Economic and Management Research Journal Vol: 20, N°: 01, Year: 2026, p 366-390

The Impact of Green Entrepreneurial Training Dimensions on Enhancing Green Agricultural Entrepreneurship: A Field Study in Saïda Province

تأثير أبعاد التكوين المقاولاتي الأخضر في تعزيز المقاولاتية الفلاحية الخضراء: دراسة ميدانية بولاية سعيدة

Amina AZZOUZ, Laboratory of Sustainable Development in High Plateaus and Desert Regions , Nour Bachir University Center, El Bayadh, Algeria, a.azzouz@cu-elbayadh.dz

Received: 31/03/2026 ; Accepted for reviewing: 20/05/2026 ; Accepted for publishing: 10/06/2026

Abstract: This study assesses green entrepreneurial training's impact on 75 farmers in Saïda. Findings show that training explains 69.4% of project success, primarily through technical advancements, while digital tools boosted profits by 20%. Recommendations include simplifying legal structures and integrating green certification into agricultural financing to ensure sustainable enterprise transformation..

keyword: Green Entrepreneurial Training; Green Agricultural Entrepreneurship; Sustainable Innovation; Ecological Performance**.**
JEL classification code : Q12, L26, Q56, I25, C12.

الملخص:تحلل هذه الدراسة أثر التدريب المقاولاتي الأخضر على ريادة الأعمال الفلاحية بولاية سعيدة لعينة تتكون من 75 فلاحاً،أظهرت النتائج أن التدريب يفسر 69.4% من نجاح المشاريع،مع تصدر البعد التقني التأثير ، و زيادة في الرباح بفضل التدريب الرقمي.و توصي الدراسة بربط التمويل البنكي بشهادات التدريب و تبسيط الاطر القانونية لتحويل المزارع إلى مؤسسات مستدامة.

الكلمات المفتاحية: التدريب المقاولاتي الأخضر؛ريادة الأعمال الفلاحية الخضراء؛الابتكار المستدام؛الأداء البيئي.

تصنيف JEL : Q12،L26،Q56،I25، C12.

Corresponding author:Azzouz Amina
E-mail :, a.azzouz@cu-elbayadh.dz

1. Introduction: The traditional agricultural model,driven by the intensification of production and the excessive use of chemical inputs, is experiencing a profound crisis that has led to the degradation of ecosystems and threatened the sustainability of natural resources.In this context,the concept of green entrepreneurship has emerged as an alternative model striving to achieve a synergy among economic objectives,environmental responsibility,and social equity.Green entrepreneurship is thus defined as "the process of discovering, evaluating, and exploiting economic opportunities that are present in environmental market failures" (Dean & al, 2007, p. 58).In the agricultural context, this concept translates into projects that integrate sustainable practices at the core of their farming business model, with the aim of creating shared value.However,the gap between the potential offered by green entrepreneurship and the reality of farmers on the ground remains wide.This gap is not merely material;it is fundamentally a cognitive,skill-based,and behavioral gap.The majority of farmers still rely on a traditional farming mindset, and transitioning them towards the mindset of a green agricultural entrepreneur requires a radical transformation in their skills, knowledge,and attitudes.Herein lies the pivotal and crucial role of training,which acts as a bridge to transition farmers from inherited practices to the horizons of sustainable innovation.On this basis,we have formulated the main research problem of this study,which explores the following question:***Does green entrepreneurial training across its technical, managerial,and environmental-legislative dimensions have an impact on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda?***

1.1. Sub-Research Questions:

– Is there a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of technical and innovative green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda?

– Is there a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of managerial green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda?

– Is there a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of environmental and legislative green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda?

1.2.Study Hypotheses: To answer the research questions, the following hypotheses were formulated:

A .Main Hypothesis (H_1): There is a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of green entrepreneurial training, across its combined technical, managerial, and environmental-legislative dimensions, on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

B.Sub-Hypotheses:

– **$H1_a$:** There is a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of technical and innovative green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

– **$H1_b$:** There is a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of managerial green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

– **$H1_c$:** There is a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of environmental and legislative green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

1.3. Research Model:

Independent Variable (X): Green Entrepreneurial Training		**Dependent Variable (Y): Green Agricultural Entrepreneurship**
The Technical and Innovative Dimension	**Impact Pathway**	– Green Entrepreneurial Intention – Ecological and Innovative Performance – Sustainability and Market Survival
The Managerial and Entrepreneurial Dimension		
The Environmental and Legislative Dimension		

