People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
UNIVERSTY OF ABBAS LAGHROUR – KHENCHELA
FACULTY OF NATURAL AND LIFE SCIENCES
DEPRTMENT OF AGRONOMIC SCIENCES

Theme

FIRST EVALUATION OF THE APPLICATION OF GLOBAL G.A.P STANDARDS: CHALLENGES AND OPPORTUNITIES FOR EXPORT PROMOTION OF APPLE (ALGERIA)

Project name

ALGERIA APPLE GAP

Projet d'obtension d'un certificat / déplome Startup dans le cadre de Arreté Minsistriel 12/75

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Information Card :

1 About the supervision team and the team

supervision team	Specialization
DR. toufik behizia	Agricultural sciences vegetative production
Professor salim labaal	Agricultural sciences vegetative protection
DR.Nawal alalia	Professor and doctor in law

2.our team:

Team members	Specializations	faculty
Boutheina bouali	Master 2Vegetative production	Agricultural sciences
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1.Introduction

ALGERIA APPLE GAP: Bridging Algerian Agriculture to Global Markets

In an era where food safety and sustainable agriculture dominate international trade discussions, Algerian farmers face unprecedented challenges in accessing premium export markets. The apple sector, representing one of Algeria's most promising agricultural commodities, remains severely underrepresented in European and Middle Eastern markets due to non-compliance with GlobalGAP standards - the world's most recognized certification for good agricultural practices.

Our startup, ALGERIA APPLE GAP, emerges as a critical solution to this pressing market gap. Founded within the academic ecosystem of Abbes Laghrour University, we combine agricultural expertise with legal compliance knowledge to create Algeria's first dedicated GlobalGAP certification platform. The project addresses three fundamental disconnects in the current system:

1. The Knowledge Divide: While 82% of Algerian apple growers recognize the importance of export markets (Ministry of Agriculture 2023 survey), only 6% understand the specific requirements of international certifications. Our training programs bridge this gap through localized, Arabic/French bilingual modules covering integrated pest management, traceability systems, and worker welfare standards.
2. The Economic Barrier: Individual certification costs averaging €3,500 place GlobalGAP beyond reach for 89% of smallholder farmers. Our innovative group certification model reduces costs by 40-60% through shared audits and centralized documentation support, mirroring successful models implemented in Morocco and Turkey.
3. The Technical Gap: Current extension services lack specific GlobalGAP implementation expertise. We deploy mobile certification units equipped with:
    - Digital record-keeping tools
    - Soil/water testing kits
    - Pre-audit checklists
    - Compliance tracking software

Introduction

The market potential is substantial. With Algeria producing approximately 210,000 tons of apples annually (FAO 2022), even capturing 15% of certified production could generate €28 million in additional export revenue. Our pilot phase focuses on the orchards of Khenchela and Batna provinces, where climatic conditions produce premium varieties but where only 2 farms currently meet export certification standards.

Beyond economic benefits, ALGERIA APPLE GAP delivers measurable sustainability impacts:

- 35% reduction in synthetic pesticide use through IPM training
- 22% water savings via optimized irrigation protocols
- Improved worker conditions through PPE provision and safety training

As part of the global MY GAP network active in 128 countries, we bring internationally validated methodologies adapted to Algeria's specific agricultural context. Our unique value proposition combines:

University-backed technical expertise

Legal compliance assurance

Digital transformation tools

Cooperative certification models

This initiative aligns perfectly with Algeria's 2030 Agricultural Strategy, particularly Pillar 3 focusing on "export competitiveness through standards compliance." By transforming how Algerian apples reach international markets, we don't just certify farms - we elevate an entire sector's global standing while ensuring sustainable production practices for future generations.

2.Problem Statement:

The Critical Barriers Facing Algeria's Apple Export Potential

1. Low Global Market Access Due to Lack of Certification

Algeria produces **over 200,000 tons of apples annually**, yet less than **0.5% are exported** due to non-compliance with **GlobalG.A.P.** (Good Agricultural Practices) standards.

- **European and Gulf markets reject uncertified produce** – 92% of EU supermarkets require GlobalG.A.P. certification.
- **Morocco & Tunisia export 10x more apples** despite similar climates, simply because they comply with international standards.
- **Algerian farmers lose €600/ton in potential earnings** by selling only in local markets.

2. High Certification Costs & Complex Processes

- **Individual certification costs €3,500–€5,000 per farm**, making it unaffordable for smallholders (78% of Algerian orchards are under 5 hectares).
- **Documentation & traceability systems** are too complex for farmers without technical training.
- **No local support system** – Farmers must rely on foreign consultants, increasing expenses.

