# DIRECTORY OF

# RESEARCH WORKERS

# IN AGRICULTURE AND ANIMAL HUSBANDRY IN INDIA



INDIAN COUNCIL OF AGRICULTURAL RESEARCH NEW DELHI This Directory lists names and official addresses of Indian research workers in Agriculture, Animal Husbandry and Forestry upto the end of 1959 and is intended as a compact personal reference guide. As far as possible, the general indication of the specialized field of each worker is given. The Directory is divided into three parts. Part I includes organisations and departments under the Central Government such as Indian Council of Agricultural Research, Central Research Institutes and the Commodity Committees. Part II is devoted to the Indian Universities with particular reference to the Departments of Agriculture and Animal Husbandry. Part III deals with the Agriculture and Animal Husbandry Departments of the various Indian States. The particulars included in this Directory have been based on the information supplied by the State Governments and other research organisations in the country.

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# MINISTRY OF INDUSTRY

### RESOLUTION

### INDUSTRIES DEVELOPMENT PROCEDURES COMMITTEE

New Delhi, the 10th June 1964

- No. 13(4)/Lic.Pol./64.—In a Resolution dated 13th January, 1964, the Government of India in the Ministry of Industry announced the decisions of Government on the recommendations contained in the Interim Report of the Industries Development Procedures Committee constituted on 24th September, 1963 under the Chairmanship of Shri T. Swaminathan.
- 2. The Committee submitted its final report on 18th March, 1964, which has been released for publication today. In its final report, the Committee has considered procedures and matters other than those covered by the recommendation in the Interim Report. The main recommendations contained in the final report and Government's decisions thereon are given below.

# 3. Main recommendations in the Final Report:

- (i) Procedure for industries other than 'key' industries.—In respect of Industries other than 'key' industries, the Committee has expressed the view that for various practical reasons, including the foreign exchange shortages which make difficult the prompt clearance in all cases of import of capital goods, it would not be practicable to follow the special procedures recommended for 'key' industries. It has, therefore, suggested that, wherever the availability of foreign exchange is not the main limiting factor, after the issue of a letter of intent, all subsequent clearances, such as the import of Capital Goods, approval of foreign collaboration terms, and issue of Capital should be given within three months from the date of receipt of the respective applications. A procedure for keeping a close watch on timely clearances has also been prescribed.
- (ii) Special procedure for certain industries other than 'key' industries which are import-saving or substantially export-oriented.—The Committee has listed a few industries in which substantial imports are at present taking place. It has recommended that the special procedure for 'key' industries should be made applicable to these industries and also in the case of any other industries which Government consider to be of special importance from the point of view of earning substantial amounts of foreign exchange through exports.
- (iii) Procedure relating to licensing of Raw Materials/Components.—As delays in the issue of licences for raw materials affect industrial production, the Committee has suggested that ways and means should be found of issuing licences within three months from the commencement of each licensing period. If, for any reason, this procedure is not found practicable, in the interests of ensuring continuous production, the Committee has recommended that ad hoc licences equal to 50 per cent of the value of the licence for the first half of the previous licensing year should be issued. For the second half, the Committee has recommended that all licences should be authorised by a General Notification to utilise at least 50 per cent of the value of the licence for the second half, pending the final announcement of policy for this period. The Committee has also suggested that while issuing licences for raw materials, the limitations should normally be value-wise and not quantitative, so that the lineensee has the discretion to import any of the permissible items listed in the licence in such proportions as may be necessary.
- (iv) Forms of application for industrial licences and licences for the import of capital goods.—The Committee has suggested some modifications to these forms, mainly with a view to ensure simplification in some ways. Another consideration that has been taken into account is the extent of detailed information likely to be available to the applicant at the time of his application.

The Committee has recommended the submission of two applications for industrial licence, one, a preliminary application (along with the Treasury Challan) to enable the issue of a 'letter of intent' speedily, and the other a final application at a later stage at the time of the issue of a formal industrial licence. The

consideration which has guided the Committee in suggesting two applications instead of one application as hitherto is that at the time of initial application, the entrepreneur does not have a detailed, clear picture of all the items prescribed in the application form. It is not unlikely that in respect of many of the items on which information has been furnished by the applicant in the preliminary application the position may change substantially after consultations and negotiations with foreign collaborators and machinery suppliers, both indigenous and foreign. As the Licensing Sub-Committee's final decision on the conversion of a 'letter of intent' into an industrial licence would depend on a correct final appraisal of all material factors, a final application is also proposed. In the case of 'key' industries this final application is to be considered along with the simultaneous consideration of the subsequent clearances relating to capital goods, foreign collaboration terms, issue of capital etc. In the case of the remaining industries, the final application is to be submitted either along with the capital goods application or at some other suitable point of time when all the relevant final details are available to the applicant. This final application is to be considered by the administrative Ministry concerned before conversion of the 'letter of intent' into an industrial licence.

- (v) Recommendation of the Committee after a year.—The Committee has stated that it is important that the actual working of the revised procedures, should be studied over a period of time. Accordingly, the Committee has recommended that it may be reconstituted after a year, with the same composition as far as may be, to study the results of the working of the revised procedures and to make suitable recommendations to Government.
- 4. Other General Recommendations of the Committee.—The Committee has also made recommendations regarding—
  - (i) residual action in cases where letters of intent/licences have already been issued for 'key' industries;
  - (ii) form of 'letter of intent';
  - (iii) issue of import licence for spare parts—either received short—or in:
    damaged condition and replacement of which is made free of cost—either by the supplier or on payment by Insurance Company; and
  - (iv) procedure, in the case of 'key' industries, for consideration of application for grant of loans by the Industrial Credit and Investment Corporation of India and the Industrial Finance Corporation.
- 5. Government's decision on the Committee's recommendations.—Government accept in principle the above recommendations of the Committee. As regards the Committee's recommendations regarding the licensing of raw materials/ components, Government believe that it should be possible to issue licences within a period of three months from the commencement of each licensing period; every endeavour will be made to ensure this. Should there, however, be delay, Government have devised a simpler alternative procdure to secure the object which the Committee had in view. Instead of issuing ad hoc licences, it is proposed to take action as under:
  - (i) In the case of industries where annual licensing is done and where the raw material requirements are not likely to be met from newly developed indigenous sources, annual licences of the same value as for the previous year would be issued subject to the condition that during the first half of the licensing period only 50 per cent of the value of the annual licence can be utilised. There would be simultaneous authorisation for the utilisation of an additional 25 per cent from the commencement of the second half of the licensing period. The value of these licences would be suitably adjusted when the final policy for the period is announced.
  - (ii) In other cases, licences for the industry's requirements for the first half year will be issued of a value not exceeding the value licensed for the first half of the previous licensing period.

The additional authorisation of 25 per cent of the value of the annual licencefor the second half of the licensing period will not, however, be made in the case of established importers.

Appropriate steps are being taken to implement the recommendations of the Committee.

### ORDER

Ordered that a copy of the Resolution be communicated to all concerned.

Ordered also that the Resolution be published in the Gazette of India, for general information.

# FINAL REPORT

OF

# INDUSTRIES DEVILOPMENT PROCEDURES COMMITTEE

The Government of India in the Ministry of Industry constituted this Committee (which has come to be known as the Industries Depelopment Procedure Committee) by their Resolution No. 4(22)Lic.Pol./63, dated the 24th September, 1963. A copy of the Resolution is at Annexure I to this Report. The terms of reference of the Committee were to review the procedures relating to the operation of the controls applicable to the establishment of additional industrial capacity under the Industries (Development and Regulation) Act, 1951, the import of capital goods, the issue of capital, and foreign investment and collaboration and to suggest such modifications as would reduce delays in decision. In a subsequent letter dated the 11th October, 1963, from the Secretary to the Government of India, in the Ministry of Industry to the Chairman of the Committee, it was clarified that the procedures governing the licensing of raw materials for industry could also be deemed to be included in the terms of reference of the Committee. The Committee submitted an interim report on the 17th December, 1963 (Annexure II to the Report). The Government's decision accepting the main recommendations contained in the Interim Report was published in the Gazette of India Extraordinary on the 13th January, 1964 (Annexure III). In this final report, the Committee has considered procedures and matters other than those covered by the recommendations in the Interim Report.

- 2. Forms of application for industrial licences and licences for the import of capital goods.—The Committee has given detailed consideration to the form of application prescribed for industrial licences (form D prescribed under the Registration and Licensing of Industrial Undertakings Rules, 1952) and also the application prescribed for import of Capital Goods, and wishes to suggest some modifications to these forms, mainly with a view to ensuring simplification in some ways and provision of all information necessary for a quick and satisfactory decision. Another consideration that has been taken into account is the extent of detailed information likely to be available to the applicant at the time of his application. The revised forms are appended as Annexure IV to this Report.
- 3. Item (2) in the form of application for the import of Capital Goods relates to Income-tax Verification Certificates. The machinery of tax collection has been progressively tightened up since these certificates were originally asked for. And, in any case, the certificate relates to a past period and does not necessarily ensure that in the immediate period preceding an application for a licence, the applicant has not either evaded or defaulted on tax payment. This item appears to the Committee to be of doubtful value. While the Committee does not specifically suggest the deletion of this item from the form, it has requested the Chairman to discuss with Government the need for the continued retention of this item in the form. The obtaining of the certificate often entails delay which is avoidable.
- 4. The Committee has recommended the submission of two applications for industrial licence, one, a preliminary application to enable the issue of a 'letter of intent' speedily, and the other a final application at a later stage at the time of the issue of a formal industrial licence. The Treasury Challan, as prescribed, need accompany only the preliminary application. The consideration which has guided the Committee in suggesting two applications instead of one application as hitherto is that at the time of initial application, the etrepreneur does not have a detailed, clear picture of all the items prescribed in the application form. It is not unlikely that in respect of many of the items on which information has been furnished by the applicant in the preliminary application, the position may change substantially after consultations and negotiations with foreign collaborators and machinery suppliers, both indigenous and foreign. The preliminary application would enable the speedy issue of a 'letter of intent', after a broad and not too meticulous examination of the essential features of the proposal to establish an industrial unit. As the Licensing Sub-Committee's final decision on the conversion of a 'letter of intent' into an industrial licence would depend on a correct final appraisal of all material factors, a final application is being proposed. In the case of 'key' industries, this final application should be considered along with the simultaneous

consideration of the subsequent clearances relating to capital goods imports, foreign collaboration terms, issue of capital etc. In the case of the remaining industries, the form of final application should be submitted either along with the capital goods import application or at some other suitable point of time, when all the relevant final details are available to the applicant. This application should be considered by the administrative Ministry concerned with the industry before conversion of the 'letter of intent' into an industrial licence. Where there is a substantial departure in the final application from the details given in the initial application in material particulars, the administrative Ministry concerned should, where necessary, place the case again before the Licensing Sub-Committee, before the 'letter of intent' is converted into a licence.