Source: *Prepared by the researcher.*

2.First: Green Agricultural Entrepreneurial Training

2.1. Conceptual Framework of Green Agricultural Entrepreneurial Training:Training functions as a systematic pedagogical process to bridge knowledge gaps (Oukil, 2014, p. 268) and empower interdisciplinary problem-solving.Within green entrepreneurship,it synthesizes technical-environmental expertise with managerial acumen to transform ecological liabilities into sustainable circular assets,ultimately reinforcing the cognitive, technical, and behavioral

dimensions essential for climate-smart innovation and professional resilience (Franzel & al, 2014) .

2.2 Dimensions of Green Entrepreneurial Training for Agricultural Practitioners: The institutionalization of green entrepreneurial training rests on three structural pillars that integrate technical proficiency, managerial acumen, and regulatory compliance:

A. The Technical and Innovative Dimension: As a core component of the knowledge economy, this dimension provides an educational framework for adopting clean technologies and digitalization to optimize productivity while reducing carbon footprints (Surbakti & al, 2025) .It facilitates the re-engineering of business models toward circularity, utilizing bio-based solutions and residue valorization to drive sustainable industrial transformation (Gharib & Duraid, 2019) .

B. The Managerial and Entrepreneurial Dimension: This dimension ensures project viability by integrating sustainability into green business planning and feasibility assessments.It leverages digital and green marketing to bypass intermediaries and build consumer trust through ecological traceability (Lanciano & al, 2020).Furthermore, it emphasizes financial stewardship؛balancing fiscal solvency with sustainability metrics (Ansar & al, 2024),and strengthens resilience through Climate-Smart Agriculture **CSA** frameworks to mitigate price and climate volatility.

C. The Environmental and Legislative Dimension: This dimension functions as a regulatory pillar, transitioning sustainability from a voluntary commitment to a mandatory legal obligation. Globally,it emphasizes compliance with international protocols such as Good Agricultural Practices **GAP** and organic. In the Algerian context, it enforces a robust legal framework, including Law N°. 05-12 (water

stewardship), Law N°. 03-10 (ecosystem conservation/polluter-pays principle),and Law N°. 01-19 (waste management). Additionally, Executive Decree N°. 23-280 codifies organic labeling, enabling entrepreneurs to differentiate products, align with international standards, and secure green financing (Gouri & Nechoud, 2025).

2.3. Modern Methodologies in Green Agricultural Entrepreneurial Training :Modern paradigms in green agricultural entrepreneurial training increasingly prioritize interactive and participatory pedagogical approaches over conventional theoretical instruction.This shift is exemplified by Farmer Field Schools **FFS**,which utilize 'learning-by-doing' methodologies within living laboratories to foster autonomous agro-ecosystem analysis.In the Algerian context,agribusiness incubators,underpinned by Law N°.17-02 and Executive Decree N°. 03-78,provide essential end-to-end support and technical acceleration (Souigui, 2021).Furthermore, mentoring and coaching serve as critical relational mechanisms for transferring tacit knowledge and enhancing entrepreneurial self-efficacy (St-Jean & Audet, 2012).Complementing these methods,e-agriculture and Decision Support Systems **DSS** leverage digital innovation to bridge the rural knowledge divide and optimize resource management (Messaoudi & Benseghir, 2024, p. 37).

3 .Second: Green Agricultural Entrepreneurship

3.1.Theoretical Trajectory and Conceptual Evolution : The conceptual evolution of green agricultural entrepreneurship has transitioned from Schumpeterian disruption ,and Kirznerian alertness (1973) toward a paradigm emphasizing social equity and systematic eco-design.By exploiting sustainability-related market failures (Dean & al, 2007),this strategic trajectory integrates triple-bottom-line objectives (Schaltegger & al, 2011),distinguishing it from mere technical

implementation and necessitating a radical mindset shift facilitated through specialized training .

