FAKOUR PEYVAND ARIA

Integrated Propagation Solutions

Grafted seedlings & turnkey facilities

Consulting, research & professional training

INTERNATIONAL CORPORATE CATALOGUE

Fakour Peyvand Aria / Iran

Company Profile

Fakour Peyvand Aria (FPA) brings scientific depth and industrial execution together to advance grafted vegetable seedlings and controlled-environment propagation.

SCIENTIFIC LEADERSHIP

Dr. Reza Salehi

Nearly 30 years at the University of Tehran, from student to faculty member, across greenhouse education, research, extension, consulting and production, with a special focus on grafted seedlings.

INDUSTRIAL LEADERSHIP

Eng. Ali Haratian

An influential figure in Iran's mining and steel sectors, with substantial experience in industrial engineering, operations and complex project delivery.

Together, they shaped FPA's new production complex. Its design, sourcing and construction have been carried out with Iranian expertise.

Ali Haratian
Co-founder and CEO

Reza Salehi
Co-founder and Scientific Director

An Integrated Propagation Platform

FPA combines plant material, production facilities and technical knowledge within one propagation platform. Seedling production remains the current operational priority.

01

Grafted Seedlings

Quality controlled production based on crop, rootstock and production objective

02

Graft Factory

Engineering support for propagation, healing and acclimation facilities

03

Data Based Consulting

Crop, climate, irrigation and root zone assessment

04

FPA Academy

Applied training built around nursery and greenhouse decisions

Grafted Vegetable Seedlings

FPA develops each grafting program around the crop, rootstock, production system and target constraint. Compatibility, seedling quality and post transplant management guide the production plan.

Cucumber scion Squash rootstock

Two-stem grafted tomato

Grafted cucumber

Grafted watermelon

Grafted melon

Grafted eggplant

Commercial availability and rootstock combinations are confirmed for each project after technical evaluation and production planning.

Grafted Pepper Seedling Production

Uniform Grafted Pepper Seedlings

Uniform growth, secure graft unions and consistent clip placement support synchronized healing and reliable nursery quality before delivery.

Pre-Graft Tomato Seedling Quality

Uniform, Vigorous and Ready for Grafting

Consistent stem diameter, balanced height and healthy stem colour indicate strong, uniform seedlings prepared for precise grafting and synchronized healing.

Rootstock and Scion Matching

Uniform Diameter Supports Graft Take

Matching rootstock and scion stem diameter improves alignment of the cut surfaces and allows the grafting clip to hold both partners securely.

Precise matching supports callus formation, vascular reconnection and consistent healing across the production batch.

FPA applies these quality controls before and during grafting to support high graft take and uniform seedling development.

Scion, grafted seedling and rootstock

From Nursery to Field

FPA supports crop establishment beyond seedling delivery, linking nursery quality with field performance.

Technical support can be tailored to the crop, production site and grower's management system.

- Pre-transplant preparation and logistics
- Transplanting and establishment guidance
- Irrigation and early root zone management
- Field monitoring and technical follow-up

Protective packaging for safe delivery

Transplanting in the grower's field

Early establishment after transplanting

Why Grafting

A grafting program starts with a defined production constraint and a rootstock selected for that crop, site and management system.

01 **Root performance**

Access to water and nutrients under demanding conditions

02 **Soil borne disease management**

Rootstock resistance can support integrated control

03 **Stress response**

Selected rootstocks may improve tolerance

04 **Crop continuity**

Greater vigour can support longer production cycles

Grafted cucumber **Non-grafted cucumber**

Commercial greenhouse observation in soil with a history of Fusarium wilt, Varamin, Iran, June 2017

Expected benefits depend on the rootstock, pathogen pressure, environment and crop management.

Rootstock Capacity in Practice

One Root System. Four Productive Stems.

A four-stem cluster plum tomato plant supported by a single vigorous rootstock.

The exposed root ball, visible graft union and four trained stems provide a clear demonstration of how rootstock vigour can support a larger productive canopy under appropriate crop management.

Plant response depends on rootstock–scion compatibility, environment, nutrition and training strategy; the image represents a field example rather than a universal performance claim.

Field Evidence: Watermelon

A field comparison in Fusarium infested soil shows a clear difference in crop stand between grafted and non-grafted watermelon.

