GENERAL DIRECTORATE OF AGRICULTURAL RESEARCH AND POLICIES

RESEARCHERS’ ROLE IN AGRICULTURAL EXTENSION

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Agricultural Economics and Policy Research

21.05.2013
• Agricultural Extension System (AES) in Turkey

• The Role of Ministry of Food Agriculture and Livestock (MFAL) in AES

• The AES Scheme of MFAL

• The Agricultural Research System in Turkey

• The Some Main Agricultural Research Output

• The linkages Among Research- Extension- Farmers) in Turkey

• Researchers’ role in Agriculture Extension
Agricultural Extension; Agricultural Extension is composed of activities aim to enhance efficiency of production by using new technologies, increasing income and improving life standards of people living in rural areas.

Impacts of agricultural extension are mainly connected to research, education, policy, planning, credit, marketing, and transfer of innovations relevant to inputs.

Currently, prominent feature of science is to change technology rapidly. In this respect, innovations relevant to agriculture and technology need to be transferred to farmers very quickly.
GENERAL APPROACHES OF AGRICULTURAL EXTENSION

- Problem solving
- Transfer of innovation

IN TERMS OF RESPONSIBLE ORGANISATION

- Public Extension
- Farmer Organization Extension
- Private Sector Extension
- Cooperative Extension

IN TERMS OF IMPLEMENTING

- Traditional Extension System
- Training and Visiting System
- Farming System Research Extension
- Mixed Extension System
AGRICULTURAL EXTENSION AS A PUBLIC SERVICE

- **1923-1950 PERIOD**
  - 1924 Ministry of Agriculture
  - 1931 The First Congress of Rural and Agricultural Development

- **1950-1985 PERIOD**
  - 1950 Technical Agriculture Organization in 6 Province
  - 1957 General Directorate of Plant Protection
  - 1960 General Directorate of Soil and Water
  - 1971 District Agricultural Engineer, Central KGTZ
  - 1976 Projects of Rural Development

- **1985-2011 DÖNEMİ**
  - 1985 The Ministry of Agriculture and Rural Affairs (MARA)
  - 1985 I. Project of Agricultural Extension Implementation and Research
  - 1990 II. Project of Agricultural Extension Implementation and Research
  - 1991 Project of Widespread Farmer Extension (YAYÇEP)
  - 1992 Project of Pilot Women Farmers Training
  - Projects of Rural Development
  - 2003 Approach of Problem Solving
  - 2004 Agricultural Production Support Project Centered Village
  - 2004 Knowledge Competition of Women Farmers
2006-2012 PERIOD

- 2006 Pluralistic Agricultural Extension and Consultancy System
- 2007 Development of Agricultural Extension Project (Tar-Gel)
- 2008 Training Project of Young Farmer
- 2009 Support to Agricultural Extension and Consultancy Services
- 2009 Workshops for Woman in Rural Area
- 2011 Women Farmers are competing-Knowledge and Projects Competitions
- 2012 Action Plans for strengthening of Women in Rural Area
- 2012 Support to Socio-Economic training of Rural Women in order to Sustain Rural Development
- 2012 Dissemination Project of Agricultural Innovation
Each Provincial Agricultural Directorate; prepares a Provincial extension programme every year.

- Definition of aim,
- Definition of problematic districts or regions.
- Definition of methods, materials and equipment will be used.
- Definition of extensionists and participants
- Definition of dates and times for activities.
Ministry of Food Agriculture and Livestock

General Directorate of Agricultural Research and Policies (47 agricultural research institutes)

Other Authorities contributing to agricultural R&D;

Ministry of Science, Industry and Technology

- The Scientific and Technological Research Council of Turkey (TUBITAK)

Universities Number of Faculties

- Faculty of Agriculture 30
- Faculty of Veterinary 25
- Department of Food Engineering 38
- Faculty of Fisheries 17

Private sectors and NGO’s
RESEARCH ORGANIZATION OF MFAL

General Directorate of Agricultural Research and Policies (GDAR)

- Deputy DG
- Deputy DG
- Deputy DG

Departments

- Field Crops
- Horticulture Crops
- Plant Protection
- Animal Health Food & Feed
- Livestock & Fisheries
- Soil & Water Resources
- Agricultural Economy & Policies
- Management & Coordination

Research Institutes (47)
RESEARCH INSTITUTES

11 Central Res. Ins.
10 Regional Res. Ins.
26 Subject Oriented Res. Stations
Total 47 Res. Ins.
AIMS OF GDAR

• To increase yield and quality of crops and livestock,

• To develop new crops, varieties, breeding stocks and technologies for domestic and foreign market demands,

• To develop methods and techniques for planted animal health and food safety,

• To conserve and provide sustainable use of natural resources,

• To improve research capacity and the national and international effectiveness of Institutes and their collaboration with stakeholders.