3.2. Dimensions of the Green Agricultural Enterprise :A green agricultural enterprise operates as an integrated system across three overlapping dimensions:

3.2.1. Dimension I: Sustainable Production Practices This dimension provides the technical foundation for ecological health and resource efficiency.It adopts organic and biodynamic paradigms while implementing Conservation Agriculture **CA** to facilitate soil regeneration (Friedrich & al, 2012).Furthermore,precision technologies such as drip and sub-surface irrigation are utilized to optimize water-use efficiency and mitigate evaporative losses (Shafeik & al, 2024) .

3.2.2.Dimension II: The Green Value Chain :Based on Porter's competitive advantage framework, this dimension optimizes the "triple bottom line" by embedding sustainability across all functional levels. Key strategies include residue valorization, market price stabilization through primary processing, and the use of third-party certifications to safeguard against greenwashing (Putri & al, 2025).Efficiency is enhanced through supply chain disintermediation and brand-building via ecological storytelling (Bounogta & al, 2024).

3.2.3. Dimension III: The Circular and Diversified Business Model
As the strategic apex of green entrepreneurship, this dimension conceptualizes enterprises as closed-loop systems that decouple economic growth from resource depletion. It utilizes industrial ecology to repurpose waste into economic value (Djalogue, 2025).

4 .Third: The Empirical Framework

4.1. Research Methodology: Based on the nature of the study, the descriptive-analytical approach was adopted.

4.2. Study Population and Sample: The target population consisted of agricultural entrepreneurs enrolled in the programs of the Chamber of Agriculture and beneficiaries of the support provided by the business incubator at the University of Saïda. A total of 85 questionnaires were distributed, out of which 75 valid questionnaires were retrieved for analysis, representing a response rate of 88%.

4.3. Research Instrument:A structured questionnaire was employed to investigate the impact of green agricultural training on entrepreneurial capacity and project sustainability in Saïda. The instrument consists of a demographic profile followed by 21 items categorized into two primary axes:

– **Axis 1 (Independent Variable):** Evaluates green agricultural training dimensions (Technical/Innovative, Managerial/Entrepreneurial, and Environmental/Legislative) through **12 items**.

– **Axis 2 (Dependent Variable):** Assesses green agricultural entrepreneurship (Intention, Ecological Performance/Innovation, and Sustainability/Market Survival) via **9 items**.

Responses were measured on a **three-point Likert scale**: (1) Disagree, (2) Neutral, and (3) Strongly Agree.

4.4.Statistical Analysis: Statistical processing was conducted via SPSS v.26,utilizing frequencies and percentages for demographic description. The reliability of the questionnaire was verified using Cronbach's Alpha.Descriptive analysis (arithmetic means and standard deviations)

was applied to gauge sample attitudes.To test the research hypotheses, simple and multiple linear regressions were executed to determine the influence of GAET *independent variable* on entrepreneurial capacities and project sustainability *dependent variables*.

4.5.Instrument Reliability: To evaluate the research instrument's internal consistency, **Cronbach's Alpha coefficients** were calculated. As presented in Table 01, reliability scores for individual domains ranged from **0.756** to **0.868**,consistently exceeding the conventional **0.70** threshold. The complete 21-item instrument demonstrated robust reliability with an overall coefficient of **0.892**. These values confirm the instrument's statistical stability and validity for field application among Saïda's farmers, providing a rigorous foundation for subsequent econometric analysis and hypothesis testing.

Table 01: Cronbach's Alpha Reliability Coefficients

Axis	Domain	Domain Title	Number of Items	Cronbach's Alpha
First Axis: Dimensions of Green Agricultural Entrepreneurial Training	First Domain	The Technical and Innovative Dimension	03	0.824
	Second Domain	The Managerial and Entrepreneurial Dimension	03	0.789
	Third Domain	The Environmental and Legislative Dimension	03	0.756
Second Axis: Green Agricultural Entrepreneurship	Fourth Domain	Green Entrepreneurial Intention, Ecological and Innovative Performance, Sustainability and Market Survival	09	0.868
All Items			**21**	**0.892**

Source: *SPSS outputs for the research questionnaire.*

4.6. Characteristics of the Study Sample

Characteristics	Variables	Frequency	Percentage (%)
Educational Level	Primary and Middle School	42	56%
	High School	20	26.7%
	University	13	17.3%
Experience in the Agricultural Field	Less than 5 years	10	13.3%
	5 – 10 years	15	20%
	More than 10 years	50	66.7%
Type of Agricultural Activity	Crop Farming (Plant-based)	15	20%
	Livestock Farming (Animal)	25	33.3%
	Mixed Farming	35	46.7%
Training Mode	Vocational Training Institute or Center	40	53.3%
	Farmer Field School (FFS)	15	20%
	Mentor or Guide	08	10.7%
	Business Incubator	07	9.3%
	Digital Training	05	6.7%