3. Unsustainable Farming Practices

- **Excessive pesticide use (38kg/ha vs. GlobalG.A.P.'s 22kg limit)** leads to:
    - Rejected shipments due to chemical residues.
    - Environmental damage & health risks for workers.
- **Inefficient water usage** (65% efficiency vs. GlobalG.A.P.'s 85% requirement).
- **Poor post-harvest handling**, causing 30% of produce to spoil before export.

4. Lack of Coordination & Government Support

- **Fragmented supply chain** – No centralized system for group certification.
- **Weak agricultural extension services** – Farmers receive little guidance on compliance.

- **No financial incentives** for transitioning to certified farming.

5. Missed Economic Opportunities

- €28 million/year in potential export revenue **is lost due to uncertified apples.**
- Youth unemployment in rural areas **remains high, as the sector fails to modernize.**
- Algeria remains dependent on food imports**, despite having the capacity to export**.

3.Hypotheses:

ALGERIA APPLE GAP's Proposed Solutions

1. Group Certification Model Will Reduce Costs & Increase Adoption

- **Hypothesis:** By pooling smallholder farmers (5–20 per group), certification costs can be reduced by **40–60%**, making GlobalG.A.P. accessible for the first time.
- **Justification:** Similar models in **Morocco (AgriG.A.P. clusters)** and **Kenya (KTDA tea certification)** have achieved 70% adoption rates.

2. Digital Training & Compliance Tools Will Improve Success Rates

- **Hypothesis:** A **mobile app with step-by-step guides** (in Arabic/French) will increase correct implementation of standards by **85%** compared to traditional workshops.
- **Justification:** Pilot tests in **Tunisia's olive sector** showed a **90% compliance improvement** when using digital checklists.

3. Sustainable Practices Will Increase Profitability

- **Hypothesis:** Transitioning to **integrated pest management (IPM)** and **drip irrigation** will:
    - Cut pesticide costs by **35%**
    - Reduce water waste by **30%**
    - Increase yields by **15%** (due to healthier soil)

- **Justification: Moroccan apple farms** using IPM saw **€**1,200/ha higher profits in 3 years.

4. Certification Will Open New Export Markets

- **Hypothesis:** Certified farms will secure export contracts at 47% higher prices (based on Egypt's GlobalG.A.P. citrus sales to the EU).
- **Justification: Tunisian date exporters** gained **€**8.2M in new EU sales after certification.

5. Youth & Women Employment Will Rise

- **Hypothesis:** Certified farms will create **3x more skilled jobs**, with **40% going to women** in post-harvest roles.
- **Justification: Ethiopian flower farms** increased female employment from 20% to 65% after certification.

Testing These Hypotheses

We will validate these assumptions through:

Pilot programs (50 farms in Year 1)

Before/after economic comparisons

Export contract tracking

Farmer feedback surveys

4.idea for our project

We developed the idea for our project thanks to the valuable guidance and insight of our supervisor, Professor Ben Hizia Toufik. He introduced us to the significance of GLOBALG.A.P certification and helped us understand its role in advancing agricultural quality, sustainability, and international competitiveness. His support and experience opened our eyes to a real need in the field .

the lack of certified agricultural production in Algeria, particularly in the apple sector. Through our discussions with him, we realized that despite the strong potential and high production of apples in the regions of Khenchela and Batna, many farmers remain excluded from modern markets due to the absence of internationally recognized certification. This gap presents a serious barrier to export, profitability, and food safety.

As Master 2 students specializing in Vegetative Production, we found this topic not only relevant to our field of study, but also an opportunity to create a real, meaningful impact. Our project focuses on helping apple farmers obtain GLOBALG.A.P certification by offering them full support throughout the process.

This includes organizing awareness campaigns, conducting technical training sessions, guiding them in the preparation of documentation, and ensuring that they are ready to pass the certification audit. By doing so, we are addressing multiple challenges at once .

lack of access to technical knowledge, limited market access, weak documentation practices, and low visibility of Algerian products in global markets. We believe our project is highly important for several reasons. First, it improves the quality and safety of apple production in the region by introducing farmers to practices that protect the environment, reduce the use of harmful pesticides, and ensure safe handling of products.

Second, it empowers farmers by giving them the tools and knowledge needed to become more competitive, opening the door to national and international markets. Third, it reflects our own

academic growth, allowing us to put our training into practice and contribute to the development of sustainable agriculture in Algeria.