- 5. The Committee recommends that appropriate amendments, where necessary, should be made in the Registration and Licensing of Industrial Undertakings Rules to give effect to the above recommendations. Meanwhile the Committee recommends the immediate adoption of the revised procedures suggested.
- 6. Form of 'Letter of Intent'.—The speedy issue of a 'letter of intent' has been recommended by the Committee so that it may be possible for the entrepreneurs to carry on negotiations with foreign collaborators and/or manufacturers of machinery. In order that the 'letter of intent' may fully serve this end, it is necessary that this document should contain a positive assurance regarding the eventual issue of an industrial licence, subject to conditions to be specified being fulfilled. Accordingly, the Committee has given some thought to the form in which the 'letter of intent' should be couched. The form as recommended by the Committee is at Annexure V to this Report.
- 7. Priority treatment for certain industries other than 'key' industries which are import-saving or substantially export-orinted.—The Committee has noted that substantial imports are at present taking place in certain industries listed below. It recommends that, though these have not been included in the list of 'key' industries, the accelerated procedures recommended in the Interim Report should, as far as practicable, be made applicable to them also, so as to ensure that adequate manufacturing capacities are speedily established.
  - 1. Industrial chains.
  - 2. Transformer Oil.
  - 3. Insulating Paper.
  - 4. High Tensile Galvanised Steel Wires.
  - 5. Laboratory Glassware.
  - 6. Detonators and Detonating fuse.
  - 7. Synthetic Fibres.
  - 8. Caprolactum.

The Committee recommends similarly that accelerated procedures may also be adopted in the case of any industries which Government consider to be of a special importance from the point of view of earning substantial amounts of foreign exchange through exports.

- 8. Residual action in cases where letters of intent/licences have already been issued for 'key' industries.—As a sequel to the recommendation in the Interim Report regarding the procedures for 'key' industries the Committee further recommends that cases of applications in which letters of intent or licences have already been issued for 'key' industries should be examined with a view to fixing time limits for the completion of formalities and obtaining of clearances for capital goods imports, foreign collaboration, capital issue i.e. (six months to twelve months from the date of the grant of the letter of intent or licence, as the case may require). The accelerated procedure of simultaneous clearance by the Licensing Sub-Committee should be applied when the holders of these letters of intent/licences hold them up for other clearances. letters of intent/licences hold them up for other clearances.
- 9. Procedure for industries other than 'key' Industries.—The Committee has considered whether in the case of industries other than 'key' industries, the procedure for simultaneous consideration of all subsequent clearances after the initial issue of the 'letter of intent' could be adopted. For various practical reasons, including the foreign exchange shortages which make difficult the prompt and practical reasons. clearance in all cases of import of capital goods, it has not been found practicable to follow the procedure recommended for 'key' industries.

- 10. In the case of these industries, the Committee, however, recommends that, wherever the availability of foreign exchange is not the main limiting factor, after the issue of a 'letter of intent,' all subsequent clearances such as applications for the import of capital goods, approval of foreign collaboration terms and the issue of capital, should be given within three months from the date of receipt of the respective applications. In order to keep a watch on the disposal of these applications, and to ensure that the prescribed time schedules are followed, as far as practicable, it is recommended that a list of cases which have not been disposed of within three months from the date of receipt of the applications should be put up for consideration at each meeting of the C.G. and Foreign Agreements Committees. Cases where applications for the issue of capital have not been disposed of within three months should be brought to the notice of the Licensing Sub-Committee at each of its meetings.
- 11. Procedure relating to licensing of raw materials/components.—The Committee has examined the existing procedures for the licensing of imported raw materials/components required by industry. It has been represented to the Committee that there are considerable delays in the issue of licences which are often issued only at the end of each licensing period. This delay is usually caused by the delay in the allocation of foreign exchange, owing to uncertainties connected with the availability of foreign exchange. As delay in the issue of licences for raw materials affect industrial production, the Committee recommends that ways and means should be found of issuing the licence within three months of the commencement of each licensing period. If, for any reason, this procedure is not found practicable, in the interests of ensuring continuous production, the Committee recommends that ad hoc licences equal to 50 per cent of the value of the licences for the first half of the previous licensing year should be issued. The Committee realises that this would entail additional work, but in the interest of uninterrupted industrial production, this procedure is recommended.
- 12. According to the current procedure, only 50 per cent of the value of the licence can be utilised during the first half of the licensing period. For the second half, a further announcement of policy by Government has to be awaited. The Committee recommends that by a general Notification all licensees should be authorised to utilise at least 50 per cent of the value of the licence for the second half, pending the final announcement of policy for the second half of the licensing period. This would enable a minimum quantity of raw materials (or components) being ordered in time to maintain uninterrupted production. In many cases raw materials (or components) take a few months after ordering to be delivered.
- 13. The Committee further recommends that while issuing licences, the limitation should normally be value-wise and not quantitative, so that the licensee has the discretion to import any of the permissible items listed in the licence in such proportions as may be necessary. If it is seen that the adoption of the practice leads to misuse of the concession, appropriate remedial action in the case of the individual units concerned could be taken. In any case, "banned" items may not be imported.
- 14. Import Licence for spare parts either received short or in damaged condition and replacement of which is made free of cost either by the supplier or on payment by Insurance Company.—Representations have been made to the Committee about delays in the issue of import licences for spare parts which are either received short or in a damaged condition and replacement of which is made free of cost either by the supplier or on payment by the Insurance Company. Delay in receipt of such spare parts often holds up production. The Committee recommends that where the cost of replacement is being paid by the Insurance Company, a licence should be issued automatically. Where the cost of replacement is met by the supplier, the Committee recommends that special efforts should be made by the Licensing authorities to issue the licences expeditiously.
- 15. Procedure followed by the Industrial Credit and Investment Corporation of India and Industrial Finance Corporation for the grant of loans special procedure for 'key' industries.—The Chairman of the Committee has had discussions with the Chairmen of the Industrial Credit and Investment Corporation of India (ICICI) and of the Industrial Finance Corporation (IFC) regarding the procedures followed by them. It has been agreed by the Chairmen of both the Corporations that if the parties concerned could approach the I.C.I.C.I./I.F.C. immediately after the issue of the 'letter of intent', in the case of 'key' industries, the Corporations would take up consideration of their cases without waiting for

clearances by he Capital Goods Committee. Final clearance of the application by the Corporations would of course be subject to clearance by the Capital Goods Committee. This procedure would result in a substantial saving of time and the Committee recommends the adoption of this procedure.

- 16. Reconstitution of the Committee after a year.—Government has already implemented the main recommendations in the Interim Report. The Committee implemented the main recommendations in the Interim Report. The Committee hopes that Government will soon take a decision on the recommendations in this Report. The Committee considers it important that the actual working of the revised procedures should be studied over a period of time. Accordingly, the Committee recommends that this Committee, with the same composition as far as may be, be reconstituted after a year to study the results of the working of the revised procedures and asked to make a report and suitable recommendations to Government. The co-ordinating Section in the Ministry of Industry should maintain statistics showing particularly the pace of disposal of applications under the revised procedures and other details so that the Committee, if and when reconstituted, may have the necessary factual information for an appraisal readily available. At that point of time the feasibility of adopting the accelerated procedures in the case of industries other than 'key' industries could also be studied.
- 17. Acknowledgements.—The Committee wishes to place on record its deep appreciation of the services of officials, non-officials and organisations who have appreciation of the services of ometals, non-ometals and organisations who have assisted in its work and made possible the submission of its report within the time limit prescribed by Government. The other members of the Committee wish to express their gratitude in particular to Shri K. J. George, the Committee's Member-Secretary, whose knowledge, experience, devotion to duty and promptness have been of inestimable value to them. The Committee is also beholden to the secretarial staff who have put in ungrudging work which has made possible the discharge of its responsibilities at relatively little expense.

T. Swaminathan.

Bharat Ram. A. R. Foster.

Lakshmipat Singhania.

A. M. M. Murugappa Chettiar.

P. Chentsal Rao.

N. C. Srivastava.

P. Govindan Nair.

V. K. Ramaswami. K. J. George.

# ANNEXURE I

(To be published in the Gazette of India, Extraordinary Part I, Section 1, dated the 24th September, 1963)

No. 4(22) Lic.Pol./63

Government of India Ministry of Industry New Delhi, the 24th September, 1963 RESOLUTION

The Government of India have been giving consideration to steps which could be taken to accelerate the pace of industrial development. One of the suggestions made in this context is that there is need to simplify the procedures and regulations relating to the appropriate of industrial expension. It is important to the appropriate of industrial expension. tions relating to the approval of schemes of industrial expansion. It is important that controls operate speedily and efficiently in order that they may serve as instruments for the achievement of a high rate of industrial growth.

- 2. Government have accordingly decided that the operation of the controls applicable to the establishment of additional industrial capacity under the Industries (Development and Regulation) Act, 1951, the import of capital goods, the issue of capital and foreign investment and collaboration should be examined by a Committee which will suggest such modifications, as would reduce delays in decided. decision
  - 3 The membership of the Committee will be as follows:
    - (1) Shri T. Swaminathan, Secretary, Departments of Supply and Technical Development—Chairman.
    - (2) Shri Bharat Ram.
    - (3) Mr. A. R. Foster.

- (4) Shri Lakshmipat Singhania.
- (5) Shri A. M. Murugappa Chettiar.
- (6) Shri P. Chentsal Rao.
- (7) Shri N. C. Srivastava, Adviser, Planning Commission.
- (8) Shri P. Govindan Nair, Additional Secretary, Ministry of Finance, Department of Economic Affairs.
- (9) Shri V. K. Ramaswami, Economic Adviser, Ministry of Industry.
- (10) Shri K. J. George, Deputy Secretary, Ministry of Industry—Member-Secretary.
- 4. The Committee will submit interim reports as and when necessary, and will complete its work within six months.

#### ORDER

Ordered that a copy of the Resolution be communicated to all concerned.

Ordered also that the Resolution be published in the Gazette India, for general information.

(Sd.) R. V. SUBRAHMANIAN, Jt. Secy.

# ANNEXURE II INTERIM REPORT

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# INDUSTRIES DEVELOPMENT PROCEDURES COMMITTEE

# PART I-INTRODUCTION

The Government of India in the Ministry of Industry, by their Resolution No. 4(22)Lic.Pol./63, dated the 24th September, 1963, set up a Committee consisting of the undersigned to review the operation of controls applicable to the establishment of additional industrial capacity under the Industries (Development and Regulation) Act, the import of capital goods, the issue of capital, and foreign investment and collaboration and to suggest such modifications as would reduce delays in decision. The Resolution also provided for the Committee submitting interim reports as and when necessary. This is an interim report which the Committee wishes to submit.

