

Groundnut in Madras; Maximisation of Production

By

G. VENKATANARAYANA

Oil-seeds Specialist,

Agricultural Research Institute, Coimbatore.

I propose to deal with the subject in two parts; first about maximisation of production in general and then about the groundnut in particular.

Necessity for increased production: As in most parts of the world, in this country too, almost all commodities required by man, particularly foods and grains are in high demand and short supply. This situation has caused prices to soar up abnormally high, with the result that the lower and the middle classes are very hard hit. The standard of living is going down with consequent repercussions on health, society, State economy and public relations. In a country like ours where yields are low and famines are always staring us in the face, the necessity for increased production of all commodities is always there. While the world figure is 1.5 acres of cultivated land per head of population, the figure for this country is only about an acre, which is rather low, and on the other hand population is increasing at rather too rapid a rate. Therefore the need for increased production of crops is much more urgent in this country than in most other parts of the world.

How can this be achieved? Crop production is a result of many factors operating viz., land and soil, climate and weather, seed, manure, water, pests and diseases, labour and also other economic considerations as demand and supply, and price levels. Some of these for example, weather, are beyond the control of man. If production has to be maximised we have to lay more stress on and pay more attention to factors which we can control and operate. The first consideration, naturally is land; more cultivated land means more production. This is more easily said than done. Still it is possible to get a few lakhs of new land under the plough. On this subject, I presented a paper at the 1948 Agricultural Conference with special reference to the West Coast. I pointed out that considerable areas of marginal and sub-marginal land could be cultivated with rice if we can only work the tractor and the bull-dozer. This applies to the East Coast as well. But poor land is not an asset and unless it is properly manured, remunerative crops cannot be grown. This leads us to the consideration of manures and manuring. These are also in short supply. Apart from the all-important organic manures as green manure, farmyard manure and composts, three classes of manures which are essential to crop production should be considered. These are phosphatic, potassic and

nitrogenous manures. Our phosphatic deposits, though not in an immediately available form, may last us a few centuries yet, and with some research to get tri-calcic into more easily available forms it may not be difficult to tackle our phosphate problem. As regards potash most of our soils except those in the West Coast and in the hills are not lacking in it. The real difficulty is with nitrogen; but there are vast stores of it in the atmosphere. Sooner or later we have got to tap our atmospheric resources of nitrogen and the sooner we do it the better. This is a matter, the technical side of which concerns the chemist primarily and I am sure he will have a say on the subject. But I would like to stress on one aspect of nitrogen supply for our immediate needs. There are large deposits of humus in our forests and it should be possible to make it available to the agriculturist in the plains at reasonable prices without in any way affecting the well-being of the forest itself; of course preliminary research has to be done on the practical aspect of the problem viz., manurial value and suitability to different crops. Also in this connexion the importance of trace elements in combating deficiency diseases may not be overlooked.

The most important and primary consideration in any programme of maximisation of crop production should be intensive cultivation. That is, as much area as possible should be grown with crops aiming at the same time to obtain as high a yield as possible. With this end in view the cropping scheme has to be drawn up, representing every aspect of crop production. Intensive cultivation is possible only when the water requirements of crops can be satisfied. There must be sufficient water as and when required. This is the great limiting factor. We cannot rely entirely on rainfall, which is usually precarious in many places of the country. Therefore, it is a matter of paramount importance that all our water resources are investigated and fully made use of. Water is our best ally in increasing crop production, at the same time, it may turn out to be an enemy when it is not controlled, as is evident during floods. Thus it follows that our rivers should be harnessed and the water utilized to the fullest possible extent. Take the instance of the mighty river Godavari. In season, there is enough and more water but we have not been able to make use of even a fraction of it. More than 90% of the supply goes waste, in spite of the Douleshwaram anicut, when vast areas could have been profitably cropped by making use of the water. This is an anomalous situation and can be remedied by constructing more dams and reservoirs. Take another instance from the West Coast. The rainfall is very heavy during the South-West monsoon ranging from 100-150 inches and there are also a number of small rivers running into the sea. All this water is practically wasted except for raising the rice crop during the South-West monsoon. Garden crops are practically unknown, the soil is too much leached out, there is dearth of even drinking water in some places during summer and the people in general are poor and the standard of living is

low. All this can be prevented by harnessing the water reservoirs and intensifying agriculture. Thus the crux of the whole problem is water and more water and water which we can command and use as and when we need it. By the way, it may be mentioned that more water means more electric power which is the mother of all industries.

