T1974AGRO10

SUNFLOWER CULTIVATION IN IRAQ

TARIK A. J. TABRAH and GURSHAM S. GREWAL
(Iraq)

In recent years sunflower has assumed a great importance, being only next to soybean as an edible oilseed crop. Unlike soybean, this crop has a much wider range of adaptability.

Although the present production centres in the temperate zone, there seems to be considerable production scope in many tropical and sub-tropical regions of the world. In fact the crop has already assumed a considerable amount of importance in countries like Turkey and Ethiopia, and to a lesser digree in Iran, Morocco, Tanzania, Kenya, Chile. Other countries, which have shown interest in this crop are Cuba, Egypt, India, Nigeria, etc. Last but not the least, may be mentioned Iraq.

As for Iraq (after petroleum) the most important sector in the country's economy is agriculture, which is responsible for more than 50% of the employment .The important crops of the country are wheat and barley. Next in importance is rice, followed by cotton. Other field crops, to name a few, are flax, lentil, chickpea, sesame, greengram, maize, vetch, tobacco, sugarbeet, sunflower, sugarcane, sorghum, peanut. The oilseed crops do not find a very prominent place among the agricultural crops with the result that the Government of Iraq is importing nearly 90% of its requirements in edible oils. At present, the rate of increase in consumption is about 4% per annum, and the requirements are likely to go up to abbut 110,000 tons in the next five years as against the present requirements of 90,000 tons per annum.

The government of Iraq is keen to increase the production of edible oilseed crops. To assist, therefore, in its programme designed to achieve self-sufficiency in oilseeds, the government has been placing increasing emphasis on the implementation of a programme of varietal improvement and agronomic trials on some important oilseed crops. Sunflower is one, among others, where in recent years, the government has shown keen interest.

The cultivation of sunflower in scattered places has been in vogue in this country for sometime past. It is not uncommon to see

sunflower growing as a border crop. The variety under cultivation is of inferior type and the seed setting is rather poor. Unlike the improved types, the one grown in Iraq is branched, with several heads at the top. No specific data are available as to when this variety was introduced in Iraq and nothing much is known about the factors affecting its yield. Some preliminary investigations indicated the possibilities of cultivation of improved types of sunflower. In 1969, therefore, under a campaign for the promotion of improved varieties of sunflower, 200 tons of seed were imported and distributed for cultivation. Lack of sufficient information on factors affecting crop performance appears to have contributed, to a great extent, to discouraging results which followed.

No specific investigations were carried out to find out the causes of the failure of this crop. Nothing can be said with certainty about it, but there is some indication that lack of pollinators at the time of flowering might have been one of the causes. To find out at least the influence of artificial pollination on the yield of sunflower work was carried out at one of the research stations in the country during four seasons (spring and autumm) of 1970 and 1971. These investigations indicated a positive response to artificial pollination; the yields increased by about 64%. More recently, investigations have been taken up to study the effect of temperature on pollen germination and insect visitation at the time of flowering, from the month of May to September. Such a study is likely to establish direct link with the factors affecting seed setting.

Simultaneously, work was also taken up during 1970 and 1971 at two research stations; one in the north and the other in the central region of the country, to study the influence of various factors affecting the crop yield. Particular emphasis was laid on the sowing date. Since in the north, there is very little irrigation, experiments were conducted both under irrigation and rainfed conditions. On the other hand, the experiments in the central region were carried out under irrigation only. In the north, the sowing was started from the middle of February to the middle of April, with 15 days intervals under unirrigated conditions. The highest yields were obtained when sowing was carried out on 15th February. There was a progressive decrease in yield with the passage of time and the crop sown in April gave almost half the yield of the crop sown in February. In the subsequent year similar results were obtained with four varieties. Another interesting fact, which came to light was that with the advent of the hot season, the growing period was reduced so that April sown crop matured in about 60 days as compared with the February sown crop which took about 105 days to reach maturity. Under irrigation, the sowing was started (Northern region) from middle of April and continued to 1st of August with 15 days interval (for 1971 only). The highest yields were obtained from the first sown crop, namely 15th of April. It would thus be seen that in both of these experiments, the highest yields were obtained from the first sown crop, viz. 15th February

(unirrigated) and 15th April (irrigated). The results, however, are not conclusive, as it is quite likely that earlier sown crop may still show better yields. In the central region, the sowings began from the 15th of February to the middle of August, with 15 days interval. The results for the two years were not consistent. In the year 1970 the highest yields were obtained from May sown crop, while the next year results were positively in favour of the March sown crop. Between these two years, the results of 1971, seem to be more reliable. Nevertheless, there is at least some indications that the crop yields are highest if sowing is carried out early in the season. But before any final conclusions can be drawn, much more information needs to be collected on the subject.