- 2. The Committee has so far held three meetings in New Delhi and has generally reviewed the existing procedures regarding the issue of licences under the Industries (Development and Regulation) Act, the import of capital goods, the issue of capital, and approval of foreign investment and collaboration. It has also undertaken a few studies of cases selected at random involving these various processes. These studies have diclosed delays at various stages, partly due to the long time taken in the movement of files from one authority to another and partly due to delays inherent in a system involving consultation with multitudinous authorities. The Chairman of the Committee, in his capacity as Secretary to Government, is bringing to the notice of the individual Ministries concerned the reports on the case studies, so that they may independently take such action as may be considered appropriate to prevent the type of avoidable delays that are taking place.
- 3. In this interim report the Committee is confining itself to two main recommendations which it considers to be very important and speedy action in respect of which is likely to assist in the expeditious operation of the controls in the fields to which they relate. The first recommendation relates to a speedy procedure for according clearance in principle to the establishment of additional industrial capacity, i.e., the issue of a "letter of intent", as this is commonly referred to. The second recommendation relates to the speedy processing of all applications relating to certain "key" industries which are either important for the promotion of self-sustaining industrial growth or are industries in which we are substantially lagging behind in the achievement of our Plan targets.
- 4. The Committee has noted in the course of its case studies that all procedures involving frequent movement of files between various offices and at various levels entail delay. Therefore the most expeditious way of ensuring early clearances would be to resort to a procedure which eliminates consultation on files to the minimum and involves taking decisions, within a prescribed number of days of

the receipt of applications, at meetings consisting of representatives of Ministries primarily concerned.

5. Rule 15 of the Registration and Licensing of Industrial Undertakings Rules, 1952, lays down a period of three months within which decisions should be taken on applications for industrial licences. For various reasons, this provision, has in practice, remained inoperative. In fact, in respect of 8 cases selected at random for case study, the time taken ranged from 61 to 396 days, and in 6 out of the 8 cases, the period involved was more than 150 days.

# PART II-PROCEDURE FOR ISSUE OF "LETTERS OF INTENT"

- 6. In the Committee's view, it is a matter of the utmost importance that the applicants should know as early as possible whether Government would be prepared to consider favourably the proposal put forward by them. It will be difficult for the entrepreneurs to negotiate with foreign collaborators or suppliers of machinery without such an indication from the Government. The Committee, therefore, favours a speedy procedure under which a "letter of intent" can be issued within a month or so of the date of receipt of the application.
- 7. The Committee's first recommendation, therefore, is that only "letters of intent" should first be issued except in cases where a licence under the Industries intent" should first be issued except in cases where a licence under the Industries (Development and Regulation) Act, can be issued straightaway. Intending applicants, it is suggested, should be advised through a Press Note regarding the proposal to issue "letters of intent" instead of industrial licences in the first instance. The present form of application for an industrial licence will be the basis on which issue of "letters of intent" will be considered. The applicant should be advised to send the application, in original, with 10 spare copies, to the Ministry of Industry, which will act as the coordinating Ministry. The Committee would suggest that there should be a small separate section in the Ministry of Industry which will deal exclusively with the receipt of all such applications, and their subsequent prompt distribution to all authorities concerned.
- 8. The receiving section in the Ministry of Industry should promptly distribute. a copy each of the application to the following authorities:-
  - 1. Secretary to the administrative Ministry of the Central Government concerned.
  - 2. Industries Division of the Planning Commission.
  - 3. Department of Economic Affairs (Ministry of Finance).
  - 4. Company Law Division of the Ministry of Finance.
  - 5. The Directorate General of Technical Development (D.G.T.D.)/Textile Commissioner/Iron & Steel Controller/Technical Advisers concerned.
  - 6. Director of Industries of the State Government concerned.

To facilitate linking up in the various Ministries etc. of the papers relating to a particular case, it is suggested that each application should be serially numbered a particular case, it is suggested that each application should be serially numbered in the order of receipt in the receiving section of the Ministry of Industry and that the endorsements of copies to other Ministries, etc., should bear this Serial No. Each applicant should also be informed of the Serial No. allotted to his application for purposes of future reference and all future correspondence on the application, whether from the Ministry of Industry or other Ministries/Departments of Government will indicate this reference number. As, during the course of case studies it has been noticed that undue delays have often taken place in the process of mere physical distribution of applications, the Committee would the process of mere physical distribution of applications, the Committee would suggest that it should be ensured that copies of the applications are sent out within three days of their receipt in the special section.

- 9. The primary responsibility for processing all applications expeditiously will be that of the administrative Ministry concerned. The receipt Section in the Ministry of Industry should, however, immediately on receipt of applications, Ministry of Industries of the State Government concerned, in a preswrite to the Director of Industries of the State Government concerned, in a prescribed form, fiviting his attention to the application and calling for his comments, cribed form, to be sent direct to the administrative Ministry concerned, within three weeks from the date of receipt of the application by him. It should be made clear in this letter that if no comments from the State Government are received within this period, it will be presumed that the State Government have no objection to the proposed application and that this will be further processed on this assumption.
- 10. The Directorate General of Technical Development should initiate action immediately on receipt of their copy, either direct from the applicant (as many applicants do send copies direct to the D.G.T.D.) or through the co-ordinating

Ministry. It has been noticed during the course of case studies that movement of files from one Directorate to another within the D.G.T.D. through the co-ordinating Section of the D.G.T.D. and from one Development Officer to another, has been a time-consuming process. The Committee would, therefore, suggest that resort should be had by the D.G.T.D. as far as practicable, to the procedure of meetings of all officers concerned, for formulating their views, or for according clearances. The D.G.T.D. should inalise their views and communicate them to the administrative Ministry, within a period of 2 weeks. and communicate them to the administrative Ministry within a period of 3 weeks.

- 11. The applications for "letters of intent" should be considered by a sub-committee of the Licensing Committee consisting of the Secretary to the Government of India in the Ministry of Industry as Chairman, the Secretaries to the administrative Ministries concerned/or their representatives, the Secretary, Department of Economic Affairs or his representative, Secretary, Department of Technical Development or his representative, a representative from the Company Law Division of the Ministry of Finance and a representative of the Planning Commission. It will be the responsibility of the administrative Ministry concerned to send, within a period of one month of the receipt of the application, a brief note making appropriate recommendations, incorporating also the technical views of the D.G.T.D., to the Secretary of the Licensing Sub-Committee for placing the case before the Sub-Committee. It will be the duty of the Secretary to the Sub-Committee to bring to the notice of the Sub-Committee any cases where applications have been pending for more than 6 weeks without being brought before the Sub-Committee.
- 12. The notes for the Sub-Committee of the Licensing Committee to consider applications for "letters of intent"/industrial licence should be in a form to be prescribed. The Committee would suggest that the Sub-Committee should meet normally once a fortnight, and more frequently, if this should be necessary.
- 13. In making the above recommendations regarding the procedure for issue of "letters of intent", the Committee has not provided for a strict scrutiny in each case from the point of view of availability of fuel, power, rail transport and other facilities. The entrepreneurs are required to give information regarding their requirements in the application form. It would be reasonable to assume that the entrepreneur gives an adequate measure of consideration to these factors before deciding on the project and a particular location. Having regard to the fact that in practice very few applications are even now being turned down on the ground deciding on the project and a particular location. Having regard to the fact that in practice very few applications are even now being turned down on the ground of non-availability of fuel, power, etc., the Committee does not think it would be worthwhile doing a rigorous or time-consuming scrutiny. The Committee would suggest that the Ministry of Industry, as the co-ordinating Ministry, should arrange to send periodically, to the authorities concerned, consolidated statements giving requirements of fuel, power, etc., in respect of approved schemes, so that these may be taken note of. If the Ministries concerned with the provision of fuel, power, etc., feel at any time that, in any particular area, fresh licensing should not power, etc., feel at any time that, in any particular area, fresh licensing should not be done because of any anticipated shortages, it would be open to these Ministries to advise the Ministry of Industry accordingly.
- 14. The "letter of intent" should broadly indicate the conditions subject to which Government will be prepared to consider the grant of a licence and should also indicate that within a specified period, varying, say from 6 to 12 months,—depending on the nature of the industry—the party should come up with definite proposals regarding-
  - (1) Terms of foreign collaboration, if envisaged;
  - (2) Import of capital equipment, if involved; and
  - (3) Issue of capital, if involved.
- 15. It should be made clear in the "letter of intent" that, if within the prescribed period the applicant does not submit all the remaining applications for the various clearances, the "letter of intent" shall automatically be deemed to have become inoperative. The period which should be allowed to the applicant to submit the remaining applications should be determined by the Licensing Sub-Committee while considering the case.
- 16. One particular advantage the Committee visualises in the procedure is that the difficulties in regard to the prompt weeding out of infructuous Licences can be overcome to some extent. Under the existing licensing procedures, licences are as a rule issued in the first place. For one reason or another, it happens that a large number of licences merely remain paper licences without being implemented. Revocation of licences in such cases has to follow a statutory procedure which takes time. It often therefore happens that substantial capacity is blocked by such in ructuous licensing Under the procedure that is now being suggested, under such in ructuous licensing. Under the procedure that is now being suggested, under which only 'letters of intent' will be first issued, if the party does not make adequate progress within the stipulated time, the letter of intent would be automatically

deemed to have become inoperative. The Committee trust that this procedure will help substantially in dealing with the problem of prompt cancellation of infructuous licences.