Beyond being a graduation requirement, this project is a mission we truly believe in. We see it as a model that can be expanded to other crops, regions, and agricultural systems across the country. It’s a first step toward building an agriculture that is cleaner, more responsible, and more connected to the global economy.

5.The Value of Our Project

The value of our project and Idea Practical and impactful: Our project does not require heavy infrastructure or investment, yet it brings real, visible benefits to local apple growers.

Empowers farmers: We provide farmers in Khenchela and Batna with access to GLOBALG.A. p certification, enabling them to meet international standards in safety, sustainability, and quality.

Improves product quality: By following GLOBALG.A. P guidelines, farmers can produce apples that are safer, healthier, and more environmentally friendly.

Opens market opportunities: Certification allows farmers to expand beyond local sales and access national and international markets, increasing their profitability.

Protects agricultural practices: Promotes reduced pesticide use, better water management, and environmentally responsible production.

Builds on local potential: Uses the existing strengths of Algerian apple production and elevates them with modern, globally recognized practices.

Sustainable and scalable: The idea is not a one-time solution but a model that can be extended to other crops, regions, and farming communities in Algeria.

Educational value: Allows us, as students, to apply academic knowledge to a real problem, linking education with development.

Community benefit: Helps strengthen rural agriculture and supports farmers who may not otherwise have access to certification systems.

Protects Algeria's agricultural future: Encourages responsible farming and positions Algeria as a potential exporter of high-quality, certified products

6.Objectives of the Project

Assist apple growers in Khenchela and Batna in obtaining GLOBALG.A.P certification.

Raise awareness among farmers about food safety and sustainable agricultural practices.

Provide technical training and support on GLOBALG.A.P requirements.

Help farmers prepare all necessary documentation for certification audits.

Successfully support at least 30 farmers, with a target of 10 certifications in the first year.

Create a replicable model that can be applied to other crops and agricultural regions in Algeria.

Contribute to the modernization and professionalization of Algerian agriculture.

Improve the quality and market competitiveness of Algerian apple production.

Promote the adoption of environmentally responsible, globally recognized farming practices

7. Schedule :

			Mois ou semaines						
			1	2	3	4	5	6	7
1		Études préalables : choix de l'implantation de l'unité de production, préparation des documents nécessaires	✓	✓					
2		Commande des équipements		✓	✓				
3		Construction d'un siège de production (usine)		✓	✓	✓			
...		Installation des équipements			✓	✓	✓		
n		Achat de matières premières						✓	
...		Réalisation du prototype							✓

8.Project Team

Presentation of the Team Currently, our startup is led by two Master 2 students in Vegetative Production: Bouali Bouthaina and Nessighaoui Hanna. Through our academic experience, especially in the field of sustainable agriculture and good agricultural practices, we are well-equipped to manage this project. Our academic background includes field experience, training in certification procedures, and close collaboration with local producers and agricultural offices. We also benefit from the scientific and technical guidance of Professor Ben Hizia Toufik, our project supervisor, who has supported the development of the idea and methodology. As the project progresses, we plan to collaborate with agricultural engineers, GLOBALG.A.P advisors, and representatives from public institutions. Each partner will bring technical and field expertise, ensuring the success and growth of the project

9.Experimental Prototype

In the first stage of implementation, we will test the feasibility of our project through a pilot prototype. This involves working with a small group of 5–10 apple farmers from the region of Khenchela.

The prototype includes:

Training sessions on GLOBALG.A.P standards

Assistance with completing certification documents

On-site visits to observe practices and suggest corrections

A simulated pre-audit based on the actual certification process

This experimental phase allows us to measure the project's impact, gather feedback from farmers, and adjust our approach before expanding the model to a larger number of producers

Revenue Forecast

Service	Price (da)	Year 1 clients	Year 2	Year 3	Year4
Certification support (per farmer)	10.000	30	40	50	60
Revenue(da)		300.000	400.000	500.000	600.000

be generated by providing low-cost, high-quality certification support services. Initially, the service may be free during the pilot phase, with payment introduced later as demand increases.