• To prepare the National Agricultural Research Master Plan,

• To determine the research priorities and ensure the use of resources according to the priorities,

• To monitor and evaluate research programs,

• To publish research results and provide the use of developed technologies,

• To prepare reports for policy makers to prevent probable crisis.
RESEARCH AREAS

- Plant Breeding and Agronomy
- Plant Health
- Livestock Breeding and Husbandry
- Animal Health
- Aquaculture and Fisheries
- Food and Feed
- Soil and Water Resources and Biodiversity
- Agricultural Economy
STAFF OF GDAR

- Workers: 2874 (46%)
- Researchers: 1978 (31%)
- Technicians and Laborants: 815 (13%)
- Civil Servants: 643 (10%)

Total: 6310 Personnel
QUALIFICATIONS OF RESEARCHERS

To improve personnel capacity;

- National and international training courses,
- Foreign language courses,
- Contracted personnel employment.
• R&D budget increased 12 times since 2002.
• Personnel expenditures not included.
R&D PROGRAMS

- Investment Budget Program
- Community Based Animal Breeding Program
- Animal Genetic Resources Conservation Program
- Private Sector R&D Support Program
- Institutes-Private Sector Collaboration Program
- Institutional Collaboration Programs
- TUBITAK Programs
- CGIAR Institutes
- FAO and Other International Organizations
- European Union Programs
- Bilateral Cooperation Programs
SOME MAIN OUTPUTS

Domestic Plant and Animal
Genetic resources conserved,

First domestic potato varieties
developed and submitted for registration,

The use of domestic F1 hybrid vegetable seeds
reached to 45%,

Dwarf fruits and kiwi
introduced to Turkish agriculture,

Half of the registered varieties
in field crops developed by our institutes,

Exporting rice hull seeds
while being an importer in short time ago.
SOME MAIN OUTPUTS

Seedless lemon developed and submitted for registration,

Production of wheat is increased although the cultivation area significantly decreased,

Hulless barley for diet improved and submitted for registration,

Mobile Solar Irrigation System developed and put forward to patent,

Advanced Research Centres are established,

Private sector participation in R&D studies supported.
SOME MAIN OUTPUTS

- Three native enzymes developed as feed supporting additive at the first time and put forward to patent,
- Animal vaccines production technologies like foot-and-mouth disease, Brucella, PPR and smallpox vaccine developed,
- National food composition determined and widespread-sustainable system formed,
- Advanced diagnostic methods provided to be used in our laboratories,
- Roll, pack goods and silage machine developed and registered as an useful model,
- Biological control and biotechnical methods as an alternative to chemical control developed, such as the bait trap against leaf rollers in cherry.
SOME MAIN OUTPUTS

Three layer hybrid parents developed in poultry,

Precision Agriculture technologies providing input efficiency developed,

The infrastructures of laboratories improved and accredited,

New species domesticated for aquaculture sector,

Air assisted field sprayer developed as an alternative to aerial spraying for control of sunn pest.
REGISTERED VARIETIES OF FIELD CROPS

- GDAR (44 %) - 1015
- Private Sector (49 %) - 897
- Other Public Organizations (2 %) - 49
- Universities (5 %) - 102

Total: 2063 Varieties
The field coverage rates of varieties registered by GDAR Research Institutes over crops.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rate (%)</th>
<th>Variety</th>
<th>Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread Wheat</td>
<td>95</td>
<td>Chick-pea</td>
<td>100</td>
</tr>
<tr>
<td>Durum Wheat</td>
<td>98</td>
<td>Lentil</td>
<td>100</td>
</tr>
<tr>
<td>Barley</td>
<td>99</td>
<td>Cucumber</td>
<td>100</td>
</tr>
<tr>
<td>Rice hull</td>
<td>100</td>
<td>Eggplant</td>
<td>55</td>
</tr>
<tr>
<td>Trefoil</td>
<td>100</td>
<td>Tomatoes</td>
<td>50</td>
</tr>
<tr>
<td>Vetch (<em>Vicia villosa</em>)</td>
<td>100</td>
<td>Pepper</td>
<td>30</td>
</tr>
<tr>
<td>Vetch (<em>Vicia narbonensis L.</em>)</td>
<td>100</td>
<td>Hybrid vegetable</td>
<td>45</td>
</tr>
<tr>
<td>Safflower</td>
<td>100</td>
<td>Soybean</td>
<td>30</td>
</tr>
<tr>
<td>Peanut</td>
<td>100</td>
<td>Sunflower</td>
<td>20</td>
</tr>
<tr>
<td>Sesame</td>
<td>100</td>
<td>Clover</td>
<td>20</td>
</tr>
</tbody>
</table>
SHARING OF RESEARCH DATA

Outputs of researches supplied for the needs of relevant institutions including universities for their studies.