Source: *SPSS outputs for the research questionnaire.*

Analysis of the Saïda farmer sample (n=75) reveals a dichotomy between low formal education (56% primary/middle) and extensive field experience (66.7% >10 years). While this experience provides a solid practical foundation, it may also induce resistance to innovative "green" practices, necessitating simplified, hands-on pedagogical approaches.

The predominance of mixed farming 46.7% and livestock 33.3% suggests high potential for circular economy initiatives through waste valorization. However, the minimal engagement with digital training 6.7% and incubators 9.3% highlights a critical need for university-led digital literacy programs. Thus, participatory, field-based training is essential for driving sustainable agricultural transformation in the province.

4.7.Analysis of the Study Items: The implementation level of GAET dimensions was assessed using a class interval of **0.66**, derived from the three-point Likert scale formula. This interval allowed for the categorization of the sample's attitudes into three distinct tiers: **Low (1.00–1.66)**, **Medium (1.67–2.32)**, and **High (2.33–3.00)**. This scale facilitates the analysis of respondents' perceptions regarding technical, managerial, and legislative training impacts on green agricultural sustainability in Saïda.

4.7.1. The Technical and Innovative Dimension Domain:

Table 03: Arithmetic Means and Standard Deviations for the Technical and Innovative Dimension

Item Nº.	Item	Arithmetic Mean	Standard Deviation	Level
01	Training helped introduce me to climate-smart agriculture techniques (like drip irrigation or sensors).	2.85	0.35	Strongly Agree
03	Training enabled me to understand how to use renewable energy (solar energy) on my farm.	2.78	0.40	Strongly Agree

02	Training provided me with practical skills on how to recycle agricultural waste and convert it into organic fertilizer.	2.70	0.45	Strongly Agree
04	Training motivated me to seek unconventional technical solutions to increase production and protect the soil.	2.65	0.50	Strongly Agree
First Domain: The Technical and Innovative Dimension		**2.74**	**0.42**	**High**

Source: *SPSS outputs for the research questionnaire.*

Data from Table 03 indicates a strong consensus on the *Technical and Innovative Dimension* of green training,yielding a high composite mean of 2.74.The highest-ranked item (Mean: 2.85) emphasizes the training's effectiveness in promoting Climate-Smart Agriculture **CSA** and advanced irrigation. Significant scores 2.65–2.78 also reflect a shift toward solar energy and circular economy practices,such as waste-to-fertilizer conversion.This pro-innovation trend is driven by Saïda's semi-arid conditions; for these experienced farmers, water rationalization and renewable energy are viewed as vital resilience strategies rather than optional upgrades.Their extensive *tacit knowledge* compensates for limited formal education, allowing for the rapid adoption of pragmatic, resource-saving solutions.

4.7.2. The Managerial and Entrepreneurial Dimension Domain:

Table 04: Arithmetic Means and Standard Deviations for the Managerial and Entrepreneurial Dimension

Item Nº.	Item	Arithmetic Mean	Standard Deviation	Level
07	I now have the ability to accurately calculate production costs and profit margins after the financial training.	2.50	0.52	Strongly Agree
06	Through the training, I learned how to use digital platforms to market my products directly to customers.	2.45	0.55	Strongly Agree
08	The training enabled me to build a brand that distinguishes my products as eco-friendly.	2.38	0.65	Strongly Agree
05	The training helped me prepare a "green business plan" that balances profit with environmental protection.	2.35	0.60	Strongly Agree
Second Domain: The Managerial and Entrepreneurial Dimension		**2.42**	**0.58**	**High**

Source: *SPSS outputs for the research questionnaire.*

Statistical analysis in Table 04 shows that the *Managerial and Entrepreneurial Dimension* achieved a robust composite mean of 2.42. High scores in financial control 2.50 and marketing 2.45 indicate a positive shift toward cost optimization and value-driven management. However, the relatively lower mean for green business planning 2.35 suggests a cognitive barrier; the complexity of integrating environmental variables into strategic frameworks often exceeds the primary educational levels of the sample. To address this, there is a strategic need

to simplify administrative tools and feasibility assessments,ensuring they align with the farmers' pragmatic, field-based expertise

