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## FAO durum wheat database

H. Gómez Macpherson and J.P. Marathée

Crop and Grassland Service, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy

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**SUMMARY** – The Crop and Grassland Service (AGPC) of FAO is collecting, selecting and organising information on durum wheat. This information will be presented by country and agro-ecological zones within the country in a user-friendly information system. The data will include statistics at country level, a description of institutes working on durum wheat, a description of the agro-ecological zones in which durum wheat is a major crop and a description of the durum wheat cropping systems and varieties grown in each agro-ecological zone. It will be possible to search for entries based on one or more criteria (e.g. country, agro-ecological zone, cropping system, variety, growth duration, use, and biotic and abiotic stresses). The potential clients of the database are interested individuals, organisations and institutions, be they non-governmental, governmental or international.

**Key words:** Information system, database, cropping system, production, durum wheat.

**RESUME** – “La base de données de la FAO sur le blé dur”. Le Service des cultures et des herbages de la FAO entreprend la collecte, la sélection et l’organisation de l’information concernant le blé dur. Cette information sera présentée par pays et, à l’intérieur de chaque pays, par zone agro-écologique dans un système d’information facile à utiliser. Les données comprendront les statistiques par pays, la description des instituts travaillant le blé dur, une description des zones agro-écologiques pour lesquelles cette culture est importante ainsi qu’une description des systèmes de culture et des variétés cultivées dans chacune de ces zones. Une recherche à partir d’un ou plusieurs critères (pays, zone agro-écologique, système de culture, variété, longueur du cycle, utilisation et stress biotiques et abiotiques) sera possible. Cette base de données s’adresse aux personnes intéressées par la culture du blé dur, aux organisations et institutions gouvernementales, non gouvernementales ou internationales.

**Mots-clés :** Système d’information, base de données, système de culture, production, blé dur.

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### Introduction

Knowledge is a vital tool for development. Scientific and technological progress has resulted in unprecedented changes in every field of human endeavour, including agriculture and food production. In addition to encouraging the direct transfer of skills and technology through field projects, FAO undertakes a variety of information and support services. Computer databases are maintained on topics ranging from fish marketing information to trade and production statistics and records of current agricultural research. FAO plays a key role in providing relevant information on food and agriculture to millions of people around the world. The information gathered is made available through videos, filmstrips, Internet, computers and publications (FAO, 1999).

The FAO Crop and Grassland Service is aware that the exchange of information on crops and their production factors and technologies is essential for the development and improvement of sustainable cropping systems. Thus, the Service is constructing a database system, DataCrop, to hold crop data at country and agro-ecological zone (within the country) level. DataCrop will be a shared database because it will be the result of a collaborative effort of FAO and several editors from all over the world. This formula has been used with success in other FAO projects such as EcoPort (<http://www.ecoport.org>). EcoPort is a public access portal to ecological knowledge where natural resource managers and ecologists share their information in an open-source service devoted to biodiversity.

There can be several editors working on the same species. In the case of the Durum Wheat Database, the idea is to have one editor per country. Contributions by sponsors and supporters are voluntary and based on the idea that individual action is the best way to motivate others to share their individual expertise. The information gathered belongs to everybody because the task of collecting data and keeping the information up-to-date and accurate is distributed globally.

The main objective of DataCrop is to make crop information available to interested individuals (e.g. farmers, researchers, extension workers, policy makers, etc.) and institutions (non-governmental, governmental or international) in order to assist them in their effort to improve sustainable crop production. DataCrop will be integrated in the FAO web page. However, to ensure that information reaches the widest possible audience, including those without internet access, alternative formats will also be used such as CDs, diskettes and hard copies. DataCrop will initially be developed for field food crops. A similar database is being developed for horticultural crops.

## Structure of the FAO durum wheat database

The structure of the FAO durum wheat database is shown in Table 1. A Country Profile will be available for each country in which durum wheat is grown. The Country Profile comprises a general part which is common to all species and a specific part related to durum wheat in particular. It will mostly include geographical and statistical data obtained from FAOSTAT (the FAO Statistical Database, <http://apps.fao.org>). Information at country level but specific to durum wheat covers: durum wheat total production, cultivated area and average yield as well as imports and exports on a 5-year basis.

A list of institutes involved in field food crops research and development will also be developed. The main activities and achievements related to the crops will be described briefly, including the names of extensionists and researchers. A set of institutes working on specific topics may be selected through the use of keywords.

Most collected data will refer to agro-ecological zones within the country. Ideally the zones should be based on temperature, soil and rainfall regimes giving a final length of growing period and a growing season pattern. In this way, the zones will only express climate characters and will be comparable when they refer to different countries. However, initially the agro-ecological zones will mostly correspond to the ones developed nationally, which often do not fully correspond to an ecological classification. In future, both classifications will be available. Apart from the description, and for the time being, the zones will also be displayed as gif-files (a picture with no in build information).

Table 1 also shows what type of information at agro-ecological level will be presented. The description of the agro-ecological zone will include one section related to climate and soil and another one mostly related to cropping systems. In addition, some socio-economical data will be presented: access to credits and inputs, involvement of women in the production system, local market and industry. In some cases, historical climatic data of main locations will also be available.