Research Topics and Ministries benefited from these outputs

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Ministries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion</td>
<td>Ministry of Forestry and Water Issues</td>
</tr>
<tr>
<td>Biodiversity</td>
<td></td>
</tr>
<tr>
<td>Integrated Watershed Management</td>
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</tr>
<tr>
<td>Fisheries</td>
<td></td>
</tr>
<tr>
<td>Climate change</td>
<td>Ministry of Environment and Urban Planning</td>
</tr>
<tr>
<td>Environment and land use planning</td>
<td></td>
</tr>
<tr>
<td>Renewable energy resources</td>
<td>Ministry of Energy and Natural Resources</td>
</tr>
<tr>
<td>Rural development</td>
<td>Ministry of Development</td>
</tr>
</tbody>
</table>
Seventeen peer-reviewed journals are published in the Institutes.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number</th>
<th>Subject</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Husbandry</td>
<td>5</td>
<td>Plant health</td>
<td>1</td>
</tr>
<tr>
<td>Plant production</td>
<td>5</td>
<td>Food and feed</td>
<td>1</td>
</tr>
<tr>
<td>Animal health</td>
<td>3</td>
<td>Soil and water</td>
<td>1</td>
</tr>
<tr>
<td>Fisheries</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indexed journals by National databases (ULAKBIM- life science)

- Total number of indexed journals 52
- Number of GDAR institutes journals 9
PUBLICATIONS OF INSTITUTES (2001-2011)

- Papers in National Periodicals
- Papers in International Periodicals
INFORMATION EXCHANGE MEETINGS

➢ To give information on

– New policies of Ministry (changes in legislation, supports of farmer etc.)

– Research results (researcher or lecturer)

– Demands of Marketing (by exporting company specialists)

– New technologies (by company experts)

➢ Problems and explanations

– Farmer problems introduced by extension experts

– Applications of Extension program
PARTICIPANTS

• Provincial and Districts Directors
• Experts of Extension (from village, province and districts),
• Researchers,
• Farmer Cooperatives, Unions and Civil Society Organizations,
• Representatives of Private sector,
• Media and Press
FLOW OF PROBLEMS AND SOLUTIONS

Farmers

Extension experts

Information exchange meetings

Researchers

feed-back
ADVANCED RESEARCH CENTERS

- Turkish Seed Gene Bank
- Medicinal and Aromatic Plants Research Centre
- Drought Test Centre
- Bull Test Centre and Gene Bank
- Layer Hen Improvement Centre
- Agricultural Energy Research Centre
- International Agricultural Research and Training Centre
- GAP International Agricultural Research and Training Centre
UPCOMING ADVANCED RESEARCH CENTRES

- National Botanical Garden
- Plant Tissue Culture Centre
- Plant Biotechnology Centre
- Farmer Training Centre
- Geophytes Garden of Turkey
- Biological Control Centre
- Cold Hardiness Test Centre
- Bred Meat Hen Improvement Centre
- Generation Gaining Centre
- Bandırma Sheep Biotechnology Centre
- Agricultural Fauna and Microflora Research Centre
In a result of all these mentioned explanations shortly;

To be developed the needs of Research Institutions and Researchers-Private sectors stakeholders in Agricultural Extension about;

- New information,
- Technology,
- Agricultural innovation

Doing needed activities to make publications and to put into practice these developed information, technology and innovations by using the other communication methods;

- Firstly to hold Regional Exchange Meetings for to agricultural extensionist,
- Later, to do necessary works by applied research to transfer to all stakeholders impressed from the results of this work by extension service.
## The Production Area of Bread Wheat in Rainfed Condition in KONYA Province By Years (%)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Gerek-79</td>
<td>56</td>
<td>48</td>
<td>48</td>
<td>23</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Bezostaja-1</td>
<td>27</td>
<td>35</td>
<td>20</td>
<td>16</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Altay-2000</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>13</td>
<td>8</td>
<td>7</td>
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<tr>
<td>Bayraktar-2000</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>13</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>Kate-A1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>10</td>
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<tr>
<td>Sönmez-2001</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Pehlivan</td>
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<td>5</td>
<td>5</td>
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<td>Ukrayna</td>
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<td>1</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Tosunbey</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Karahan-99</td>
<td>0</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Ahmetağa</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Konya-2002</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Dagdas-94</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Gun-91</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Kırgız</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Esperia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bağcı-2002</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Partial Budget Analyses of Wheat Varieties According to the Gerek-79 Wheat Variety in Rainfed Condition in KONYA Province (TL/ha)

<table>
<thead>
<tr>
<th>Variety Names</th>
<th>Partial Budget Analyse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td><strong>GEREK-79</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>SÖNMEZ</strong></td>
<td>350</td>
</tr>
<tr>
<td><strong>BAYRAKTAR</strong></td>
<td>380</td>
</tr>
<tr>
<td><strong>KARAHAN-99</strong></td>
<td>270</td>
</tr>
<tr>
<td><strong>KATE/A-1</strong></td>
<td>-100</td>
</tr>
<tr>
<td><strong>KONYA-2002</strong></td>
<td>--</td>
</tr>
</tbody>
</table>
Thank you...