Field comparison in Fusarium-affected soil

Grafted watermelon harvest from a Fusarium-affected field

Integrated Grafted Seedling Production Complex

A connected pathway from automated seed sowing to controlled graft healing.

FPA Venlo glasshouse, Karaj, Iran

01 SOW & GERMINATE

Automated sowing and a controlled germination room

02 GROW

Venlo glasshouse with movable benches and recirculating fertigation

03 GRAFT & HEAL

Dedicated grafting operations and multi-tier healing chambers

Automated Sowing & Controlled Germination

Seed placement and early development are managed in dedicated environments.

Automated seed-sowing line

Controlled germination room

SOWING HALL

Automated placement of seed into production trays.

GERMINATION

Humidity, air movement and temperature management.

MONITORING

Sensors support repeatable conditions during emergence.

Venlo Glasshouse Nursery

Movable benches and a controlled greenhouse environment support uniform nursery production.

Seedling trays on purpose-designed mobile benches

INTEGRATED SYSTEMS

- Ebb-and-flow irrigation and nutrient solution recirculation
- Hot-water boiler heating and high-pressure fog
- Semi-closed air supply and circulation fans
- Two layers of shading and energy-saving screens
- Insulated floor and perimeter; full climate control

TRAY • BENCH • CLIMATE

A connected nursery production system

Grafting & Multi-Tier Healing

The plant factory links pre-graft preparation, precise grafting and controlled recovery.

Dedicated rooms for controlled graft healing

Installed infrastructure shown; output depends on crop and production schedule.

01 PRE-GRAFT COOLING

Dedicated cooling rooms before grafting.

02 GRAFTING OPERATIONS

A workroom designed to accommodate 50 people.

03 HEALING & ACCLIMATION

10-tier chambers with LED lighting, cooling, humidification and airflow between tiers.

Precision Instruments and Data-Driven Production

Measurement Supports Every Production Decision

FPA teams monitor the plant environment and crop response using precision instruments. Direct measurements of climate, canopy temperature, light and plant performance guide production control and quality assessment.

Measured conditions. Recorded evidence. Informed decisions.

Graft Factory Solutions

The Graft Factory concept integrates nursery workflow, healing environments and production control for dedicated grafted seedling facilities.

1

Production planning

Capacity, crop mix and workflow

2

Nursery and healing design

Environmental zones, hygiene and biosecurity

3

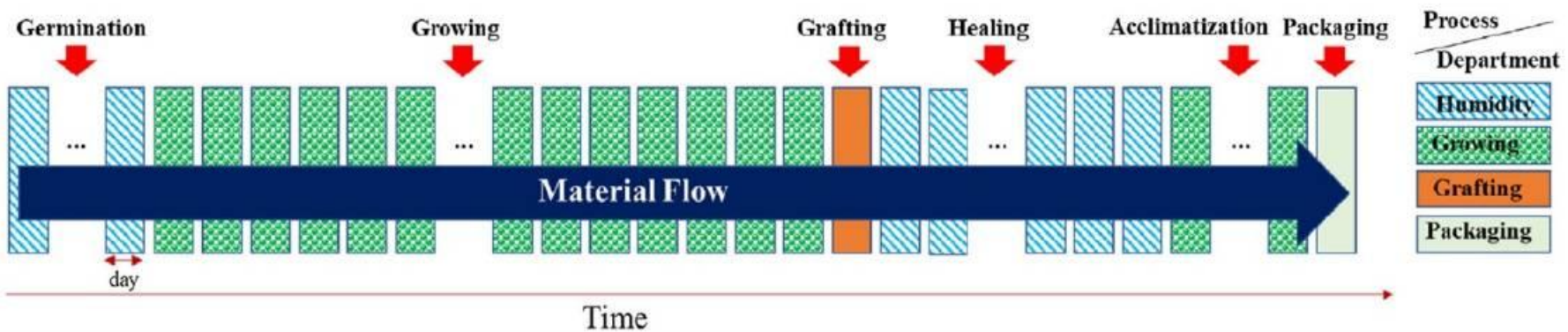
Systems integration

Lighting, irrigation, sensors and control

4

Commissioning and training

Protocol validation and operational startup



Research and Innovation

FPA builds production protocols on long term research in vegetable grafting, seedling physiology and controlled environment propagation.