Not discouraged with the results obtained in the past, the Government continued to make further efforts to find ways and means to establish improved varieties of sunflower in the country. Ever since 1971, when Government secured international assitance, the work has been taken up on more systematic lines. A beginning was made by importing small samples of seed of improved varieties from the important sunflower growing countries of the world. This resulted in a collection of 42 types (some were duplications). All these were put under observational trials ; two lines of each sown on two different dates (loth March and loth April). Data was collected on germination, growth, disease/pest incidence, yield (total and per plant) and oil percentage. The information collected was by no means enough to draw any definite conclusions but it did give some indications of the varieties that are likely to do well. Another factor which came to light was that without exception all varieties gave higher yields when sown on loth March as compared to loth April. This confirms, the previous findings that early sown crop does better. There was a wide range in oil percentage varying from as low as 20.2 to as high as 46.3. Eleven varieties were selected for varietal trials.

As a short term measure, it was decided to import seed of the variety Record from Romania in 1972. This helped not only to lay out large scale trials in the countryside, but also assisted in the production of seed, in the event of this variety being selected finally for release. The selection of Record was based on several considerations, firstly because it fell within the first two/three varieties, secondly this variety had its origin in Romania under conditions much nearer to Iraq than others, which originated from comparatively colder countries of the world. Last, but not the least, because this variety seems to have established in Iran and some other countries, with similar growing conditions as Iraq. The seed arrived late but it was still possible to distribute a substantial quantity for trial in the countryside. The results were not very encouraging at all the places, although at some places the condition of the crop was quite satisfactory. In view of the fact that the crop was being raised for the first time in certain areas, the results are not very surprising. All the same, it did create an interest and

some enthusiasm in the minds of the district staff to strive for better results in the years to come.

In the following year (1973), the observational trial was repeated, but for want of facilities the sowing was carried out on one date only. The results were not very much different from those of the previous year. Since facilities did not exist to raise the seed of each variety in isolation, selfing had to be restored to obtain seed for the subsequent year's trials. This resulted in yields being lower in 1973 as compared to the year before. In the experiment for varietal trial, Record variety gave encouraging results. It may also be mentioned that along with the one ton seed of variety Record, small quantity of seed of two hybrids namely Romsun 52 and Romsun 53 was also received.

The data collected so far tend to show that early sowing gives higher yields. It is not always possible, however, to sow the crop early. The rainy season coincides with the winter months and even small amount of rainfall in the early part of the year makes it difficult to prepare the heavy clayey soil. This, therefore, calls for further investigations to find out factors which may at least in part compensate for delayed sowing. One such factor is the seed rate, so that comparatively poorer vegetative growth is compensated by a larger plant population per unit area.

Other factors like manuring, fertilisation, and irrigation, concerning the future of the crop are all needed to be studied singly and in various combinations. Their effects should be examined not only to find out the crop responses in terms of crop yields under favourable conditions, but also the extent to which some of these factors can contribute to increasing yields under circumstances not otherwise conducive to high yields. A large number of experiments have been designed to study the effect of all these factors in various combinations and under different agroclimatic conditions. The data so collected will help to formulate future lines of work. It may not be out of place to mention that the investigative work is being carried out in the light of an assured market. The State Company for Vegetable Oil Production is prepared not only to collect the entire produce but also to pay a remunerative price. It may be further mentioned that last year, the Oil Company procured from within the country about 200 tons of sunflower seed. Although it is not a large quantity but it does indicate a positive response, showing awareness on the parts of the field staff and the farmers to make the cultivation of sunflower a success.

It may perhaps be too early yet to say anything definite about the future of sunflower in Iraq but the data collected so far would justify an optimistic outlook. Much will depend, of course, on the identification of the right variety/varieties and the evaluation of other factors affecting crop yields. Still another factor, which needs mention, is the production of good quality seed. The entire structure will and can fail if a sufficient quantity of good seed is not made available on time and at reasonable prices. This factor is particularly important in view

of the fact that this crop is highly crossfertilized. Although in the initial stages it may be possible to count on the help of some other countries, such an arrangement can neither be satisfactory nor permanent. It may be mentioned that it is not difficult to produce the seed, as the country is blessed with a large number of State and Government regulated cooperative farms, which are ideally suited for the production of good quality and pure seed. Such farms exist in different regions of the country and thus afford an excellent opportunity for isolation. It may not be out of place to mention that there already exists one seed processing plant in the country. Another is being installed in the North. This will be followed, in due course, by still one more in the South. Facilities also exist for seed testing and seed certification.

It will, thus, be seen that the work has been taken up on sound and systematic lines. The results are being watched with interest. The hopes are high, the aspirations great. With the excellent encouragements and support being received from the Government and the zeal and the energy with which the staff has set upon itself with the task, it may not be long before some positive results are obtained, and in due course, the country may greet visitors with an excellent crop of sunflower.

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