

pathogens to enable the selection of desirable ones. For this the active collaboration of the plant pathologist is essential. The real test is obtained when the variety is grown in a number of places under a variety of conditions to enable the selection of desirable ones. The most tedious and the most uncertain part of the programme is to obtain a variety combining resistance to the major diseases with other characters which go to make the variety acceptable to the farmer. But this should work as an incentive to concerted and continuous efforts on the part of the breeder and the plant pathologist. The necessity for resistant varieties is more for combating certain types of diseases than others. Resistance to diseases which can be easily controlled by cheap protective methods like seed treatment need not be sought after. But more attention should be devoted to breed for resistance to diseases which are not amenable to economic protective measures. Wilt diseases, root rots, rusts and similar diseases affecting extensive field crops are examples of diseases for which production of resistant varieties will be desirable.

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Methods to be Adopted to Maximise Production and Development of Groundnut Strain Suitable for Summer Cropping in the Madras State

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Introduction: The Groundnut (*Arachis hypogaea* Linn.) reported to have been introduced into India in the 16th century has now become well established in the country. It has obtained a high status for the country in the international market for oilseeds and it is the first money crop among the few important crops which earn plenty of dollars for this country at a time when she needs them most. It has also become an important food crop for men and cattle, builder of soil and its protector and on top of all an important industrial crop. India is the largest producer of groundnut in the world contributing more than 40%. In Madras the area under this crop is about four million acres (40% of the

area in India) accounting for 46% of the Indian production. Out of this the area under summer groundnut in the State is 1,65,656 acres which is 47 % of the total area of the State.

Realising the importance of the crop in the agricultural economy of the country and more especially of the Madras State, the State Government organised an Oilseeds wing and opened an Oilseeds Research Station at Tindivanam in the year 1935. As a result of intensive breeding work, so far carried out, five improved strains have been evolved and they are under distribution in the State and outside. Out of them, TMV. 2 (A. H. 32) representing the bunch type of groundnut and TMV. 4 (A. H. 334) representing the spreading type were tried in number of centres and found suitable and profitable for cultivation during the summer months. It is more than ten years since the supply of seeds of these strains to the cultivators have been undertaken but their multiplication and spread have been rather slow. To step up production of these two improved strains for summer cropping, the following suggestions are made.

Methods of Maximisation:

(i) *Supply of Quality seeds for the single crop wetlands:* One of the important means of maximising production is the utilisation of single crop wetlands in the State (nearly 8 million acres) more especially in the delta areas. Of late, the growing of groundnut under such conditions has become popular due to the high price prevailing for the commodity and to the interest evinced by the Department. This source can be utilised to the maximum in order to increase the area under groundnut in the State and incidentally to develop the improved strains. In these areas cultivation of the bunch groundnut is mainly preferred. The TMV. 2 bunch strain has been found suitable and definitely profitable and it is already being cultivated over a large area particularly in Krishna and Godavari districts. Large quantities of seeds of the strain were supplied to these areas but the seeds multiplied every year are not made use of for further sowings. Usually in the single crop wetlands of the delta area the groundnut crop is cultivated in December-January to April-May season. The seeds which are produced in this period do not stand storing till the next irrigated season on account of the heavy monsoon rains that follow. During the rainy period, the seeds of TMV. 2 groundnut which are non-dormant, absorb moisture from the atmosphere and lose their viability to a considerable extent (upto 50%). Even after careful drying and preservation the germination has been found to get affected by 10 to 20%. This factor discourages cultivators from extending cultivation of groundnut because they have to procure large quantity of seeds and at a high cost from the dry areas. This can be easily solved by organising certified private agencies or the Agricultural Department to procure the seed material from these regions,

multiplying in the drylands of the upland taluks of the delta area under rainfed conditions during July–October season and making it available to the cultivators of the delta region in large quantities. The strain has been found to give good yields even in the dry lands of upland taluks when grown in the rainfed season. Hence the seeds of the strain multiplied as a rainfed crop may be procured by the same agencies and made available to the low lying single crop areas for sowing from November onwards. Thus a proper organisation is necessary to utilise effectively the multiplication of the strain that is actually going on in the cultivators' fields in the normal course. If quality seeds are not made available, it is likely that the area under groundnut more particularly under short duration bunch strain TMV. 2 in single crop wetlands of the delta may go down considerably.