- Nearly 30 years of research, education and extension in vegetable grafting
- Research on tomato, cucumber, watermelon, melon and eggplant
- LED light, healing, acclimation and seedling quality studies
- Rootstock performance under salinity and soil borne disease pressure
- Greenhouse and field trials with growers and commercial partners

Separate R&D pilot unit: 18 m² | 42 growing levels

Used for controlled-environment propagation and protocol development.

Controlled environment evaluation under LED lighting

Grafted tomato under high root-zone sodium

Research greenhouse evaluation at sodium concentrations above 1,000 ppm, with sustained growth and fruit production.

Scientific leadership includes around 100 publications, supervision of nearly 100 graduate researchers and contributions to international grafting meetings.

Grafted Eggplant Research

Tomato Rootstock Effects on Eggplant Performance

University of Tehran research greenhouses

This research evaluates how grafting eggplant onto tomato rootstock influences plant growth, yield development and fruit quality under controlled greenhouse conditions.

Growth	Vegetative development and plant balance
Yield	Fruit set, yield formation and crop continuity
Fruit quality	Marketable and quality related fruit traits

Research supported financially by Fakour Peyvand Aria (FPA)

Grafted Tomato Research in Soil-Based Greenhouses

Tomato Rootstock Effects on Crop Performance

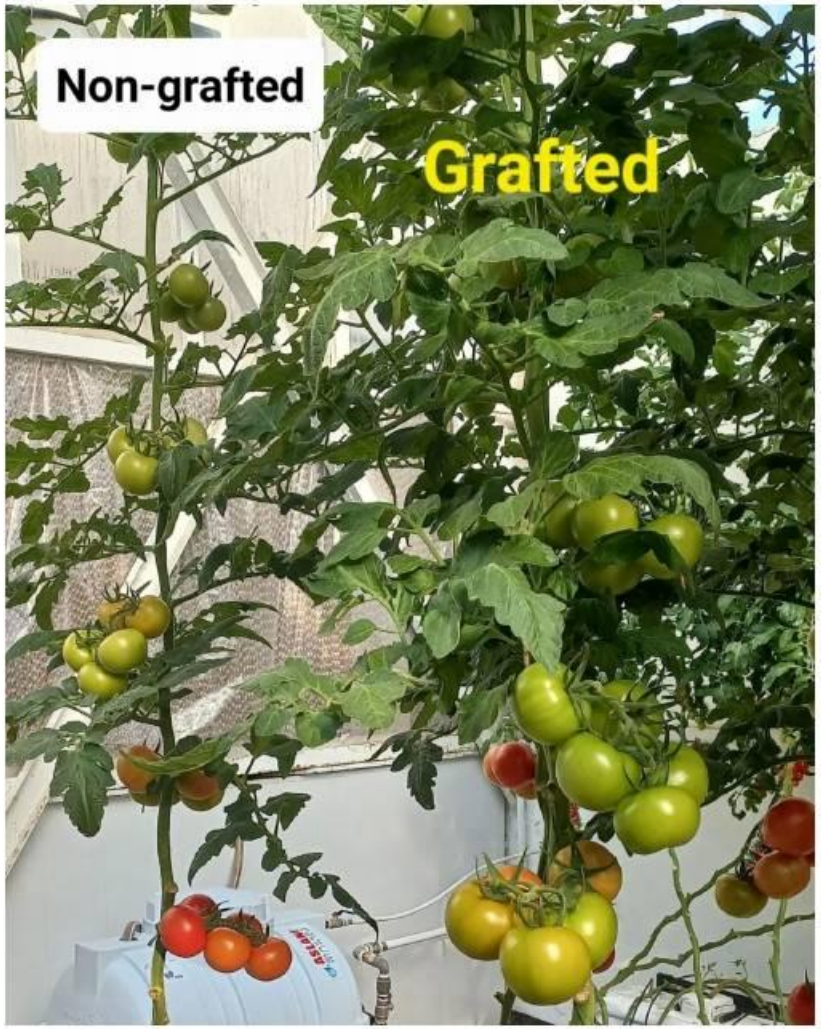
Commercial greenhouse trial with a private-sector partner

This research evaluates how grafting tomato onto a tomato rootstock influences plant growth, yield development and fruit quality under soil-based commercial greenhouse conditions.