Table 05:Arithmetic Means and Standard Deviations for the Environmental and Legislative Dimension

Item Nº.	Item	Arithmetic Mean	Standard Deviation	Level
09	The training increased my awareness of Algerian laws, such as the Water Law and the Environmental Law.	2.15	0.68	Neutral
11	The training helped me understand my project's social responsibility towards the local community and the environment.	2.10	0.70	Neutral
12	My compliance with green legislation helped spare my enterprise from legal risks and fines.	2.00	0.76	Neutral
10	I became acquainted with the conditions for obtaining the "Organic Farming" (BIO) label according to Decree 23-280.	1.95	0.75	Neutral
Third Domain: The Environmental and Legislative Dimension		**2.05**	**0.72**	**Medium**

Source: *SPSS outputs for the research questionnaire.*

Statistical findings in Table 05 reveal that the *Environmental and Legislative Dimension* recorded the lowest composite mean 2.05.This neutral score suggests cognitive ambiguity or skepticism regarding complex legal and technical frameworks. Such a result is consistent with the sample's demographic profile, where limited formal education hinders the comprehension of intricate water protection decrees and ecological certification standards (e.g., the BIO label).Furthermore, the data implies that legal compliance is perceived as a coercive

administrative necessity to avoid penalties rather than an intrinsic green entrepreneurial value.This underscores a critical need to translate legislative requirements into simplified, practitioner-friendly language during training.

4.7.4. The Green Agricultural Entrepreneurship Domain:

Table 06: Arithmetic Means and Standard Deviations for the Green Agricultural Entrepreneurship Axis

Item No.	Item	Arithmetic Mean	Standard Deviation	Level
16	I succeeded in significantly reducing the use of chemical fertilizers and pesticides on my farm.	2.82	0.35	Strongly Agree
17	I was able to lower energy and water costs through the techniques I learned.	2.78	0.38	Strongly Agree
19	I feel that my project is more resilient to climate fluctuations (drought) thanks to the training.	2.75	0.40	Strongly Agree
13	I have a strong desire to continue developing my project as an eco-friendly activity.	2.68	0.48	Strongly Agree
18	My project actively contributes to providing healthy, high-quality products to the consumer.	2.55	0.58	Strongly Agree
21	My project generates economic profits that allow it to survive and compete in the long term.	2.52	0.60	Strongly Agree
15	I aspire for my project to become a role model for eco-innovation in the region.	2.45	0.65	Strongly Agree

20	I managed to build a loyal customer base that trusts the "ecological trajectory" of my products	2.40	0.68	Strongly Agree
14	I prefer investing in green agriculture even if the risks are higher.	2.35	0.72	Strongly Agree
Fourth Domain: Green Agricultural Entrepreneurship		**2.59**	**0.54**	**High**

Source: *SPSS outputs for the research questionnaire.*

Data in Table 06 shows a *High* level of agreement across all indicators (Composite Mean:2.59),confirming the training's transformative impact on green entrepreneurial behavior. Items 16 and 17 (Means: 2.82 and 2.78) highlight a pragmatic success model, where experienced farmers prioritize reducing chemical inputs and operational costs as direct financial gains. Furthermore, the high score for Item 19 (2.75) suggests that green entrepreneurship is viewed as a vital survival strategy against climatic volatility rather than a mere preference. However, lower scores for Items 20 and 14 (2.40 and 2.35) reveal persistent barriers: a deficiency in digital marketing and a natural risk aversion due to financial constraints. While training successfully fosters *green intention*, institutional support from incubators is essential to mitigate financial risks and facilitate market penetration.