# PART III—SPECIAL PROCEDURE FOR "KEY" INDUSTRIES

- 17. Having regard to the shortfalls in effective establishment of capacity for the attainment of our Plan targets, and the need for speedily establishing additional capacity in certain important industries for our industrial development, the Committee has drawn up a brief list of industries, which should be regarded as 'key' industries. This list is appended to this report. The list is by no means exhaustive and is intended to be one of immediate practicability, accordingly certain other important industries, for example aluminium, copper, zinc, lead, tangsten carbide etc., which were considered for inclusion, have been left out as these industries would require special ad hoc treatment for various reasons, e.g., availability of raw material, requirement of large power resources, the need for further expansion in existing units rather than through licensing of new units. Such a list will obviously have to be reviewed from time to time—perhaps every 6 months. The Committee will further examine this list and suggest additions, if any, in the final report.
- 18. Once a "letter of intent" has been issued, it is the Committee's recommendation that in respect of the 'key' industries, a special procedure should be evolved for dealing simultaneously with all other clearances involved, such as approval of foreign collaboration terms, approval to the issue of capital and the issue of import licences. The Committee's recommendation in this regard is intended to apply only to the procedure to be followed in respect of 'key' industries.
- 19. After a "letter of intent" has been issued, in accordance with its terms, the party has to submit his applications for other clearances within a stipulated period. In the case of the 'key' industries, it is the Committee's recommendation that all further clearances required should be considered simultaneously by the Sub-Committee of the Licensing Committee referred to in para. 11 ante, the Chief Controller of Imports and Exports being co-opted as an additional member of the Sub-Committee as also, when necessary, the Controller of Capital Issues.
- 20. It will be the responsibility of the administrative Ministry concerned to keep a watch over the time limit allowed to applicants, as prescribed in the "letter of intent". Extension of the time limit should be the exception rather than the rule. Extensions should be granted only by the Licensing Sub-Committee after a drue consideration of all factors. Intending applicants should be advised in a Press Note that all the applications for the clearances required in the case of the key industries such as foreign collaboration approval, issue of capital, import applications, etc.. should be submitted simultaneously, so that they may be considered at one meeting by the Licensing Sub-Committee. They should also be advised to send the required number of copies of all their applications to the Ministry of Industry. The special section in the Ministry of Industry will, immediately on receipt of the application, transmit copies to the following authorities, giving the same Serial No. as given earlier to the application for industrial licence:
  - 1. Secretary of the administrative Ministry concerned.
  - :2. D.G.T.D./Textile Commissioner/Iron and Steel Controller/Technical Advisers concerned.
  - 3. Secretary, Department of Economic Affairs.
  - .4. Planning Commission (Industries Division).
  - 5. Chief Controller of Imports and Export (copy of import application only with Treasury Challan).
  - 6. Controller, Capital Issues (copy of Capital Issue application with Treasury Challan and of proposals regarding foreign collaboration, wherever foreign equity participation is involved).
- 21. Immediately on receipt of the application, it will be the responsibility of the administrative Ministry concerned to initiate action and ensure that within a period of three weeks of the receipt of the applications a brief summary of the

relevant aspects of the case is sent to the Sceretary to the Licensing Sub-Committee for consideration at the next meeting of the Sub-Committee.

- 22. The D.G.T.D. should, immediately on receipt of the copies of the applications, initiate all action required on their part regarding technical advice and in particular take up the question of clearance in regard to indigenous non-availability of items contained in the import application. Clearance of the entire import list applied for should not be held up if there is some doubt about only a part of the machinery regarding indigenous non-availability. Further, as has been suggested earlier, clearances in this office should normally be on the basis of meetings of officers concerned and on known availabilities with relation to the state of the order books of principal suppliers rather than on the basis of leisurely movement of files or on the basis of time-consuming individual reference to suppliers.
- 23. The administrative Ministry, should, to the extent practicable, prepare the notes for the Sub-Committee after discussion with the concerned officers in the D.G.T.D. so that it may be possible for them to finalise the note for the Licensing Sub-Committee within a period of three weeks. It should be the responsibility of the administrative Ministry to ensure that applications are placed before the Sub-Committee not later than five weeks from the date of their receipt. The Secretary to the Sub-Committee should bring to the notice of the Sub-Committee, at each meeting, cases which have been pending for more than six weeks and have not yet been placed before the Sub-Committee.
- 24. It is the Committee's recommendation that the industries included in the "Key" industries list should be given special preferential treatment in respect of release of foreign exchange and regarding all other clearances such as permission for issue of capital.
- 25. In order that final decisions may be taken at the meetings of the Licensing Sub-Committee without waiting for further consultation with the applicants by correspondence, in all cases where such consultation is likely to be necessary, a representative of the applicant may also be asked to make himself available on the day of the meeting of the Licensing Sub-Committee, for consultation, if required by the Sub-Committee. The Committee makes this recommendation since it may be possible for the Licensing Sub-Committee to take a decision at the meeting in the light of such clarification, written or otherwise, which the applicant or his representative, may be able to give on the spot.
- 26. The Committee has suggested the inclusion of the CCI & E, on the Licensing Sub-Committee so that he is in touch with the decisions of the Sub-Committee and import licences can issue without any further checking or observance of routine formalities and without undue delay in his office.
- 27. The Committee has considered whether in view of its recommendation regarding simultaneous consideration of all clearances in the case of 'key' industries, an integrated application form for all these clearances should be evolved. It is felt that it would be preferable to continue to have separate applications, which would, however, be submitted by the applicants simultaneously, so far as the 'key' industries are concerned.
- 28. The Committee further recommends that at the "letter of intent" stage, the Sub-Committee of the Licensing Committee should give special attention to the applications relating to 'key' industries, with a view to indicating, if possible, the source from which foreign exchange is likely to be available.

# PART IV-GENERAL.

- 29. The Committee further recommends that for the convenience of the Licensing Sub-Committee, all notes put up to the Sub-Committee for "letter of intent" should be grouped into two parts—Part I relating to 'key' industries and Part II relating to other industries.
- 30. Government have been from time to time publishing a list of industries in respect of which industrial licences will ordinarily be rejected without reference to the Licensing Committee—the list commonly referred to as the 'banned' list. The Committee would suggest that this list, along with the list of 'key' industries should be reviewed at intervals of 6 months. It has been suggested to the Committee that it would help intending applicants if, in addition to the list of 'banned' items, a list of other industries which will be licenced on merits is also simultaneously published. In view of the importance attached in such a notification by industry for psychological reasons, the Committee would recommend that Government should consider the need for and the feasibility of such a notification.

- 31. The Committee would suggest that meetings of the full Licensing Committee, as constituted at present, including representatives of State Governments, should be held at suitable intervals to review all the decisions taken by the Sub-Committee proposed in these recommendations.
  - 32. The main objectives in this interim report have been to suggest-
    - (i) an expeditious procedure for the issue of "letters of intent" in all cases; and
    - (ii) a special procedure calculated to avoid delays in the case of all clear-ances in respect of 'key' industries,

Because of the important bearing that the achievement of this objective will, have on our industrial development, the Committee has thought fit to submit this interim report. It would suggest that the special procedure recommended herein for 'key' industries should be tried out with immediate effect.

33. The Committee is giving further thought to other aspects of the matters referred to it, including the procedure to be adopted for industries other than those included in the list of 'key' industries. These will be dealt with in the Committee's final report. For the time being the existing licensing procedures may continue in the case of industries other than 'key' industries except for the substitution of "letters of intent" for licences in the first instance where licences cannot be issued straightaway.

T. Swaminathan,

Bharat Ram,

A. R. Foster,

Lakshmipat Singhania,

A. M. M. Murugappa Chettiar,

P. Chentsal Rao,

N. C. Srivastava,

P. Govindan Nair,

V. K. Ramaswami,

K. J. George.

# LIST OF KEY INDUSTRIES.

- 1. Pig Iron.
- 2. Alloy Steel.
- Ferro-Chrome and other Ferro Alloys except Ferro-Manganese and Ferro-Silicon.
- 4. Malleable Iron Castings.
- 5. Steel Castings.
- Steel Forgings.
- 7. Structurals (Heavy).
- 8. Industrial Machinery.
- 9. Cranes.
- 10. Machine Tools including Small Tools, Dies, Jigs, and Fixtures.
- 11. Automobile Ancillaries.
- 12. Coated Abrasives.
- 13. Electric Winding Wires.
- 14. Fertilizers.
- 15. Sulphuric Acid.

- 16. Caustic Soda and Soda Ash.
- 17. Rubber Chemicals.
- 18. Petro-chemicals including Synthetic Rubber.
- 19. Pesticides.
- 20. Paper and Paper Board.
- 21. Cement.
- 22. Pulp. (Cellulosic).

# ANNEXURE III

[To be published in the Gazette of India, Extraordinary Part I, Section I. dated the 13th January, 1964.]

# MINISTRY OF INDUSTRY

### RESOLUTION

# INDUSTRIES DEVELOPMENT PROCEDURES COMMITTEE

New Delhi, the 13th January 1964

- No. 13(2)/Lic. Pol./64.—By a Resolution dated the 24th September, 1963, the Government of India in the Ministry of Industry appointed a Committee under the Chairmanship of Shri T. Swaminathan to review the operation of controls applicable to the establishment of additional industrial capacity under the Industries (Development and Regulation) Act, the import of capital goods, the issue of capital, foreign investment and collaboration and to suggest such modifications as would reduce delays in decision.
- 2. The Committee submitted an interim report on 17th December, 1963, which has been released for publication today. The main recommendations contained in the report and Government's decision thereon are given below.
- 3. Main recommendations in the Interim Report.—In the interim report, the Committee has confined itself to two main recommendations. The first recommendation relates to a speedy procedure for according clearance in principle to the establishment of additional industrial capacity i.e. the issue of a "letter of intent", as this is commonly referred to. The second recommendation relates to a special procedure for the speedy processing of all applications relating to certain "key" industries, which are either important for the promotion of self-sustaining industrial growth or are industries in which there is a substantial gap in the achievement of Plan targets.
- 4. Procedure for speedy issue of "letters of intent".—The Committee has stressed that it is of the utmost importance that the applicant should know as early as possible whether Government will be prepared to consider favourably the proposal put forward by him, as it will be difficult for the entrepreneur to negotiate with foreign collaborators or suppliers of machinery, without such an indication from Government. They have, therefore, recommended a procedure under which a "letter of intent" can be issued within about a month from the date of the receipt of the application.
- 5. To ensure expeditious disposal of the applications, the Committee has recommended certain time schedules to be followed in the disposal of applications. It has also recommended that while considering individual applications for the issue of "letters of intent", there need be no rigid or time-consuming scrutiny, in each case, of the availability of fuel, power, rail transport and other facilities. The Committee has also recommended that the main work of consideration of applications should be by a Sub-Committee of the Licensing Committee constituted as follows:—

# Chairman

Secretary, Ministry of Industry

# Members

Secretary, Department of Economic Affairs or his representatives. Secretary, Department of Technical Development or his representative.

A representative of the Company Law Division of the Ministry of Finance.

Secretaries of the Administrative Ministries concerned or their representatives.

A representative of the Planning Commission.