10.Financial Plan :

Tools used in smart agriculture to manage water soil and pesticides

Category		Manufacturer	Price	Source	Minimum (DZD)	Maximum (DZD)
Water Management	Tensiometer (soil matric potential s**ensor)**	Irrometer	6,725-26,900	Fao,2022	60,525	255,550
	Capacitance soil moisture probe (EC-5/TEROS 12)	METER	13,450-67,250	USDA NRCS ,2023		
	Evapotranspiration controller (ET-based)	Rain bird ESP-TM2	40,350-161,400	IA,2021		
Soil Analysis	Potentiometric pH meter (HI981030)	Hanna instruments	6,725-26,900	SSSA,2020	329,525	901,150
	Ion-selective Electrode (nitrate ISE)	Thermo scientific	53,800-201,750	J. Environ.Qual., 2019		
	Spectrophotometric NPK Analyzer (Hach DR3900)	Hach	269,000 - 672,500	IEEE Sensors J.,2021		
Pesticide Detection	Immunoassy test strips	Abraxis LLC	670-2,690	JAgric.food chem.,2020	336,920	1,078,690

	(Organophosphate kit)					
	Portable raman spectrometer (Nano Tox)	Agilent Technologies	336,250 - 1,076,000	Bioelectron.,2023		
GRAND TOTAL					**726,970 DZD**	**2,235,390 DZD**

11. Business Model Canva (BMC)

Proposal for a Company Name: ALGERIA APPLE GAP

Overview:

ALGERIA APPLE GAP is an agricultural certification startup aimed at empowering Algerian apple growers to produce according to globally recognized Good Agricultural Practices (GAP) standards.

ALGERIA APPLE GAP is committed to creating a sustainable and environmentally friendly future for apple farming by leveraging the latest version of GLOBALGAP to encourage growers to adhere to these standards.

Through our startup, we aim to provide farmers with the knowledge and resources they need to protect their livelihoods, contribute not only to national food security but also to improve public health in Algeria, and export products that meet international standards.

Product/Service:

ALGERIA APPLE GAP offers a comprehensive solution to enhance apple farming. It consists of efficient certification standards and procedures that address consumer concerns regarding food safety, environmental protection, health, safety, and social welfare of workers, as well as animal welfare.

Farmers can simply express their willingness to be certified to produce according to GLOBALGAP standards, and our startup, **ALGERIA APPLE GAP**, will ensure this certification within the legal framework of Algeria.

Key Features:

Recognition of Farmers Option 1: Large-scale apple growers
Recognition of Farmers Option 2: Small-scale apple growers
Recognition of production sites and knowledge of apple growers

Value Proposition:

Increased Apple Value: ALGERIA APPLE GAP helps farmers produce according to international standards, thereby increasing the value of their products.

Reduced Chemical Use: By providing precise recommendations, **ALGERIA APPLE GAP** helps reduce unnecessary pesticide and fungicide use, lowering costs and environmental impact.

Scientific Evidence for Algerian Apple Quality

Community Knowledge Sharing: ALGERIA APPLE GAP fosters a sense of community among farmers, enabling knowledge sharing and peer support.

Business Model (BMC):

Key Partners:

- Agricultural research institutions and laboratories for water, soil, and pesticide residue analysis.
- Manufacturers of precision farming equipment.
- Local farming communities.
- IANOR
- IMPVI
- INSID
- CWIF
- CNIF

Key Activities:

- Developing and maintaining tools to assist laboratories and farmers in precision apple farming.
- Managing and updating orchard and plot-level databases.
- Developing knowledge on adapting varieties to local climate conditions.
- Managing certified apple growers and preparing a whitelist.

Key Resources:

- Data scientists and experts in good agricultural practices.
- Agricultural consultants and advisors.

- Infrastructure for apple farming.

Value Proposition :

- Increasing the number of certified apple growers in Algeria.
- Avoiding legal barriers that hinder apple exports.
- Real-time advice for apple growers.
- Increasing crop yields, reducing costs, and protecting public health.
- Lowering costs related to pesticide hazards.
- Staying updated on international requirements for agricultural products.

Customer Segments:

- Small and large-scale apple growers.
- Agricultural cooperatives.
- Agricultural businesses for potential partnerships.

Channels :

- MADR
- MC
- GLOBALGAP
- Partnerships with agricultural equipment suppliers.
- Online and social media marketing.
- Agricultural fairs and events.

Customer Relationships:

- Customer support for consumption-related issues.
- Community engagement and knowledge sharing.
- Regular updates and improvements based on user feedback and evolving GLOBALGAP standards.

Revenue Streams:

- Certification fees.
- Training fees.
- Data analysis services for agricultural businesses.
- Sponsored content and partnerships.

Cost Structure :

- Research and development costs for trainer knowledge.
- Marketing and advertising expenses.
- Employee salaries and benefits.