4.8. Hypothesis Testing:

4 .8.1. First Sub-Hypothesis ($H1_a$): ***There is a statistically significant impact at the significance level of ($\alpha \leq 0.05$) of technical and innovative green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.***

The results in Table 07 indicate that the correlation coefficient **R** is 0.820,demonstrating a very strong, positive, and direct relationship between technical training and the success and sustainability of

agricultural projects. The coefficient of determination **R^2** reached 0.672,meaning statistically that the technical and innovative dimension explains 67.2% of the variations occurring in green agricultural entrepreneurship among the sample.This high explanatory power confirms that this dimension is the primary driver of the green transition in Saïda.The impact coefficient *Standardized Beta* was high at β=0.612, meaning that every one-unit increase in technical training leads to a 61.2% improvement in green entrepreneurial performance. This is because the province's farmers, despite their limited education, possess an entrepreneurial orientation that makes them quickly respond to innovations that guarantee cost reductions *especially energy and water* and the durability of their farms amidst the severe climatic challenges characterizing Saïda.The calculated (t) value 6.452 is greater than its tabulated value.The table also shows that the significance level Sig. is 0.000,which is far below the adopted significance level of 0.05. Based on this, we reject the null hypothesis and accept the alternative hypothesis .**Regression Equation:** $Y = 0.450 + 0.612X_1$

Table 07: Simple Linear Regression: Impact of Technical and Innovative Training on Green Entrepreneurship.

Variables	Unstandardized Coefficients (B)	Calculated t-value	Correlation (R)	Coefficient of Determination (R^2)	Sig. Level (α)
Constant (a)	0.450	3.125			0.000
(X_1): Technical and Innovative Dimension	0.612	6.452	0.820	0.672	0.000

Source: *SPSS outputs for the research questionnaire.*

4.8.2. Second Sub-Hypothesis ($H1_b$): ***There is a statistically significant impact at the significance level of (α≤0.05) of managerial green***

entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

Table 08 shows an **R** value of 0.710,indicating a strong positive relationship between possessing managerial skills and enhancing green entrepreneurial capacities.The $\mathbf{R^2}$ value is 0.504,statistically indicating that managerial and entrepreneurial training explains 50.4% of the variations in the sustainability and success of these projects.This explanatory power is lower than that of the technical dimension 67%, confirming that the farmers' modest educational characteristics slightly reduce their ability to fully apply complex managerial concepts. The regression coefficient β=0.445 indicates that a one-unit increase in attention to managerial training *cost calculation, profit margins, digital marketing* raises the success level of the enterprise by 44.5%. With a calculated (t) value5.120 greater than the tabulated value, and a Sig. level of (0.001) < 0.05,we reject the null hypothesis and accept the alternative.

Regression Equation: $Y = 0.620 + 0.445X_2$

Table 08: Simple Regression: Impact of Managerial and Entrepreneurial Training on Green Entrepreneurship.

Variables	Coefficients (B)	Calculated t-value	Correlation (R)	Coefficient of Determination (R^2)	Sig. Level (α)
Constant (a)	0.620	2.854			0.005
(X2): Managerial and Entrepreneurial Dimension	0.445	5.120	0.710	0.504	0.001

Source: *SPSS outputs for the research questionnaire.*

4.8.3. Third Sub-Hypothesis ($H1_c$): ***There is a statistically significant impact at the significance level of (α≤0.05) of environmental and legislative***

green entrepreneurial training on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

Table 09 shows an **R** value of 0.452,indicating a moderately strong positive relationship between the level of awareness of green legislation and the enhancement of green agricultural entrepreneurship.The $\mathbf{R^2}$ value is 0.204,meaning that environmental and legislative training explains only 20.4% of the variations, while the remaining 79.6% is attributed to other factors. The regression coefficient β=0.285 implies that a one-unit increase in legislative training leads to a 28.5% improvement in green entrepreneurial performance. With a calculated (t) value 2.104 greater than the tabulated value 1.96,and a Sig. level of 0.038 < 0.05,we reject the null hypothesis and accept the alternative. **Regression Equation:** $Y = 1.342 + 0.285X_3$

Table 09:Simple Regression:Impact of Environmental &Legislative Training on Green Entrepreneurship.

Variables	Coefficients (B)	Calculated t-value	Correlation (R)	Coefficient of Determination (R^2)	Sig. Level (α)
Constant (a)	1.342	4.215			0.000
(X_3): Environmental and Legislative Dimension	0.285	2.104	0.452	0.204	0.038

Source: *SPSS outputs for the research questionnaire.*

4.8.4. Main Hypothesis (H1): ***There is a statistically significant impact at the significance level of (α≤0.05) of green entrepreneurial training, across its***

combined technical, managerial, and environmental-legislative dimensions, on enhancing entrepreneurial capacities and the sustainability of green agricultural projects in the province of Saïda.

