

**OIL CROPS:
BRASSICA
SUBNETWORK**

PROCEEDINGS OF THE
THIRD WORKSHOP, QUALITY
TRAINING, AND CHINESE
PROJECT REPORTS,
HELD IN SHANGHAI,
PEOPLE'S REPUBLIC OF CHINA,
21-24 APRIL 1990

ABBAS OMRAN

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AN OUTLINE OF RESEARCH ON RAPESEED QUALITY ANALYSIS

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Rape is a very important oil crop in China. The planting area is close to 80,000,000 mu (5.3 million hectare) annually. In the late of 70s', our institute began to study improving rapeseed quality, and quality analysis. The Department of Quality Analysis was established equipped with GLC, HPLC UV-vic, High Speed Centrifuge, and NMR (for oil content determination), with 25 staff.

The research on rapeseed quality analysis includes two parts: the first is analysis method and the second is studying the chemical composition of rapeseed germplasm resources. In the past ten years, the state has paid great attention to support this project, and the project ranked among the national key research projects in the sixth-five and the seventh-five years plan. At the same time, this project has been helped and supported by Canada and Australia through the Sino-Canadian and Sino-Australia Cooperating Projects. Great appreciation is extended to International Development Research Center (IDRC) and Australia Center for International Agriculture (ACIAR).

The major progress of the project is summerized below:

A. Introduction in analysis method of rapeseed quality and further study:

1. Establishing a national standard method of testing crude oil content in oil seed: This method was set up by Oil Crops Institute of CAAS, in cooperation with Shanghai Academy of Agricultural Sciences (SAAS), Jiangsu Academy of Agricultural Sciences (JAAS), Huazhong University of Agriculture and etc. The method was admitted by the government, which was utilized by the institutions all over China.
2. Establishing the national standard method for determining erucic acid content in rapeseed: This work was carried out by the four units mentioned above. The method also was admitted by the state, which is expanding its use in China.
3. Paper chromatograph method for erucic acid test: This method was introduced from abroad, and was widely used in the institutions of agriculture for chemical selection.
4. NMR for oil content determination: It is schemed by Oil Crop Institute of CAAS, Wuhan, Physics Institute of Academia of Sinica, Wuhan Measuring Equipment Factory and it is in a small lot production.
5. Palladium method of rapeseed glucosinolate quantitation: Set up by Huazhong University of Agriculture and Oil Crop Institute of CAAS, also has been widely used.
6. ITC-OZT method: After we established this method, the procedure has been applied to detect the glucosinolate content in food stuff.
7. TMS method for single glucosinolate tasting: It was established with the help of Canadian chemists.
8. Reflectometry: A quantitative method of total glucosinolate established with the help of Australian chemists.
9. Thymol method: Was established with the help of Australian chemists.
10. HPLC method: Was established with the help of Australian chemists.
11. Testape method: We are thankful to IDRC and ACIAR providing with testapes, we have used the quick test for several years.
12. Thiourea method: A quantitative

method of total glucosinolate in rapeseed plant organ. It was set up in our lab.

B. Study on the chemical composition of rapeseed germplasm resources:

There are rich germplasm resources of rapeseed (*B. campestris*, and *B. juncea*) varieties and a number of *B. napus* varieties. In the recent years, cooperating with relevant institutions of China, our institute have investigated the oil content, fatty acid composition, total and individual glucosinolate content of germplasm resources and wild rapeseed. Also we have primarily studied the bionomic and geographical factors affecting the chemical constituents of rapeseed, and provided the evidence for making breeding materials to different areas.

C. The problems existed:

1. The research condition ought to be improved: We need more study fee and improvement of the equipments in laboratory and

import of the special chemicals and reagents e.g. standard glucosinolates.

2. The fast methods of erucic acid and glucosinolate need to be further studied: As we know, before the through changeover of double high by double low rapeseed varieties, the double low, single low and double high varieties may be planted in adjacent area. So we request fast methods and equipments to distinguish the different seed quality, which suit our commercial and processing departments.
3. The standard methods of total and single glucosinolate contents: Although we have made a lot of progress in this aspect, we cannot meet the need of breeding. Because the results from different methods are not the same, we must evaluate and improve the methods we have now, so as to set up the standard methods.

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