Growth	Plant establishment, vigour and canopy balance
Yield	Fruit set, yield formation and production continuity
Fruit quality	Marketable yield and quality related fruit traits

Applied research conducted under commercial greenhouse conditions

High-Sodium Root-Zone Trial



Grafted vs. Non-Grafted Tomato

Root-zone sodium concentration above 1,000 ppm

Under the conditions of this research greenhouse trial, the grafted plant maintained stronger canopy development and a visibly higher fruit load than the non-grafted plant.

The comparison illustrates the potential contribution of a suitable rootstock to crop performance under high-sodium stress. Interpretation remains specific to the tested rootstock–scion combination, environment and management protocol.

Visual research evidence

A direct side-by-side comparison within the same experimental greenhouse environment.

Greenhouse Consulting

Commercial cucumber greenhouse under advisory support

Technical decisions linked to crop response

FPA helps production teams interpret climate, irrigation, root zone and plant measurements and convert them into crop specific management decisions.

- Climate and crop steering
- Irrigation, nutrition and drain analysis
- Root zone and plant balance assessment
- Performance monitoring against production targets
- On site and remote technical support

Scope and deliverables are defined for each crop, site and production objective.

FPA Academy

FPA Academy converts research and field experience into practical training for nursery and greenhouse operations.

Managers

Production planning, performance indicators and operational risk

Technical teams

Propagation, grafting, healing, climate, irrigation and crop assessment

Growers

Establishment and management of grafted crops after transplanting

Hands-on Training in Commercial Greenhouses

Practical, on-site learning focused on crop assessment and production management.

Practical Training for University Students

Operational Learning Inside FPA's Grafted-Seedling Plant Factory

FPA trains students in a real production environment, connecting academic knowledge with nursery operations, grafting practice, hygiene and quality control.

Developing Skilled Grafting Technicians

A Practical Pathway from University Training to Employment

FPA develops the precision, hygiene discipline and production skills required for professional grafting work, helping graduates prepare for technical roles in modern propagation facilities.

Training for Growers

Practical training designed around growers' field conditions, production constraints and crop-management decisions.

Field-oriented extension

Training for Tomato Greenhouse Growers

Practical training in the greenhouse

A training visit for growers who cultivate tomatoes in commercial greenhouses.

International Partnerships

FPA seeks partnerships that combine international plant material and technology with local trials, technical support and market access in Iran.

Plant material	Evaluation of rootstocks and varieties through controlled and commercial trials
Technology	Adaptation of propagation equipment, climate control and nursery automation
Projects	Feasibility studies and phased development of propagation facilities
Knowledge	Joint research, technical training and exchange of validated protocols

Visit to High-Tech Greenhouses in the Netherlands

Priority partners include seed companies, nursery technology suppliers, research organisations and greenhouse groups.

International Technical Experience

Technical visits and specialist training connect FPA's local programmes with advanced greenhouse research and commercial nursery practice.