Special emphasis will be given to cropping systems. The main rotations in which durum wheat has an important role will be described: common sowing dates, tillage practices, biotic and abiotic stresses, production costs, source of seed, etc. When possible, the percentage of area cultivated by main durum wheat varieties will also be included.

The durum wheat varieties will be briefly described paying special attention to any characteristics that may be useful for breeders, for example resistance to any pathogen or abiotic stress. Information expected to be available includes: maturity type, colour and any other quality characteristics, height, type of use.

The durum wheat database will be linked to complementary databases already available in the web. Of special interest will be the reminders and links to information systems developed by CIMMYT, for example at variety level. The systems developed by CIMMYT include more specific data of interest to breeders.

As mentioned above, DataCrop will be located in the web page of FAO's Crop and Grassland Service (<http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPC/doc/Default.htm>). The update of the database will be done as soon as contributions are received. The information obtained from FAOSTAT will be updated on a yearly basis.

Table 1. Structure of FAO Durum Wheat Database

Information at country level common to all species	<p>General description:</p> <ul style="list-style-type: none"> <li>- Geographical boundary</li> <li>- Main climates</li> <li>- Land</li> <li>- Arable land</li> <li>- Main soil associations</li> <li>- Water resources</li> <li>- Total population</li> <li>- Agricultural population</li> <li>- Main food consumed</li> </ul>
Information at country level related to durum wheat	<p>Public and private Institutes involved in wheat research and development (Breeding, Agronomy, Extension, Seed Production):</p> <ul style="list-style-type: none"> <li>- Name and address of the institute</li> <li>- Name and email of director</li> <li>- Web page</li> <li>- Brief description of main activities related to wheat</li> <li>- Achievements (e.g. varieties released and year)</li> <li>- Scientists, Extensionists or Responsible Personnel involved</li> </ul> <p>Durum wheat statistics at country level and on yearly basis</p> <ul style="list-style-type: none"> <li>- Durum wheat production</li> <li>- Durum wheat harvested area</li> <li>- Durum wheat average yield</li> <li>- Durum wheat import and export</li> </ul>
Information at agro-ecological level for those in which durum wheat plays an important role	<p>Map of the country showing the zones</p> <p>Durum wheat statistics on yearly basis</p> <ul style="list-style-type: none"> <li>- Total cultivated area</li> <li>- Durum wheat harvested area, production and average yield</li> </ul> <p>Description of the agro-ecological zones</p> <ul style="list-style-type: none"> <li>- Durum wheat potential yield</li> <li>- Climate and soil</li> <li>- Length of growing season</li> <li>- Any special soil condition: salinity, acidity, flooding, drought</li> <li>- Legislation</li> <li>- Access of farmers to inputs and credit</li> <li>- Directory, institutions</li> <li>- Local seed production. Sources of seed used by farmers.</li> </ul> <p>Description of the cropping systems</p> <ul style="list-style-type: none"> <li>- Cropping systems – subsistence or commercial</li> <li>- Rotations: predominant crop</li> <li>- Sowing date and density</li> <li>- Tillage practices</li> <li>- Most common varieties: name and acreage</li> <li>- Soil fertility; fertiliser responses and use</li> <li>- Common pests, diseases, weeds and their control</li> <li>- Production costs</li> </ul>
Information at variety level	<p>Description of the varieties:</p> <ul style="list-style-type: none"> <li>- Breeding: origin and year of release</li> <li>- Breeding: resistance to abiotic or biotic stress</li> <li>- Maturity: extra late, late, intermediate, early, extra early</li> <li>- Maturity: spring wheat, winter wheat</li> <li>- Height: tall, semidwarf, dwarf</li> <li>- Quality, major type preference: grain texture, colour, etc.</li> <li>- Use: food, feed, industrial, local consumption</li> </ul>

## Queries

Data received from different countries are often based on different standards and therefore cannot be compared. However, these standards may be the result of laborious work at national level and can therefore not be ignored. For DataCrop it will therefore be necessary to set up certain common and comparable standards and at the same time provide for individual country standards. Since the common standards have to be applicable to several crop groups, these cannot be very specific, and adjustment to particular countries, varieties, etc. will have to take place through text fields.

Once a species has been selected, in this case durum wheat, the user will be able to perform a search based on one or more criteria: country, agro-ecological zone, cropping system, variety, growth duration and use. Using keywords, a search by other criteria (main activities carried out by the various institutes, specific characters of the variety and biotic and abiotic stresses in the zone) will also be possible.

Specific information for various countries may be selected at one go. Similarly, for each country various zones may be selected, and for each zone it will be possible to describe a multiple number of varieties. For each country and zone, a list of institutes working on durum wheat will be available.

## We need your collaboration

Individuals are invited to participate in DataCrop by providing information regarding their country. This information will be presented giving the name and logo of the contributing author or institution, thus resulting in a public, transparent assumption of responsibility and ensuring appropriate recognition. A link to the author's or institution's web page will also be included.

## References

FAO (1999). *Year Book Production*, Vol. 52, 1998, Statistics Series, No. 148. Food and Agriculture Organization of the United Nations, Rome.