- 6. The Committee has also recommended that the "letters of intent" should be valid for a specified period and that, if within this period, the applicant does not submit all the remaining applications for the various clearances, the "letter of intent" should automatically stand cancelled.
- 7. Special procedure for Industries referred to as "key" Industries.—Having regard to the shortfalls in the effective establishment of capacities for the attainment of Plan targets and the need for speedily establishing additional capacity in certain industries which are important for the promotion of self-sustaining industrial growth, the Committee has drawn up a list of industries, to be treated as 'key' industries. This list, is not exhaustive and is intended to be one of immediate practicability. This list, it has been recommended, should be reviewed from time to time. After the issue of a "letter of intent" applications for all further clearances required in the case of these 'key' industries, such as foreign collaboration approval, issue of capital, import applications etc., should, the Committee has recommended, be submitted simultaneously, so that they may be considered at one meeting by the Licensing Sub-Committee referred to above, the Chief Controller of Imports and Exports and, when necessary, the Controller of Capital Issues, being co-opted as additional members. The applications are to be placed before the Sub-Committee within about a month of the receipt. The Committee has also recommended that at the 'letter of intent' stage, the Sub-Committee of the Licensing Committee should give special attention to the applications relating to these 'key' industries, with a view to indicating, if possible, the source from which foreign exchange is likely to be available. It has also been recommended that the industries facluded in the 'key' list should be given special preferential treatment in respect of release of foreign exchange and regarding all other clearances such as permission for issue of capital.
- 8. Other general recommendations of the Committee.—(i) There should be a small separate cell in the Ministry of Industry, which will function as the coordinating Ministry, to deal exclusively with the receipt of all applications for licences under the Industries Act and also the applications for the subsequent clearances that may be required, and for their prompt distribution to the other authorities concerned. To facilitate linking up in the various Ministries etc., of the papers relating to a particular case, it has been proposed that each application should be serially numbered in the order of receipt in the receiving Section of the Ministry of Industry and that the endorsements on copies to other Ministries etc., should bear this serial number. Each applicant is to be informed of the serial number allotted to his application for purposes of future reference and all future correspondence on the application will indicate this reference number.
- (ii) In addition to the list of 'banned' items for industrial licensing, which is how being published from time to time, a list of other industries which will be licensed on merits should also simultaneously be published.
- (iii) Meetings of the full Licensing Committee, as constituted at present, including representatives of the States Governments, should be held at suitable intervals, to review all the decisions taken by the Sub-Committee.
- 9. Government's decision on the Committee's recommendations.—Government accept in principle the above recommendations of the Committee.
- As regards the composition of the proposed Sub-Committee of the Licensing Committee, Government are, however, of the view that the other members of the Licensing Committee stationed at Delhi may also be associated with the work of the Sub-Committee, without causing any undue delay on this account.
- The list of 'key' industries has been drawn up by the Committee, having regard to the shortfalls in effective establishment of production for the attainment of Plantargets and the need for speedily establishing additional capacity in certain industries which are important for the promotion of self-sustaining industrial growth. This would involve speedy licensing of additional capacity under the Industries (Development and Regulation) Act in certain cases, while, in others, where adequate capacity has already been licensed, only expeditious sanctions will have to be given for matters like Capital Goods Clearance, Capital issues, approval of foreign collaboration terms etc. Government accepts this recommendation.

Appropriate steps are being taken to implement the recommendations of the Committee.

### ORDER

Ordered that a copy of the Resolution be communicated to all concerned.

Ordered also that the Resolution be published in the Gazette of India, for general information.

S. RANGANATHÁN, Secy.

# ANNEXURE IV

# FORM OF PRELIMINARY APPLICATION FOR INDUSTRIAL LICENCE

To be addressed with 10 spare copies to the Coordination & Licensing Progress Section, Ministry of Industry, Udyog Bhavan, New Delhi.

- Name of the Scheduled Industry or Industries to which the articles proposed to be manufactured relate.
- 2. Name and address of the applicant.
- 3. Name and address of the Industrial undertaking.
- 4. If possible at this stage, indicate-
  - (a) whether it is proposed to be undertaken by proprietors, partners, private limited or public limited company.
  - (b) Names of proprietors, partners, or Board of Directors and their addresses.
  - (c) Name and address of the Managing agents, if any.
  - (d) Obligations, rights and privileges of Managing Agents in the constitution and working of the Company.
  - (e) How is it proposed to finance the undertaking?
  - (f) Is any foreign collaboration (whether in the form of royalty or consultancy agreement) or investment envisaged? If so, the extent and nature of such collaboration. Is it proposed to find foreign exchange for import of capital equipment in any other way?

5.	Proposed	location	οf	the	factory.	

Tehsil ...... District ...... State ......

6. Lines of manufacture proposed:
Name of product
and/bye product.

\*Proposed (Annual) - installed capacity.

\*Basis of estimating installed capacity should be clearly stated, viz., whether the operation will be continuous or by shifts and the number of shift days assessed for estimating the annual capacity.

# 7. Manufacturing Programme:

(a) Existing activities, if any:

01	T C	Existing	capacity	Currer	nt Annual P	rodn.
Sl. No.	Items of production	Quantity/ tonnage		Quanti tonn		alue
• • • • • • • • • • • • • • • • • • • •	1. 2. 3. etc.					
		acturing pr n respect o tion is mad	f which			
	T	Ann ial c	abacity	Estimated An	nual Prodn	
Sl. No.	Item of manufacture	Quantity/ tonnage	Value	Q santity/ tonnage	Value	value of unit pro- duct
8	1. 2. 3. etc. (c) Forecast of implementat . Phased manufacture.	ion of the p		3		
	7(b) above, i	any:	Annual Turn	over Percents	age by value	of impor
Year	Item of product	ion Q11	ntity/ nage	ted c im ro	ontent (i.e. rted raw ma ponents.	total of al
	Ist Year	स्	यमेव जयते			
	(i) (ii) (iii) (iv) 2nd Year (i)					
	(ii) (iii) (iv) 3rd Year					
0	-	a sheet, if				
9.	Estimated require materials:	ments of m	ain raw			
Name o		if the	Quantity re		_	imated alue

- i0. Requirements of capital equipment. Total value of equipment required:
  - (i) Imported:

Please give name of the countries in the order of preference.

- (li) Indigenous:
- Indicate your requirements of rail transport for movement of raw materials and finished products in the proforma attached.
- 12. Water Supply:
  - (a) Will it be ample for requirements of:
    - (1) factory, and
    - (2) township or staff quarters?. (state approximate quantity).
  - (b) Will it be drawn from public supply?
  - (c) Effluent problems, if any.
- 13. Power Supply:
  - (a) Total requirements proposed to be drawn from:
    - (1) own generating station
    - (2) public supply.
  - (b) In case of own station give brief particulars of plant in operation.
- If possible indicate your requirements of coal/coke in the proforma attached.
- 15. If possible indicate the estimated requirements of fixed assets i.e. investment in land, buildings and machinery.

land-

Building-

Machinery-

Note.—Where the land and/or building is rented, the capitalised value of the same may be given.

16. Give a brief description of the processes involved in the manufacture and factors favourable for their adoption.

Liace	
Date	

D1 - --

Signature of Applicant.

ANNEXURE IV (Contd.)

Statement showing the Rail Transport Requirements of M/s.

Statement showing the Rail Transport Requirement of Raw Materials and Finished Goods for the manufacture of

	dity re-	products in	Quartines of national products in tons, re-	Inequectionwise breakdown of traffic	nwise ftraffic	Name of each raw	Source of supply of	Quantity of materials	of each raw	Quantity of each raw Brief indications of materials special facilities if	Any other in- formation
station 7ill	be manu- factured	by rail year by year during the next few years	ar by year he next few	a daily basis indicat- ing important stations areas to which the	ndicat- nt station	, ,	, pu	Annual move- ment	Daily move- ment	try patching & receiving stations including types of wagons.	relevant to railway transport
		Annual move- ment (tons)	Daily average (tons)	place			1443	(enor)	(cons)		ments.
I	73	3	4	8		9	7	∞ 	6	OI	
Exact location of the un-	İ	Grade, Cl	Statement si	ANNEXURE IV (Cont.)  Statement showing the requirements of Coal/Coke of M/s.  Grade, Class, etc. of Quantity of coal/coke Source of supply ind	NEXUR uirements oal/coke	E 14	IV (Cont.) of Coal/Coke of M/s. Source of supply indicat-		Date of commencement	ment Type of hurning	Fine
dertaking & the Railway Station which will serve it	ilway rve it	coal/coke required Coal Cok	required Coke	required per month	month		ing station and areas		of the works		t used
I		70	3	4	5		9		7		80

# ANNEXURE IV

# FORM OF FINAL APPLICATION FOR INDUSTRIAL LICENCE

To be addressed with 10 spare copies to the Co-ordination and Licensing Progress Section, Ministry of Industry, Udyog Bhavan, New Delhi.

- Serial No. allotted to the application for industrial licence.
- 2. Name of the Scheduled Industry or Industries to which the articles proposed to be manufactured relate.
- 3. Name and address of the applicant.
- 4. Name and address of the industrial undertaking.
- 5. Whether it is proposed to be undertaken by proprietors, partners, private limited or public limited company.
- 6. Names of proprietors, partners, or Board of Directors and their addresses.
- 7. Name and address of the Managing Agent, if any.
- Obligations, rights and privileges of Managing Agents in the constitution and working of the Company
- How is it proposed to finance the undertaking?
- 10. Proposed location of the factory:
  Tehsil ..... District ...

..... State ......

11. Lines of manufacture proposed:
Name of product
and bye-product.

\*Proposed (Annual) installed capacity.

\*Basis of estimating installed capacity should be clearly stated, viz., whether the operation will be continuous or by shifts and the number of shift days assessed for estimating the annual capacity.

- 12. Manufacturing Programme:
  - (a) Existing activities, if any:

SI.	items of	Existing capac	ity	Current Annual Production	n
No.	production	Quantity/ tonnage	Value	Quantity/ Tonnage Val	- 1e

- 1.
- 2.
- 3.
- etc.
- (b) Final manufacturing programme for items in respect of which this application is made.

Sl. No. r	Item of nanufacture	Quantity/ tonnage	Value	Quantity/ tonnage	Value	value of unit pro- duct
SI	from of	Annual cap	acit <b>y</b>	Estimated annu	al production	C.I.F.

- 1.
- 2.
- 3.
- etc.

13. Phased manufacturing programme for 12(b) above, if any:

	Y	Annual Turnover	Percentage by value of imported
Year	Item of production	Quantity/Value tonnage	Percentage by value of imported content (i. e. total of all imported raw materials and components)
1st	Year		
	'(i)		
	(ii)		
	(III)		
ſ	(iv)		
2:	nd Year		
	<b>(i)</b>		
	(ii)		
!	(iii)		
!	(iv)		
3	rd Year		
	etc. (Atta	ch a sheet, if necess	ialy)
14. 1	Estimated requ materials.	irements of main r	aw

Name of raw Material Whether indigenous or imported; if the latter, the country of origin Quantity required per year. Estimated value

- Requirements of capital equipment, Total value of equipment required:
  - (i) Imported:

Please give name of the countries in the order of preference.

- (ii) Indigenous
- 16. Indicate your requirements of rail transport for movement of raw materials and finished products in the proforma attached.
- 17. Water Supply:
  - (a) Will it be ample for requirements of:
    - (1) factory, and
    - (2) township or staff quarters?
      (State approximate quantity)
  - (b) Will it be drawn from public supply?
  - (c) Effluent problems, if any.
- 18. Power supply:
  - (a) Total requirements proposed to be drawn from:
    - (1) own generating station.
    - (2) public supply.
- Indicate the requirements of coal/coke in the proforma attached.