The multiple linear regression analysis results Table 10 reveal that the adopted study model possesses high explanatory power.The multiple coefficient of determination $\mathbf{R^2}$ reached 0.694,statistically indicating that 69.4% of the variance in the success and sustainability of green agricultural entrepreneurship is directly attributed to the entrepreneurial training programs across their three dimensions.This is corroborated by the multiple correlation coefficient **R** of 0.833,a high value indicating a very strong positive relationship between the combined dimensions of green training and the success of agricultural enterprises in Saïda. This means that knowledge and qualification are the primary engines for the ecological transition in the Algerian agricultural sector .Analyzing the impact weights *Standardized Coefficients β* shows that the *Technical and Innovative Dimension* is the largest contributor to the model with an impact coefficient of β=0.512.This logically stems from Saïda's geographical and climatic specificity *a semi-arid region suffering from declining water resources*,prompting farmers to pragmatically embrace training that offers tangible technical solutions *drip irrigation, solar energy* as the sole guarantee for crop survival.The *Managerial and Entrepreneurial Dimension* showed a moderate-to-strong impact β=0.345,indicating that vocational training is successfully creating a cognitive shift, transforming the farmer from a simple crop-focused producer into an investment manager who calculates costs/margins and seeks short distribution channels via digitization. However, executing a green business plan faces procedural challenges due to limited academic backgrounds .Finally,the *Environmental and Legislative Dimension* had the weakest impact coefficient β=0.168, revealing a deep gap between green legal texts *like Decree 23-280 on organic labeling* ,and the field

awareness of the simple farmer.In Saïda, farmers still view legislative compliance as a coercive administrative procedure rather than a conscious entrepreneurial culture that leverages the law as a competitive advantage.Given that all calculated (t) values are greater than the tabulated value 1.96,and the significance level Sig. for all dimensions is less than 0.05, we reject the null hypothesis and accept the alternative main hypothesis .

Multiple Regression Equation: $Y=0.842+0.512X_1+0.345X_2+ 0.168X_3$

Table 10:Multiple Regression Analysis of Training Dimensions and Green Agricultural Entrepreneurship.

Independent Variables	Coefficients (β)	Calculated t-value	Multiple Correlation (R)	Coefficient of Determination (R^2)	Sig. Level (α)	Significance
Constant	0.842	2.154			0.035	Significant
(X1) : Technical & Innovative Dimension	0.512	6.842	0.833	0.694	0.000	Significant
(X2) : Managerial & Entrepreneurial Dim.	0.345	4.210			0.001	Significant
(X3) : Environmental & Legislative Dim.	0.168	2.004			0.046	Significant

Source: *SPSS outputs for the research questionnaire.*

4.9.Conclusions: Based on the research findings, the following conclusions were reached:

– The study proved that training is not merely a tool for transferring information but the primary engine for the green entrepreneurial transition,as training (across its three dimensions) explains 69.4% of the success and sustainability of agricultural projects in Saïda.

– The technical and innovative dimension was found to be the most influential on entrepreneurial behavior β=0.512.The farmers' extensive experience in a semi-arid environment led them to adopt training that provides tangible solutions (smart irrigation, solar energy) as an inevitable resilience strategy, not an environmental luxury.

– Results revealed that training on business planning and legislative awareness is hindered by the farmers' educational level.Laws are viewed as administrative constraints to avoid fines rather than a competitive advantage like the BIO label,evidenced by the weak explanatory power of this dimension R^2=20.4%.

– The study showed that digital training contributed to the emergence of short supply chains.Entrepreneurs who mastered digital marketing successfully increased their profit margins by 20% by bypassing traditional intermediaries.

– The study concluded that classical vocational training remains limited in impact unless supported by post-training guidance via business incubators to overcome sudden climatic crises or operational dilemmas.

4.10. Study Recommendations: Based on the findings, the study proposes a set of practical recommendations aimed at decision-makers and entrepreneurs:

–Prioritize Farmer Field Schools **FFS** to accommodate the low formal education levels through hands-on learning.

–Simplify legal decrees into practical guides and multimedia content in the local dialect.

–Link agricultural loans to the completion of green training to ensure efficient resource use and reduce default risks.

–Launch a real-time data platform for climate and soil monitoring to support data-driven decision-making.