Improved strains of crops: In the maximisation of production, the importance of improved strains cannot be emphasized too much. Most strains of crops in Madras are known to give an increased yield of about 20% and more over the locals. If all the cultivated area can be sown with only improved seeds, the amount of increased yield will obviously be very considerable. But we do not have strains of every crop suitable to and satisfying the needs of every tract. And even in the strains we have, the quantity of seed available is very limited, though there is considerable demand for it. Therefore more improved strains and more seed of such have to be produced on a large scale to meet the demand from all over the country. This means that we should have a large-scale programme of research at more regional research stations to evolve high yielding strains, and more seed multiplication schemes. These two branches of work should go together and one is incomplete without the other.

Seed Testing: This aspect of the subject primarily concerns itself with the quality of seed meant for sowing. Quality consists mainly of high percentage of germination and freedom from foreign matter such as seeds of weeds and dirt. The loss sustained by the country, by sowing seed of low germinating percentage is considerable. It is a double loss, because it neither serves the purpose of sowing nor the needs of man for consumption. This loss can be saved by having seed testing units in every tract so that only seed of tested quality can be sown and that which is unfit for sowing can be put to other uses by the people. This important branch of agricultural research does not seem to have received attention in this country and it is time the subject is taken up.

Storage of Seeds: Along with the maximisation of production the problem of storing seeds also should be considered. When there is large-scale production, there will be years when surplus produce is bound to accumulate which has to be stored carefully for future use without deterioration and damage by insect pests and vermin. For every kind of grain it has to be determined, based on research, how long it can be preserved for seed purposes and for consumption without deterioration. The kind and nature of receptacle and the precautions to be taken against insect attack have to be determined both for small-scale storage by individuals and large-scale storage as in godowns. Though it is well known that the loss caused to stored products in this country is very

considerable, no systematic work on the subject seems to have been attempted in respect of farm produce and it is very desirable that the work is taken up with a view to saving much avoidable waste.

Marketing and Prices of farm produce: The most important consideration in this context of increased production is that the produce is made available to the people by whom it is urgently required for consumption, at reasonable prices. We are not planning to step up production for the benefit of the traders to profiteer. At the same time, the price of produce should induce increased production. These are aspects which have to be considered at a higher level than an agricultural conference and are therefore, not dealt with in detail here.

II. The Groundnut in Madras

The groundnut is now one of the principal oilseed crops of the tropics and of India. The native country of groundnut is said to be Brazil. It was reported to have been introduced into India in the 16th century but did not come into prominence till the middle of 18th century. The first four decades of the present century witnessed a phenomenal increase in the acreage and production of the groundnut in India. It is, at present, the most important money crop of the dryland ryot in Madras. It has literally yielded crores of rupees to the poor Indian ryot and also secured for the country a place of importance in the international oilseeds market.

Importance of the Crop: The great importance which the crop has attained in the economy of man is due to the fact that it is not only a cash crop but also a food crop. The seeds contain about 50% of oil of excellent quality (by chemical extraction) 27% of protein and have very high calorific value viz., 561. It is not only a food for man, but also food for cattle and at the same time, a renovator of the soil. It is not only an industrial crop but also a preserver of soil for it is a very good cover crop which can prevent soil erosion on account of the numerous pod-forming pegs driven into the soil. Every part of the plant can be put to some good use or other and also to a variety of uses. It is a multipurpose crop. There is no wonder then, that such a useful plant is called the wonder nut.

Area and Production: India is the largest producer of groundnut in the world with 40% of the world's production. And Madras owns 4 millions of acres or 40% of the area in India, with 46% of India's production, valued nearly 100 crores of rupees a year for Madras alone. Therefore, it is the first money crop in Madras and then comes cotton whose annual production is worth only about 48 crores of rupees. At one time, India was exporting (1933-39) as much as 1.2 million tons of seed. But now the internal demand for groundnut seed, oil and cake has increased so much that we are unable to export any appreciable quantities with the result

that our foreign assets are dwindling and our erstwhile customers are turning their attention to other countries and also making great efforts to produce their own requirements. Under these conditions we may lose our world market.