20. Indicate the estimated requirements of fixed assets i.e. investment in land, building and machinery—

Land Building Machinery

Note.—Where the land and/or building is rented, the capitalised value of the same may be given.

21. Give a brief description of the processes involved in the manufacture and factors favourable for their adoption.



# ANNEXURE IV

Statement showing the Rail Transport Requirements of Mis.

for the movement of Raw Materials and Finished Goods for the manufacture of

Any other informa-	levant to railway transport	ments	11			
Brief indications of special facilities if	despatching streetering streetering stations including spl. types of	o de como de c	01			
Quantity of each raw material	Daily move- ment	(atton)	6			
Quantity	Annual move- ment	(\$101)				
Source of supply of	material in Amaterial in Adicating in Stations and its stations are also stations are also stations and its stations are also stations are also stations and its stations are also s	مادها دها	7		ΙΛ	8
Name of each raw	III ACCITATION		9	 7	AN NEXURE IV	Coke of M
The direction wise breakdown of traffic	as stated in con. 3 on daily basis indicating important stations areas to which the		8	मं	N NA	Statement showing the requirments of ${\sf Coal}/{\sf Coke}$ of $M/s$
ties of finished	ar by year an ext few	Annual Dally move-average ment (tons)	4			ement showing
Quantitie products	duned to by rail ye during th years	Annual move- ment (tons)	3			Stat
Commo- dity re-	duned of be manu factured	•	2			
Exact location of the under-	railway station which will serve it		1			

Type of burning equip- ment used.		<b>∞</b>	
Date of commencement of the works		7	
Busct location of the un-Grade, Glass, etc. of Quantity of coal/coke Source of supply indicat-Date of commencement derading & the Ry. Stn. coal/coke read. required per month ing stations and areas. of the works		9	
f coal/coke	Coke	\$	
Quantity or required p	Coke Coal	*	
ass, etc. of te reqd.	Coke	3	
Grade, Ci	Coal	8	
Exact location of the undertaking & the Rly. Stn.	WINCH WILL SCITC II	<b>7</b>	

# ANNEXURE IV

Form of application for import of Capital Goods

Particulars of applicant:

i. Name:

### Full Postal Address

- (i) House/Shop No.
- (ii) Name of Street/Road
- (iii) Name of Locality
- (iv) Name of State.
  Telegraphic Address:
- Registration No. allotted to Incometax Verification Certificate or Exemption therefrom by the licensing authorities.
- 3. Details of Treasury or Bank
  Certificate under which the
  requisite fee prescribed under
  Commerce and Industry Ministry's
  Order No. 17/55, dated the 7th
  December, 1955 has been deposited.
  (Treasury Receipt to be
  attached).
- Country or countries in the order of preference from which goods are to be shipped and the manner of financing the import.
- (i) Name and address of the manufacturers, if practicable.
  - (ii) If practicable, the name and address of supplier merchant on whom the order has been placed. State number and date of order and of its acceptance if any, (evidence of firm contract where made should be furnished).
- 6. Detailed description of goods (with number or quantity). For Machine Tools Falling under Part VI of the ITC Schedule the following particulars may be given in a separate Statement:
  - (i) S. No.
  - (ii) Quantity along with full specification of machine tools and electric motors, etc.
  - (iii) Manufacturer's name and address.
  - (iv) Code No. as appearing in the Code-Book-Styled "Classification of Machine Tool types."
  - (v) Country of origin.
  - (vi) Supplier's name and address.
  - (vii) C.I.F. value.

- Indicate in serial order the nomenclature of each individual item of capital goods required specifying under each of the items the following particulars.
  - (i) Broad spesification of the item.
  - (ii) Quantity required.
  - (iii) Individual total CIF value against each serial No.
  - (iv) Part and serial No. in the schedule to the Government of India late Ministry of Commerce and Industry Order No. 17/55, dated 7th December 1955 (Vide Parts I, II, III, IV, V and VI.)
- 8. Total value of goods C I.F. (in Rupees).
- 9. Do the goods covered by this application, form a complete order or only an instalment? If the latter, state:
  - (a) the extent of the instalment.
  - (b) the extent of the full order.
  - (c) the date of any connected application for import licences, and No. and date, of any licence issued.
- 10. Have you made enquiries from all indigenous suppliers of items included in the application, mentioned in the Directorate General of Technical Development's published lists as suppliers of items.
- Note.—Copies of correspondence with suppliers to be enclosed. Where no replies have been received within one month this fact may also be mentioned.
- is (a) second hand and reconditioned or (b) new. If (a) proposed certificate from the suppliers of a firm of consulting engineers should always be furnished to indicate the age of the machinery, its present condition and probable unexpired life.
- 12. In cases where the value of application for capital goods/H.E.P. exceeds Rs. 5 lakhs or where the value is below Rs. 5 lakhs but the total imports of the scheme as a whole exceed Rs. 5 lakhs, the following information should be supplied in quintuplicate:—
  - (a) If a phased manufacturing programme has been approved with respect to the undertaking, the specific phase covered by the application.

- (b) Value of plant and machinery already imported in connection with the scheme.
- (c) If Capital Goods/Heavy Electrical Plant licences are held by the undertaking and are yet to be fully utilised, the date, number and value of such licences and the manner in which unutilised portions are proposed to be utilised.
- (d) Details regarding deferred payment/foreign capital investment arrangements contemplated or other financing arrangements proposed for financing the cost of imports.
- 13. Full details of the enclosures attached with the application (every copy of the document should be marked as a true copy and signed beneath by the applicant).

I/We hereby declare that the above statements are true ond correct to the best of my/our knowledge and belief. I/We fully understand that any licence granted to me/us on the basis of the statements furnished is liable to cancellation in addition to any other penalty that the Government may impose having regard to the circumstances of the case if it is found that any of the statement of facts therein are incorrect and false.

Date	Signature
	Name in Block Letters
	Designation
	Residential Address

- (1) Applicants are advised to read the licensing instructions for the current period carefully before filling up the Application Form for import licence.
- (2) The information required against the various items in the form should be given legibly and complete in all details to avoid correspondence and delay in the disposal of their applications. The licensing authorities have discretion to reject an application if the application is not complete in all respects.
- (3) Documentary evidence as asked for should be sent along with the application
- (4) Any special reasons in support of the application may, if necessary be explained in a covering letter attached to the application.
- (5) Application should be signed by the proprietor, partner or managing director of the firm or by any person duly authorised to sign any legal declaration on behalf of the firm. The position held by the person signing the application should be clearly stated.
- (6) Any applicant supplying false or incorrect information may be liable to have his licence cancelled and in addition may be debarred from the grant of an import licence in future.

# ANNEXURE V

### Form of the letter of intent.

 ment are prepared to issue an industrial linence to you subject to your finalising arrangements in respect of the following, to the satisfaction of the Government:

- 1.
- 2. 3.
- etc.
- 2. You are requested to send within a date of issue of this letter (1) proposals application for import of capital goods (3) capital, with 10 spare copies of each of these applications to the issue of capital, with 10 spare copies of each of these applications. In the Coordination and Licensing Progress Section of the Ministry of industry:
- 3. This 'letter of intent' is valid for a period of ...... months and, in the event of your not submitting applications/proposals relating to the conditions mentioned above within the stipulated period, this letter of intent will automatically lapse.

Under Secretary to the Government of India.

\*Strike out whichever is not applicable. Copy to:

- 1.
- 2.
- 3.
- 4.



# GOVERNMENT OF INDIA

# MINISTRY OF INDUSTRIES



# Final Report of the Industries Development Procedures Committee

# Central Government

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- Sham Singh, B.Sc. (Ag.), Ph.D. (Lond.), Deputy Agricultural Commissioner (Fruit Development)
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- G. N. Bhatia, B.Sc. (Ag.), (Hons.) Assoc. I.A.R.I., Deputy Locust Entomologist: locust investigations and aerial operations against crop pests and diseases
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- Y. K. Murthy, B.Sc., D.M. II Grade, I.E., Agricultural Engineer: designing types and maintenance schedules of plant protection equipment
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- M. D. Nandkeolyar, M.Sc. (Ag.), Superintendent (Botanical Sub Station, Pusa, Bihar): breeding of Brassica, tomato and some other crops
- Y. M. Upadhyaya, B.Sc. (Hons.), Ph.D. (Syd.), Assoc. I.A.R.I., Assistant Wheat Breeder (Botanical Sub Station, Pusa, Bihar): breeding of wheat for the north-eastern tract of India

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- V. K. Srinivasan, M.Sc., Ph.D. Assistant Wheat Breeder (Wheat Breeding Sub Station, Wellington, Nilgiris, Madras State): breeding of dicoccum and aestivum wheats for Southern India
- M. G. Joshi, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Botanist (Botanical Sub Station, Pusa, Bihar): breeding of essential oil yielding spice plants, e.g. coriander, fennel, cumin
- L. M. Jeswani, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Botanist (Jamnagar, Bombay State): breeding of essential oil yielding spice plants, e.g., coriander, fennel, cumin
- R. N. Mukerjee, B.Sc. (Hons.), M.Sc. (Bot.), Assistant Physiologist: use of radio isotopes in cytochemical and plant physiological studies
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  - B. Ramamoorthy, M.Sc., A.R.I.C., D. Phil., Assoc. I.A.R.I., *Physical Chemist:* spectro-chemistry of soil colour, clay-humus complexes and fertility, salinity and alkalinity
  - Y. V. Kathavate, M.Sc., Ph.D., Experimental Physicist: spectro-chemistry, applied to soils and plants for micro-element studies
  - W. V. B. Sundara Rao, M.Sc. (Hons.). Ph.D., Assoc. I.A.R.I., Soil.