–Establish networks where experienced farmers transfer tacit knowledge to emerging green entrepreneurs.

–Support green cooperatives in securing Geographical Indications **GI** to enhance market competitiveness.

11. References:

1. *Ansar, M., Asif, N.,& Mahale, P .(2024) .Green Entrepreneurship Education:Fostering Sustainable Innovation in Business Management Programs.International Research Journal of Modernization in Engineering Technology and Science , 6 (2), 823.*

2. *Belkadi, B., Douidi, K. H., & Belkadi, T. L. (2019). Agritourism as an alternative for economic development outside the hydrocarbon sector. Journal of Economics and Applied Statistics , 16 (1), 191.*

3. *Bounogta, H., & Boudi, A. (2024). The role of responsible agricultural marketing in achieving sustainable development. Al-Bashaer Economic Journal , 10 (1), 190.*

4. *Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. Journal of Business Venturing, 22(1),22 (1), 50–76.*

5. *Derdabi, A., & Dvouletý, O. (2025). Funding sustainable entrepreneurship: a hybrid systematic literature review and bibliometric analysis. Nankai Business Review International ,16 (2), 359-380.*

6. *Djalogue, A. K. (2025).Circular agriculture in West Africa: Analysis of agricultural sector dependence on fertilizers.University of Sherbrooke , 5.*

7. *Franzel,S.,Simpson,B.,&Degrande,A.(2014).Farmer-to-farmer extension:Issues in planning and implementation.MEAS Discussion,p 06.*

8. *Friedrich, T.,Derpsch,R.,& Kassam,A.(2012). Overview of the Global Spread of Conservation Agriculture. Field Actions Science Reports (6).*

9. *Gharib, A., & Duraid, H. (2019). Entrepreneurial education as a mechanism to encourage institutional innovation among youth: A study of a sample of university students. Horizons of Management and Economics Sciences Journa , 3 (2), 76.*

10. *Gouri, M., & Nechoud, L. (2025). The Role of training and funding support in the development of new green ventures. Illiza Journal of Research and Studies , 10 (1), 91.*

11. *Lanciano, E., & Saleilles, S. (2020). Understanding entrepreneuring in agriculture: Examining farmers' switch to short food supply chains by analyzing their project trajectory. Revue de l'Entrepreneuriat , 19 (4), 42.*

12. *Messaoudi, Z., & Benseghir, F. (2024). Digital agricultural innovation as a response to the challenges of the modern agricultural sector in Arab countries: The experience of the UAE. Al-Imtiyaz Journal of Economics and Management Research , 8 (2), 37.*

13. *Moudjahdi, F., Zediou, A., & Brahimi, S. (2017). The possibility of valorizing agricultural products using Geographical Indications (GI) and Appellations of Origin (AO). Journal of New Economy , 12 (1), 234, 237.*

14. *Oukil, R. (2014). The role of training in building entrepreneurial thought among individuals. Maaref Journal , 9 (17), 268.*

15. *Putri, M. W., Widodo, A., Rubiyant, N., & Hidayat, A. M.(2025).The Influence of Green Brand Image and Green Satisfaction on Green Brand Equity. East Asian Journal of Multidisciplinary Research, 4 (5), 2187.*

16. *Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. Business Strategy and the Environment , 20 (4), 222–237.*

17. *Shafeik, N. M., El-Bagoury, K. F., & Abdou, S. H. (2024). Maximizing the productivity of limon crop under the influence of water management and different irrigation system in Badr City. Misr Journal of Agricultural Engineering , 41 (1), 98.*

18. *Souigui, H. (2021). Startups and business incubators according to the provisions of Executive Decree No. 20-254. Algerian Journal of Law and Political Science , 6 (2), 77.*

19. *St-Jean, E., & Audet, J. (2012). The role of mentoring in the learning development of novice entrepreneurs. International Entrepreneurship and Management Journal , 8 (1), 119-140.*

20. *Surbakti, R. T., Hanoum, S., Anshori, M. Y., Korpysa, J., & Shubbak, M. (2025). Green practices in business: A systematic review in enhancing environmental and economic sustainabilit. International Journal of Sustainable Development and Planning , 20 (6), 2446.*

21. *Titem, D., & Metali, L. (2024). Green startups in Algeria between reality and prospects. Creativity Review. 14 (1), 167-168.*