From the lab to the farm: promoting regenerative agriculture by updating the “arena of change”

Co-operative Research Programme: Sustainable Agricultural and Food Systems (CRP)

Mr. Eran Ettinger
Israel
A Journey to Israel’s Regenerative Agriculture
Industrializing Global Food Production - Maximizing Harvest per Sqm
The change in the mean yearly temperature in Israel at 1988-2017. Mean observations – Black.
Alternative Approaches
Starting the 20s Century

Organic
Conservation
Sustainable
Bio-dynamic
Environmental
Agro-Ecology
Regenerative Agriculture
Does it live up to the hype?
75 YEARS OF ORGANIC LEADERSHIP

Rodale Institute has been conducting groundbreaking research on regenerative organic agriculture since 1947.

ABOUT RODALE INSTITUTE
What is Regenerative Agriculture?

Regenerative agriculture is a system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. Resulting in increased yields, increased resilience to extreme weather events and climate change, and higher health and vitality for the rural communities.

aspiring to...
Regenerative Agriculture: Three Perspectives

Based on:
Set of environmental & agricultural goals

- Increasing the durability of the ecological/agronomic system;
- Increasing biodiversity;
- Increasing soil health and fertility;
- Replenishment of natural resources;
- Carbon fixation;
- Minimizing damage to the environment and to humans;
- Continued economic prosperity of agriculture and farmers.
Set of Agricultural Practices

1. reducing mechanical and chemical disturbances to soil and crop;
2. optimal preservation of ground cover;
3. cultivating agricultural diversity;
4. preserving living roots in the soil;
5. Integration of livestock and agricultural systems.
World View and Constant Effort

Ongoing journey of trial and error, searching; complexity and interconnections within the agro-eco-system; humanity - nature balance
Regenerative Agriculture: Three Principles

- Soil comes first
- Locality & flexibility
- Holistic approach
Israel’s Agriculture Facts & Figures

**National figures:**
- Territory: 22,000 sq. Km
- Population: 8.9 M

**Water Consumption in Agriculture:**
- 60% of national consumption
- Mostly marginal water

**Labor force in Agriculture:**
- 75 K

**Arable land:**
- 4,200 sq. km
- Rainfed: 54%
- Irrigated: 46%
Main Constraints on Israeli Agriculture Sector

- Distant from foreign markets
- Shortage of natural water
- Rain period limited to 3-4 months
- Frequent drought seasons
- Only 20% of the land is arable
- Shortage in farm labor
- 2/3 Semi-arid or arid
- Complex geopolitical environment

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Regenerative Agriculture: Israel’s status

Conservation Agriculture
Organic Agriculture
Agroecological Intensification

Farming Concepts

Conventional

Maxim: Maximization of yield
Industrialized processes

Basic concepts

Regenerative

Maxim: Use of natural processes
Natural processes

?
### Complexity and Lack of Accurate Data

Over 100 combinations of species and sustainable practices
Organic Farming Area as Indicator for Regenerative Farming

EU: 8%
Israel: 1.5%
Pesticides Usage in Israel and Worldwide

Ratio of 1 tone of active ingredient to 1,000 tones of plant output, in selected countries, 2018
Implementation of Conservation Agriculture in Israel

Three principles of Conservation Agriculture:

1. Minimum mechanical soil disturbance
   (i.e. no tillage) through direct seed and/or fertilizer placement.

2. Permanent soil organic cover
   (at least 30 percent) with crop residues and/or cover crops.

3. Species diversification
   through varied crop sequences and associations involving at least three different crops.

Cropland area in the region (9%)
Conservation Agriculture in Israel: Orchards & Deciduous

**Orchards 38%**
- High: 30%
- Medium: 28%
- Low: 17%
- Best: 8%
- Without: 17%

**Deciduous 9%**
- Low: 71%
- Medium: 5%
- High: 4%
- Without: 20%
Implementation of Regenerative Agriculture in Israel: main challenges

Policy / public awareness

Research and development

Training and implementation
Policy Adaptations

- Strengthening competitiveness & innovation
- Switching to non-distortive support measures
- Encouragement of farmer cooperatives
- Supporting rural communities in peripheral regions
- Supporting R&D and extension services
- Developing agro-tourism and other non-agricultural activities in rural areas

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Scientific research: basic, working in Silos and short-term schemes
Fostering Green Growth in Agriculture

The Role of Training, Advisory Services and Extension Initiatives

Knowledge investment supporting the adoption of environmentally friendly farm practices is a key driver behind innovation processes in agriculture, yet impact evaluations and financial analysis of existing initiatives remain scarce despite dramatic changes in orientation, organisation and funding.

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Author(s): OECD
Israel - Development & Implementation of Applied Knowledge

- **Farm**
- **Extension Service**
- **Reginal applied R&D**
- **ARO Basic and applied R&D**
- **Academic Research Institutions Base R&D**

Private guidance

R&D Business sector
Reasons for optimism: #1 growing public interest
Reasons for optimism: #2 Innovation atmosphere

Israel's Agtech Community

DOTS: Start-up that deal with overdose fertilizing
Reasons for optimism:

3. Increased governmental activity

- Budget for Conservation agriculture support (MSH)

New: Governmental Support for Research of Regenerative Agriculture scientific challenges
Reasons for optimism: # 4 Entrepreneurs
Our Theory of Change: 4 Courses of Action of Inter-sectoral Partnership; farmers are central
2 Action Items:

1. Building integrative/applied/long-term research programs

2. Establish Network of model & research farms
Thank you.

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