- organisms, bacterization of soils, micro-biological methods of measuring mineral deficiencies in soil, nitrogen fixation and nitrification in soils; studies on effect of micronutrients on microbiological activities
- T. D. Biswas, M.Sc., D. Phil., Soil Scientist: soils genesis and soil survey—black and associated soils; run-off and soil loss in soil conservation; trace elements in soils; paper chromatography
- M. A. Idnani, B.Sc., Assoc. I.A.R.I., Fertilizer Technologist: fertilizer technology studies of physical and chemical conditions under storage; use of organic manures, composts and artificial fertilizers; utilization of waste materials like bones, hide, hair, etc., as manures; use of cattle dung for dual use as combustible gas and manure
- B. T. Mulwani, B.Sc. (Ag.), Ph.D. (Lond.), D.I.C., Assistant Soil Physicist: soil studies with reference to their physical properties and moisture relations
- A. R. S. Kartha, M.Sc., Ph.D., Assistant Organic Chemist: pesticides from indigenous materials and methods for determination of quality of oil in small samples of oil seeds
- A. Sen, M.Sc., Ph.D., Assoc. I.A.R.I., Assistant Soil Microbiologist: microbiological activities in relation to soil structure development; Azotobacter in acid soils; activation of Azotobacter with and without cellulose decomposing organisms; studies on rhizobium of wild leguminous plants
- B. V. Subbiah, M.Sc., Ph.D., Assistant Soil Chemist: soil fertility, soil testing and agricultural chemistry with special reference to determination of manurial requirements of soils and crops
- B. M. Lal, M.Sc., Ph.D., Assistant Biochemist: food processing, animal nutrition; quality of crops as affected by climatic, soil and manurial conditions; role and uptake of trace elements in plants and soils
- S. C. Mehta, M.Sc., Assistant Physicist: studies in clays and viruses using electronmicroscope
- S. C. Das, M.Sc., Ph.D., D.Phil., Assistant Professor of Physical Chemistry: electrochemistry of soils and clays; X-ray investigation of the structure of clay minerals and identification of clays in soils; surface studies of soils and clays
- R. S. Dewan, M.Sc. (Tech.), Assistant Chemist: development of pesticides and problems related to pesticide residues; studies on soil organic matter; problems related to work on oils and fats
- A. B. Ghosh, M.Sc., Assistant Soil Chemist: soil fertility investigations on long-term manuring and cropping conditions; radio tracer investigations for assessment of soil fertility; use of new nitrogenous and phosphatic fertilizers for agricultural research and development

- V. Iswaran, M.Sc., Ph.D., Lecturer in Agricultural Chemistry: studies on Azotobacter
- R. K. Asthana, M.Sc., Assistant Soil Chemist: soil testing
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- H. G. Gopala Rao, M.Sc., Assistant Soil Chemist: soil studies
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#### DIVISION OF ENTOMOLOGY

- E. S. Narayanan, M.A., Ph.D. (Lond.), D.I.C., F.R.E.S., F.E.S.I., F.A.Sc., F.N.I., *Head:* fundamental studies in insect parasitism; biological control of insect pests; taxonomy of parasitic hymenoptera and predatory mites, breeding of pedigree queens of honey bees
- S. Pradhan, B.Sc. (Hons.), M.Sc., Ph.D. (Lond.), D.Sc., F.R.E.S., F.E.S.I., *Professor of Entomology:* Insect ecology and toxicology
- M. G. Ramdas Menon, B.Sc., Ph.D., F.R.E.S., F.E.S.I., Systematic Entomologist: insect taxonomy
- N. C. Pant, M.Sc. (Ag.), Ph.D. (Lond.), D.I.C., Insect Physiologist: physiology of insects; insect microbiology and insect resistance in plants
- Rattan Lal, B.Sc. (Hons.), M.Sc. (Hons.), Ph.D., Assoc. I.A.R.I., F.E.S.I., F.R.E.S., F.A.Z., *Entomologist*: use of radioactive isotopes in entomological problems

- H. N. Batra, B.Sc. (Ag.), Assoc. I.A.R.I., F.E.S.I., Entomologist (Seed Testing): seed testing experiments in the laboratory and the field
- T. V. Venkatraman, M.Sc., Ph.D., Assoc. I.A.R.I., F.R.E.S., F.A.Sc., Assistant Ecologist: ecology of insect pests and parasites
- S. M. Chatterjee, M.Sc., Ph.D., Assoc. I.A.R.I., F.R.E.S., F.E.S.I., F.A.Z., Assistant Systematic Entomologist: insect taxonomy
- P. B. Mookerjee, B.Sc., Assoc. I.A.R.I., F.E.S.I., Assistant Entomologist (Storage Pest): storage pest ecology
- M. G. Jotwani, B.Sc., Assoc. I.A.R.I., Assistant Entomologist (Insecticides): insect toxicology and certification of insecticides
- B. R. Subba Rao, B.Sc. (Hons.), Assoc. I.A.R.I., Ph.D., F.A.Z., F.A.Sc., Assistant Professor of Entomology: survey of beneficial parasites of the Indian Union; taxonomy of chalcidoidea and biological control of insect pests
- H. J. Bhambhani, B.Sc., Assoc. I.A.R.I., Ph.D. (Lond.), Assistant Entomologist (Termite) sinsect toxicology, biology and control of termites
- Y. P. Beri, M. Agril. Sc. (Entomology) (Queensland), Assistant Entomologist: toxicity hazards
- P. D. Srivastava, M.Sc., D.Phil., Assistant Toxicologist (Locust): locust toxicology and physiology
- P. L. Sharma, M.Sc. (Ag.), Assistant Entomologist (Bee-Keeping): ecology and raising of pedigree stocks of honey bees

#### DIVISION OF HORTICULTURE

- G. S. Randhawa, M.Sc., M.S.A. (Toronto), Ph.D. (Mich.), F.R.H.S. (Lond.), *Professor*: stock-scion relationship studies; breeding and cytogenetical studies in sub-tropical fruits; plant regulators
- B. Choudhury, B.Sc. (Ag.), Ph.D. (Melbourne), P.G. (I.A.R.I.), F.R.H.S. (Lond.), Vegetable Breeder: teaching and research; breeding and genetical studies for the improvement of different vegetable crops, studies on the effects of different plant regulators on different vegetable crops
- N. L. Jain, M.Sc. (Tech.), Fruit Preservation Officer: fruit and vegetable preservation
- Jagpal Singh, M.Sc. (Ag.), Ph.D. (Mich.), Assistant Professor of Horticulture: research and teaching; plant regulators, fruit breeding, propagation and rootstock studies in tropical fruit crops
- Romesh Chandra, B.Sc. (Ag.), Garden Superintendent: ornamental gardening
- P. M. Bhagchandani, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Vegetable Breeder: vegetable breeding
- J. C. Anand, M.Sc. (Tech.), Assistant Fruit Preservation Officer: fruit and vegetable preservation

- N. Nath, M.Sc. (Hort.), Assoc. I.A.R.I., Lecturer in Horticulture: cytogenetics in fruits
- Ranjit Singh, M.Sc. (Ag.), Assoc. I.A.R.I. Assistant Professor of Horticulture: fruit breeding, systematic pomology

#### DIVISION OF MYCOLOGY

- R. S. Vasudeva, Ph.D. (Lond.), D.Sc. (Lond.), D.I.C., F.N.I., Joint Director and Head: physiology of parasitism, antibiotics, diseases of cotton, plant viruses
- B. L. Chona, Ph.D. (Lond.), D.I.C. (Lond.), Mycologist: sugarcane diseases, taxonomy of fungi, physiology of parasitism
- R. Prasada, D.Sc., Mycologist: wheat and linseed rusts
- P. M. Varma, M.Sc., Virus Entomologist: plant viruses with special reference to insect vectors and virus vector relationship
- S. P. Capoor, M.Sc., Ph.D. (Lond.), Virus Pathologist: virus diseases of citrus, plantation crops and vegetables, purification of plant viruses
- M. K. Hingorani, B.Sc., Ph.D. (Minn.), Assoc. I.A.R.I., Plant Bacteriologist: bacterial diseases of plants and bacteriophages
- S. P. Raychaudhuri, M.Sc., D.Phill., F.L.S., Assoc. I.A.R.I., Virus Pathologist: plant viruses, particularly temperate region crops
- D. Suryanarayanan, M.Sc., Ph.D., Plant Pathologist (Seed Testing): seed borne disease of vegetable crops, diseases of millets
- C. V. Subramanian, M.A., Ph.D., D.Sc., F.A.Sc., Professor of Plant Pathology: systematic mycology (Hyphomycetes)
- R. L. Munjal, M.Sc., Assistant Professor of Plant Pathology: taxonomy of deuteromycetes, assessment of losses due to crop diseases, wheat bunts
- T. K. Nariani, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Professor of Plant Pathology: virus diseases of fruit and vegetables
- D. N. Srivastava, B.Sc. (Ag.), Assoc. I.A.R.I., M.S. (Wisc.), Ph.D. (Wisc.), Assistant Professor of Plant Pathology: sugarcane diseases; physiology of fungi
- V. C. Lele, M.Sc., Assistant Mycologist: rust of wheat
- L. M. Joshi, M.Sc., Assistant Mycologist: rusts of wheat and barley
- S. N. Chatterjee, M.Sc., Assoc. I.A.R.I., Virus Entomologist: plant viruses with special reference to insect vectors
- B. S. Bajaj, M.Sc., Assistant Plant Pathologist: sugarcane diseases, physiology of fungi, induced mutation in micro-organisms (use of atomic radiations)
- H. S. Sahambi, M.Sc., Assistant Virus Pathologist: phyllody diseases and virus diseases of oilseed crops
- M. M. Payak, M.Sc., Ph.D., Assistant Mycologist: wheat-rust
- B. B. Nagaich, M.Sc., Ph.D. (Illin.), Assistant Virus Pathologist (Vectors): virus diseases of fruit trees

- Sheodhan Singh, M.Sc., Ph.D. (Minn.), Assistant Mycologist: wheat-rust J. N. Kapoor, M.Sc., Assoc. I.A.R.I. Herbarium Keeper: taxonomy of basidiomycetes and maintenance of herbarium
- Gopal Swarup, M.Sc., Ph.D. (Kans.), Assistant Plant Pathologist: seed borne diseases and plant parasitic nematodes
- D. P. Misra, M.Sc., Assoc. I.A.R.I., Assistant Mycologist: linseed and wheat rust
- J. S. Grewal, M.Sc., Ph.D., Assistant Plant Pathologist: efficacy of fungicides, control of important diseases of cercals and vegetables with the help of fungicides
- M. L. Seth, M.Sc., Assistant Virus Pathologist: virus diseases of plants

#### ALL INDIA SOIL AND LAND USE SURVEY

- S. P. Raychaudhuri, M.Sc., Ph.D., D.Sc. (Cal. and Lond.), Chief Soil Survey Officer: supervisory control of soil and land use survey
- K. V. S. Satyanarayan, B.Sc. (Ag.), Ph.D., Assoc. I.A.R.I., Soil Correlator: correlation of soil and land use survey
- R. S. Murthy, M.Sc., Assistant Soil Conservation Officer: conservation survey for land use
- R. K. Chibber, B.Sc. (Ag.), Assoc. I.A.R.I, Soil Chemist: soil analysis and interpretation
- S. P. Gupta, B.Sc. (Hons.), Assoc. I.A.R.I., Assistant Soil Survey Officer: collection and collation of soil and agronomic data
- P. K. Thomas, B.Sc., Assoc. I.A.R.I., Soil Survey Officer: collection, collation and interpretation of soil and agronomic data
- S. Digar, M.Sc., Dip. in Ag. (Cantab.), Soil Correlator: correlation of soil and land use survey
- J. C. Bhattacharya, M.Sc., Soil Chemist: soil analysis and interpretation
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- S. V. Govindarajan, B.Sc. (Hons.), Ph.D., Soil Correlator: correlation of soil and land use survey
- L.M. Mathur, M.A., B.T., Cartographer: map compilation and cartography
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#### Institute of Agriculture, Anand, Bombay

