34.
46. NAHAL, I. (1998). Principes d'agriculture durable. Ed. ESTEM, Paris.
47. OZENDA, P. (1983). Flore du Sahara. Ed. Centre national de la recherche scientifique (C.N.R.S), Paris.
48. PATRICIA, D., & THIERRY, M. (1997). Les projets de recherche en psychologie sociale. Ed. Armand Colin/Masson, Paris.
49. PETIT LAROUSSE EN COULEUR. (1980). Ed. Librairie Larousse, Paris.
50. PETIT ROBERT. (1990). Ed. Librairie Larousse, Paris.
51. PRÉVOSTE, P. (1999). Les bases de l'agriculture. Ed. Technique et documentation, Paris.
52. RAJAB, A. (1994). La vulgarisation agricole en Syrie. Cahiers Options Méditerranéennes, CIHEAM, 2(3), 11-15.
53. ROCHE, J., & ROCHETEAU, O. (1971). Economie et population. Le cas du Sénégal. Cah. O.R.S.T.O.M., sér. Sci. hum., 8(1), 63-72.
54. ROUVILOIS-BRIGOL, N. (1975). Le pays d'Ouargla (Sahara algérien), Variation et organisation d'un espace rural en milieu désertique. Ed. Publications Univ. Paris.
55. SALINAS, J. L. (1993). Typologie et évolution des systèmes de vulgarisation agricole et rurale en Méditerranée. Cahiers Options Méditerranéennes*, CIHEAM, 2(1), 80-87.
56. SALMONA, M. (1975). Innovation et composantes affectives et cognitives du travail. Pour, 40, 23-29.
57. SENOUSSI, A. (1999). Gestion de l'écosystème saharien en Algérie : symbiose ou confrontation entre systèmes productifs en milieu agricole et pastoral. Cas de la région de Ouargla. Ed. Presses Univ. Septentrion, France.
58. SWANSON, B. E. (2003). Tendance et changement au sein du système de vulgarisation agro-technique chinois. Journal d'Education International Agricole et de Vulgarisation, 10(2), 17-24.
59. TEKELIOGLU, Y. (1993). La vulgarisation agricole en Turquie. *Cahiers Options Méditerranéennes*, CIHEAM, 2(2), 107-111.
60. TOUTAIN, G., DOLLI, V., & FERRY, M. (1989). Situation des systèmes oasiens en régions chaudes. *Cahiers de la Recherche Développement, 22.
61. WALI, K. (2007). Influence de la vulgarisation agricole sur le développement rural. Mémoire d'ingénieur, USD Blida.