

CE systems Capel analyze and characterize Sicilian wheat landraces

Instrument

Capillary electrophoresis system Capel-105M

Client

Research Centre for Cereal and Industrial Crops, CREA

Industry

Agriculture

Region

Italy, Europe

Challenge

We were approached by one of the agricultural laboratories in Acireale, Sicily, which is a part of CREA (Council for Agricultural Research and Economics) network structure. CREA, a chain organization with laboratories all over Italy, positions itself as a leading structure dealing with all research and analyses in the country in the agricultural field.

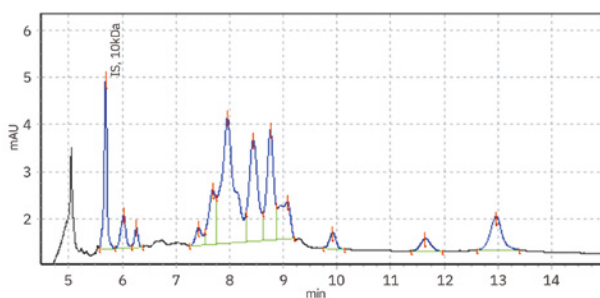
The global task of CREA research centers was to **characterize all Sicilian wheat landraces** (more than 52 varieties) and to compose a kind of database, also relating the obtained protein profiles to other properties of the wheat and its corresponding dough. This approach should also allow to characterize and to define a new landrace by comparison its protein profile with some of reference ones.

Solution

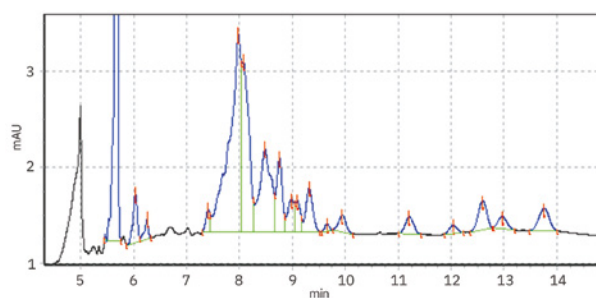
Lumex Instruments suggested using capillary gel electrophoresis (CGE) technique for wheat protein determination. Protein resolution and sensitivity are definitely superior to the classical SDS-PAGE analysis, while the highest degree of automatization of the whole analysis makes CGE much less laborious.

Genetic varieties between grain races lead to differences in their protein profiles. For example, such landraces as *durum wheat* and *bread wheat* have different number of chromosomes, that is seen in protein distribution – the latter has more proteins in extra high molecular weight range.

Two electropherograms of the cultivar *Simeto* (belongs to durum wheat, left EPG) and *Maiorca* (belongs to bread wheat, right EPG), demonstrate clear differences in their protein profiles. All measurements were done using an analytical protocol and an appropriate SDS-Mw kit, adopted for Capel-105M by Lumex Instruments.



Protein profile of *Simeto* cultivar



Protein profile of *Maiorca* cultivar

Capel series capillary electrophoresis systems work with standard consumables, low reagents and sample consumption and do not require extra charges. It can be a perfect addition to any lab, taking many routine analyses, increasing work productivity and reducing operational expenses.

Results

The CREA laboratory in Acireale successfully uses Capel-105M to characterize local wheat landraces. After 10 months of successful work on protein profiles determination, one more Capel-105M was purchased to another agricultural laboratory in Caltagirone, also located in Sicily, for the same tasks.