Research Greenhouse Visit

Wageningen University & Research, the Netherlands

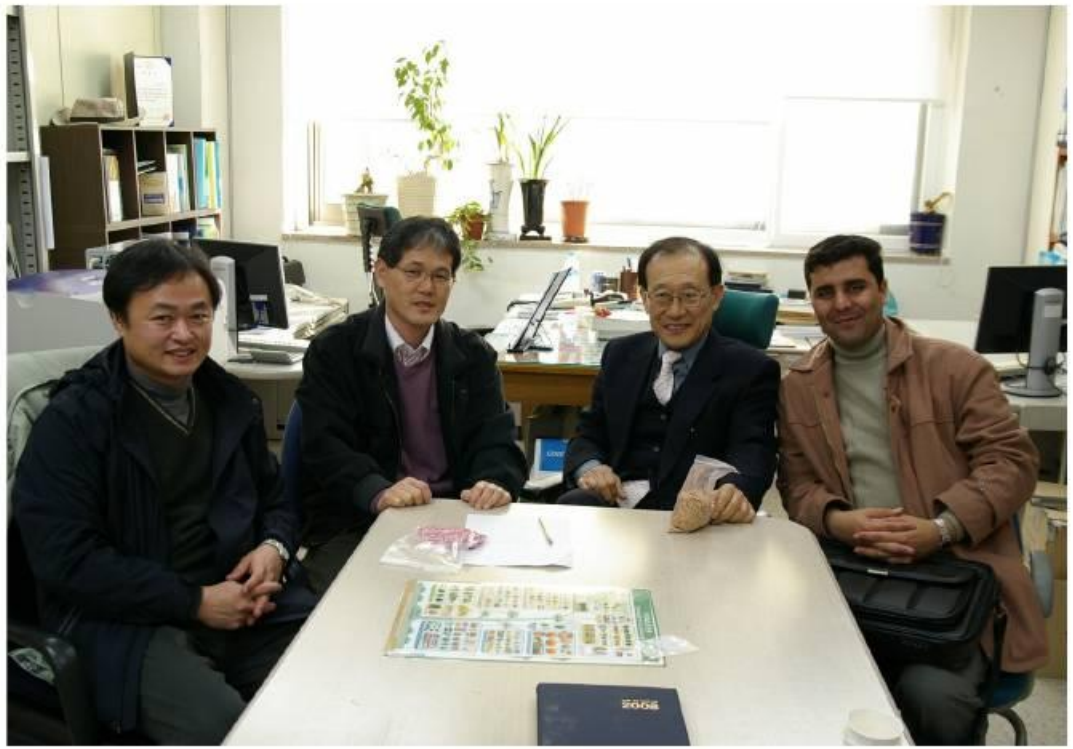
Advanced Greenhouse Management Training

Delphy, the Netherlands

Commercial Grafted-Seedling Nursery Visit

Antalya, Türkiye

Vegetable Grafting Training in South Korea



Kyung Hee University, South Korea

Reza Salehi learned from Professor Jung-Myung Lee in 2008 and 2009, an experience he considers a great honor.

Field Learning with Professor Jung-Myung Lee

Learning in the greenhouse

A field visit during the training period in South Korea, 2008–2009.

First International Symposium on Vegetable Grafting

Participation and Oral Presentation

Participation in the inaugural international symposium brought together vegetable grafting researchers and specialists from around the world.

Wuhan, China; 17–21 March 2014

Greenhouse Visit during the 2014 Symposium

20 March 2014

A visit to a vegetable seedling nursery during the symposium trip.

Third International Symposium on Vegetable Grafting

Participation and Oral Presentation

We presented our research at the Third International Symposium on Vegetable Grafting, sharing findings on LED light quality and cucumber scion development before grafting. We also visited advanced nursery facilities.

Thessaloniki, Greece, 2–6 June 2025

De Ruiter Experience Center

Technical Visit to Tomato Rootstock Evaluation Trials

The visit examined how commercial tomato rootstocks are assessed under controlled greenhouse conditions, with attention to plant vigour, crop balance, yield formation and fruit quality.

De Ruiter Experience Center, the Netherlands

Open to International Collaboration

FPA welcomes partnerships across its integrated platform, connecting plant science, production infrastructure and grower support.

01 Grafted seedling programs
Rootstock-scion selection, nursery production and crop-specific programs.

02 Turnkey greenhouse & graft-factory projects
Concept, engineering, sourcing, construction, commissioning and team training.

03 Applied research and technology
Joint trials, technical validation and controlled-environment protocols.

04 Greenhouse consulting
Data-informed climate, irrigation, root-zone and crop-performance decisions.

05 FPA Academy
Practical training and knowledge transfer for growers and technical teams.

READY TO COLLABORATE

From a focused pilot to a complete facility.

We welcome seed and nursery companies, greenhouse developers, technology providers, research organisations and investors.

Joint trials / technical exchange / turnkey delivery

Fakour Peyvand Aria

Let us discuss your propagation and greenhouse objectives

We welcome discussions with seed companies, nursery technology providers, greenhouse developers, research organisations and professional growers.

Controlled graft-healing chambers

فکور پیوند آریا

BUSINESS AND TECHNICAL ENQUIRIES

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