Future of Groundnut: When the prices for groundnut go down, as they are bound to, in due course, due to increased production of other oil seeds, a time may come when there will be no incentive for the cultivation of groundnut and the crores of rupees our people are now earning will not be there then. That would certainly be a calamity to the country. Therefore, it is a matter of paramount importance that groundnut production should be stepped up immediately in this country, so that we can have an exportable surplus and the much-needed foreign exchange. Then, there is the world shortage of fats and oils.

Target: The Panel on Oils and Soaps have recommended that the target of groundnut production in India be fixed at 5.4 million tons of nuts in shell i. e., about 2 million tons of nuts more than the present output of the country.

How to attain the Target: It is not an easy matter to attain this target unless an all-round attempt is made to step up the present production by about 60%. This means that every possible effort should be made with that object in view. In the first place, it is not possible to increase the area under groundnut without encroaching on the area under main food crops. This is obviously not a feasible proposition. Therefore recourse should be had to direct our efforts to intensive cultivation, adopting every known method of crop improvement.

Seed rate: The normal seed rate for groundnut should be 80-100 lb. of kernels or seeds per acre. This is quite high, considering the yield which is only about ten times the seed rate. Therefore, to make the limited seed available, go a long way, there is a tendency in most parts of the country to adopt lower seed rates. But then the crop will be gappy and the yield will be correspondingly low. The ryots or farmers should be made to realize the importance of proper seed rate. The seed should be tested for viability and only seed with high percentage of germination should be sown.

Mixed Cropping: Groundnut can be sown as a mixture with other crops viz., cotton, cholam, cumbu, tenai, castor and red-gram. Such cropping has been found to yield better money returns per acre than pure cropping.

Rotations: There is a tendency among our ryots to go on cultivating groundnut year after year without rotation. This is not desirable as the soil will be depleted of certain manurial ingredients.

and the yields are bound to go down. It is therefore necessary that proper rotation is adopted with cereals like, cumbu, or cholam, or tenai and also cotton, castor or redgram.

Most of the area under groundnut in Madras is grown under rainfed conditions and rainfall is often precarious and uncertain. Groundnut responds very well to irrigation and if there is sufficient moisture in the soil a rich harvest is assured. A sure way of increasing the area and production of the crop is to rotate it wherever feasible with rice under which there is quite a large area in the country. In Madras alone the area under single-crop rice is about 8 million acres and a part of it, can be cultivated with groundnut after the main crop is off the field. It is however important that there is sufficient moisture in the soil after the groundnut crop is established. A few summer showers will be helpful or recourse will be had to irrigation.

Improved Strains Improved strains yield more than the local and have other economic characters also, such as high shelling percentage, natural test weight, oil content, resistance to drought etc. In Madras we have three well-established strains of proved merit. They yield 20 to 25 percent. more than the local. So, if we can replace the local by the improved ones, certainly the production can be stepped up. But at present such a proposal is practically impossible, because the quantity of nucleus seed that can be produced at the Groundnut Station, Tindivanam, is very limited viz., 40,000 lb. per year and it is sufficient to sow only about 400 acres of primary seed farms. Further, the rate of multiplication of the seed in the districts has been rather very slow for some reason or other. If the benefit of improved strains should reach the farmer, the work of seed multiplication should be planned and carried out on a much enlarged basis on a regional scale, by properly qualified staff who can attend to the work efficiently. The seed has to be made available to the farmer as and when he requires it for sowing. Proper arrangements have to be made to get the produce from primary seed farms in time and distribute it for sowing in secondary seed farms. A sound organisation for proper production and distribution of the seed is now lacking.

Research: Research is the basis of all progress. For crop improvement and maximisation of production, research on various aspects is essential. At present there is only one Agricultural (Oilseeds) Research Station for the whole of the Madras State and it has to work on all the major oilseeds of the State viz., gingelly and castor besides groundnut. Three useful strains in each of the crops have already been evolved. But these have done better in the southern districts than in the north. The Andhra districts which have about 60% of the area under groundnut in Madras are not much benefited by the work done at Tindivanam in South Arcot. The strains suitable for the Andhra districts have to

be produced in that tract itself. A short-duration bunch variety of groundnut with dormant seeds is urgently required not only for the northern districts but also for the Pollachi tract. Much work yet remains to be done on the agronomic and plant protection side. Research on groundnut has to be taken up on a regional basis. The work involved is so very considerable and extensive that a separate specialist assisted by sufficient staff and facilities should solely devote his attention to tackle the various problems pertaining to the crop. It is a crop which has given us millions of rupees and it is but proper that research on such a crop is intensified in our own future interests. It is a sure investment, certain to pay us good dividends in the near future.