(ii) *Use of summer produce for seed:* Another important suggestion for maximising the production of the strains is the utilisation of summer produce for seed purposes. Usually the groundnut produce obtained from a summer crop grown under irrigated conditions is marketed at once for industrial use and no attempt is being made at present in the irrigated tracts to preserve the produce for seed purposes. It is felt, that the seeds out of the summer produce lose rapidly their viability on account of the high initial moisture content present in the produce. Therefore, for every irrigated crop, seed material is procured afresh from the produce of preceding rainfed crop. In the case of the bunch type the seed materials obtained from the rainfed season can be immediately used for sowing on account of the nondormant nature of its seeds and no difficulty is experienced with regard to this type of groundnut. But in the case of the spreading type the seeds are dormant and do not germinate immediately. At least a period of about two to two and a half months should elapse before the seeds become suitable for sowing. Normally the spreading variety grown in the rainfed season comes up for harvest in December–January and its seeds will be fit for sowing only in March–April. By this time the season for summer sowing becomes fairly advanced and any late sowing in practice, results in severe incidence of pests and diseases, reduction in yield and delay for the subsequent cropping in the field. To avoid such late sowings in summer and the consequent disadvantages seeds from the previous rainfed season are obtained and sown. This means, the seeds are to be preserved for more than 12 months which is fairly a long period and which results in rapid deterioration in quality due to absorption of moisture and insect damage.

These difficulties are easily overcome by utilising the seeds obtained from irrigated season taking sufficient care in harvesting fully matured pods, thoroughly drying the produce immediately after harvest and preserving them carefully. Experience at the Agricultural Research Station, Palur (South Arcot District) where facilities exist for the cultivation of groundnut under irrigated conditions and which is a

representative tract for irrigated groundnut in the State has shown that well matured, thoroughly dried and well preserved produce of the spreading type of groundnut grown during summer can be utilised for sowing in the next irrigated season without any adverse effects. In such cases the period of preservation is only short (six to eight months) and the deterioration in viability is practically negligible. If this method were to be adopted there would not be any necessity to have recourse to the use of rainfed produce as seed material for the irrigated season.

The TMV. 4 a spreading strain of groundnut best suited to the irrigated cropping has given record yields in the important irrigated tract of South Arcot District. But unfortunately the strain has not developed to the extent desired because in every season even though it is largely grown under irrigated conditions almost the entire produce is marketed owing to the fear that the deterioration in quality would set in if preserved for seed purposes. But with a certain amount of precaution and care in harvesting fully matured pods, drying them thoroughly immediately after harvest and properly preserving the seeds, the deterioration in quality can be prevented and a huge waste of seed material of an important strain can be avoided. The strain that is best suited to irrigated conditions can thus be rapidly multiplied and the area under it can be considerably extended in the State.

Conclusion: The methods suggested would improve the production of the strains TMV. 2 and TMV. 4 which are most suitable for cultivation in the single crop wetlands and other irrigated areas in the State during summer months.

Summary: In the Madras State, the Oilseeds wing established by the State Government has evolved five improved strains of which TMV. 2 and TMV. 4 are found suited for being grown as a summer crop in single crop wetlands of the delta areas and other irrigated areas of the State. But their multiplication and spread are rather slow and hence the following suggestions are made to step up production of these strains.

(i) TMV. 2 strain which has proved successful in the State and more especially in the delta areas may be developed by arranging supply of quality seed material of the strain by multiplying in the neighbouring upland taluks in the preceding rainfed season and procuring the produce with the aid of certified agencies or departmental staff.

(ii) The seed material of the spreading strain TMV. 4 obtained from the summer crop can be utilised for the next summer sowing by taking adequate precautions in harvesting pods when fully mature, thorough drying immediately after harvest and subsequent preservation. By this method, the multiplication and development of TMV. 4 strain specially suited to irrigated conditions may be achieved at a more rapid pace.