Summary: The necessity for producing crops on as large an area as possible on an intensive scale in view of our increase of population is stressed. The steps to be taken, to achieve the end are stated. Every improvement research has contributed towards increased crop production and every known method of doing it has to be pressed into service to maximise the yields of crops. More land has to be made available for cultivation by reclaiming marginal and sub-marginal land. The importance of manuring in this connexion is well known but manures are in short supply. Nitrogenous and organic manures are the most urgently needed. The possibility of tapping our humus deposits from certain forests for immediate requirements has to be considered. Atmospheric nitrogen will have to be made use of in the manufacture of artificial manures. The first desideratum is water and all our water resources as rivers should be fully utilized by having more irrigation projects. That improved strains of crops available can contribute to step up production is well known. But an efficient organization to multiply and distribute such improved seed is urgently required. The country is sustaining very great loss by sowing seed of doubtful quality. To prevent this avoidable loss, seed testing units are immediately wanted but are not available. Storage of farm produce has to be seriously taken up and efficient methods devised. Reasonable prices for farm produce have to be assured and sufficient inducement to grow more crops on an intensive scale has to be provided. Also crop protection services have to be extended.

Groundnut in Madras: In the context of stepping up production groundnut should receive top priority next only to staple food crops, because it is a multi-purpose international crop capable, of giving food for man and cattle and oil for industry. It is the first money crop yielding nearly 100 crores of rupees annually in the Madras State alone. Also it can give the much-needed foreign exchange. India is the largest producer of groundnut in the world and Madras holds a unique position with 4 million acres under the crop and 46% of India's outturn. But our exports are dwindling and there is a serious danger of our losing the world's markets and

foreign assets for want of sufficient surplus, and there is a world shortage of edible oils. The Panel on Oils and Soaps have recommended an increased production of about 2 million tons of nuts in shell. To save a serious situation we have to increase our exportable surplus of groundnut urgently, and also for the ever-increasing internal consumption. This has to be brought about by every possible means at our command. It is not quite practicable to increase the area under the crop but it can be introduced into the rotation of crops with cereals, pulses and cotton. In single-crop wet lands it can be grown after a first crop of rice in large areas of the State where facilities exist. The high-yielding, improved strains of groundnut now available have to be multiplied on a large scale and distributed among farmers so as to replace the less paying local forms. An efficient organisation to carry on this line of work is required.

Evolution of strains suitable for the large groundnut tract of the Andhra districts is an urgent necessity. Research on every aspect of groundnut production has to be intensified under a whole-time Specialist with sufficient staff, and facilities on a regional basis. Money invested on groundnut research is sure to be fruitful and benefit the country in no small measure.

Maximising the production of Gingelly in Madras

By

M. M. KRISHNA MARAR, B. SC., (Ag.)
(Oilseeds Section, Coimbatore.)

Introduction: Gingelly (*Til*) or Sesame (*Sesamum indicum* Linn.) is one of the oldest of oilseed crops of the tropical and sub-tropical countries of the world. According to Hildebrandt, the plant is supposed to have originated in Southern and South-Western Africa. However, considering the large diversity of forms met with under cultivation, India and Japan are recognised as important secondary centres of origin. In India the plant has been under cultivation as an oilseed from time immemorial.

The sesamum plant is cultivated for its seeds which contain about 50 per cent by weight of an edible oil of excellent quality. The oil is largely in demand for culinary purposes, especially in South India and to a lesser extent for soap making. Many medicinal properties are also attributed to the oil. In fact it is the base for the preparation of a variety of medicated oils in Ayurveda. An impressive list of medicinal uses attributed to the different parts of the plant in India and elsewhere has been given by Kirtikar and Basu in their "Indian Medicinal Plants". In America and Europe, gingelly oil is reported to be utilised in the manufacture