- M. D. PATEL, M.S. (Cornell), Ph.D. (Wisc.), Director and Principal:
  B. A. College of Agriculture, Anand: animal genetics
- B. M. Patel, B.Sc. (Ag.), M.S., Ph.D., (Wisc.), Research Officer: animal nutrition and dairy science

- R. M. Patel, B.Sc. (Ag.), M.S., Ph.D. (Wisc.), Professor of Agricultural Botany: plant breeding
- A. M. Majumdar, B.Sc. (Ag.), Ph.D. (Nottingham), Professor of Horti-culture: fruit crops
- C. J. Patel, M.Sc. (Ag.), Ph.D. (Wisc.), Professor of Agronomy: agronomy and soils
- U. G. Patel, M.Sc. (Ag.), Ph.D. (Edin.), Research Officer: statistical genetics, animal breeding
- A. S. Patel, M.Sc. (Ag.), Ph.D. (Wales), Research Officer: agricultural botany, grasses
- M. V. Desai, M.Sc. (Ag.), Ph.D. (Iowa), Professor of Plant Pathology: diseases of field crops and mycology
- J. R. Patel, B.Sc. (Ag.), M.S., Ph.D. (Wisc.), Professor of Animal Husbandry: immuno-genetics and animal husbandry
- B. V. Mehta, M.Sc., Ph.D., Professor of Agricultural Chemistry: agricultural chemistry and soil science
- H. K. Patel, B.Sc. (Ag.), Ph.D., (Durham), Professor of Entomology: applied entomology
- N. K. Desai, B. Ag. (Econ.), M.Sc. (Leeds), Professor of Agricultural Economics: dairy economics and farm management
- N. C. Buch, G.B.V.C., M.S., Ph.D. (Wisc.), Professor of Veterinary Science: genetics and dairy science
- S. M. Patel, B.Sc. (Ag.), Ph.D. (Durham), Professor of Agricultural Engineering: farm power and machinery irrigation
- U. R. Patel, M.Sc. (Ag.), Senior Research Assistant: agronomy and breeding of bidi tobacco
- D. P. Patel, B.Sc. (Ag.), Manager, Northcote Cattle Farm: animal breeding
- B. G. Shah, M.Sc. (Biochem.), Assistant Research Officer: Biochemistry
- G. F. Mithuji, B.Sc. (Vety.), Assistant Research Officer: veterinary science
- A. M. Vashi, M.Sc. (Ag.), Farm Manager: tobacco seed multiplication
- P. S. Patel, M.Sc. (Ag.), Senior Research Assistant: animal nutrition
- P. C. Shukla, M.Sc. (Ag.), Senior Research Assistant: animal nutrition
- C. M. Patel, M.Sc. (Ag.), Superintendent, School Farm: agronomy
- V. C. Amin, M.Sc. (Ag.), Supervisor, Milk Scheme, Chharodi
- H. A. Joshi, M.Sc., Lecturer in Agricultural Botany: taxonomy
- B. G. Jaisani, M.Sc. (Ag.), Senior Research Assistant: plant breeding
- R. R. Patel, M.Sc. (Ag.), Lecturer in Agronomy: agronomy
- A. D. Dave, B.Sc. (Ag.), Supervisor: animal production
- A. J. Patel, B.Sc. (Ag.), Senior Research Assistant: diseases of tobacco
- M. H. Patel, M.Sc. (Ag.), Senior Research Assistant, Bajri: smut disease
- H. M. Shah, B.Sc. (Ag.), Senior Research Assistant: diseases of tobacco
- N. M. Parikh, M.Sc., Lecturer in Agricultural Chemistry: agricultural chemistry

- R. T. Dangaruala, B.Sc. (Ag.), Research Assistant: tobacco chemistry
- J. L. Amin, M.Sc. (Ag.), Senior Research Assistant: tobacco chemistry
- C. H. Babria, B.Sc. (Ag.), Research Assistant: agricultural economics and farm management
- Ravjibhai M. Patel, B.Sc. (Ag.), M.S. (Wisc.) Senior Research Assistant: agronomy and horticulture
- I. K. Kothari, M.Sc. (Ag.), Senior Research Assistant: soil physics
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- T. D. Patel, M.Sc. (Ag.), Senior Research Assistant: dairy technology
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- G. J. Patel, M.Sc. (Ag.), Ph.D. (N.C.), Assistant Research Officer: plant genetics and plant breeding
- K. A. Patel, B.Sc., Senior Research Assistant: cytology
- R. A. Patel, M.Sc. (Ag.), Senior Research Assistant: plant breeding
- C. B. Shah, M.Sc. (Ag.), Lecturer: plant physiology
- A. U. Patel, B.Sc. (Ag.) B.T., Senior Research Assistant: agricultural education and journalism
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T. M. Paul, M.Sc., Ph.D., F.R.I.C. (Lond.), A.M. Tech. (I), Research Officer: dairy chemistry

#### DIVISION OF DAIRY BACTERIOLOGY

- A. T. Dudani, Ph.D., Dairy Bacteriologist and Head: dairy bacteriology
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- Kerala Varma, M.Sc., Ph.D., I.D.D., Assistant Dairy Bacteriologist: dairy bacteriology
- K. S. Gunnery, M.Sc., Assistant Research Officer: survey of bacteriological quality of milk supply in Delhi

#### DIVISION OF DAIRY TECHNOLOGY

M. R. Srinivasan, B.Sc. (Hons.), M.A., A.I.I.Sc., Assistant Research Officer: standardisation of an accelerated oxidation test to determine the shelf life of ghee produced, packed and stored under variable conditions

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- S. N. Ray, M.Sc., Ph.D., (Cantab.) Dairy Husbandry Officer and Head: animal husbandry and dairying
- R. S. Singh, G.V.Sc., B.V.Sc., A.H.M.S. (U.S.A), Cattle Officer: animal husbandry

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N. N. Simha, B.E., Dairy Engineer: dairy engineering

#### DAIRY SCIENCE COLLEGE

- Noshir N. Dastur, M.Sc., Ph.D., A.I.I.Sc., Principal and Head of the Division of Dairy Education and Training: dairy education and training
- Sukumar De, M.Sc., I.D.D., Assistant Professor: dairy education and training
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- M. L. Mathur, M.Sc., A.R.I.C., Assoc. I.A.R.I., Ph.D., Research Officer: animal nutrition
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- T. V. R. Pillay, M.Sc., Ph.D., Research Officer: estuarine
- Y. R. Tripathi, D.Sc., Research Officer: lacustrine
- M. P. Motwani, Ph.D., Research Officer: riverine and lacustrine

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- A. V. Natarajan, M.Sc., Assistant Research Officer: zoology
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- S. B. Singh, M.Sc., Assistant Research Officer: weed control
- V. Gopalakrishnan, M.A., Ph.D., Assistant Research Officer: pathology
- B. B. Pakrasi, M.Sc., Assistant Research Officer: estuarine fish farming
- V. Ramchandran, B.Sc., Assistant Research Officer: chemistry

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- A. V. V. Satyanarayana, B.Sc., Technologist
- S. Gopalan Nayar, B.Sc., Technologist
- V. K. Krishna Pillai, M.Sc., Ph.D., Assistant Research Officer
- A. F. D'Mello, M.Sc., Technologist
- P. V. Kamasastri, M.Sc., Assistant Research Officer
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- S. Jones, D.Sc., F.N.G.S., F.A.Sc., F.Z.S.I., Chief Research Officer
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- R. Velappan Nair, M.Sc., F.Z.S.I., Research Officer: fishery survey
- G. Seshappa, M.Sc., Ph.D., Research Officer: fishery biology
- L. B. Pradhan, M.Sc. Research Officer: mackerel
- N. K. Velankar, M.A., Research Officer: chemistry
- S. K. Banerji, M.A., Research Officer: fishery survey
- M. Krishna Menon, M.A., M.Sc., Research Officer: prawns
- T. Tholasilingam, M.Sc., Research Officer: off-shore fisheries
- K. H. Mohamad, M.Sc., Research Officer: off-shore fisheries
- R. Jayaraman, M.A., Assistant Research Officer: biochemistry
- F. Thivy, M.A., L.T., Ph.D., Assistant Research Officer: marine algology
- R. Subrahamanyan, M.Sc., Ph.D., F.R.M.S., F.B.S., F.A.Sc., Assistant Research Officer: algology

- V. Sadasivan, M.A., M.Sc., Assistant Research Officer: sharks and rays
- P. C. George, M.A., Assistant Research Officer: ecology
- R. Viswanathan, M.A., M.Sc., Der-rer-nat, A.R.I.C., Assistant Research Officer: oceanography
- P. R. Sadasivan Tampi, M.Sc., Assistant Research Officer: fish farm
- L. R. Kasturirangan, M.A., M.Sc., L.T., Assitsant Research Officer: marine biology
- S. V. Bapat, M.Sc., Assistant Research Officer: fish embryology
- Samuel V. Job, M.A., Ph.D., Assistant Research Officer: physiology
- G. Venkataraman, M.A., Assistant Research Officer: off-shore fisheries
- M. S. Prabhu, M.Sc., Assistant Research Officer: mackerel, shark and ray
- M. J. George, M.Sc., Assistant Research Officer: prawns
- K. Nagappan Nair, M.Sc., Assistant Research Officer: mollusc
- B. Krishnamurthy, M.Sc., Assistant Research Officer: inshore fishing
- K. V. Sekharan, M.Sc., Assistant Research Officer: sardines
- V. Balan, M.A., Assistant Research Officer: sardines
- M. V. Pai, M.Sc., Assistant Research Officer: off-shore fisheries
- V. Balakrishnan, M.Sc., D.Phil., Assistant Research Officer: off-shore fisheries
- S. Ramamurthy, M.A., M.Sc., Assistant Research Officer: prawns
- P. Vijayaraghavan, M.Sc., Ph.D., Assistant Research Officer: mackerel
- N. Radhakrishnan, M.Sc., Assistant Research Officer: sardines
- K. Venkatanarayana Rao, M.Sc., Assistant Research Officer: mackerel
- M. S. Muthu, M.A., M.Sc., Assistant Research Officer: off-shore fisheries
- B. T. Antonyraja, M.A., M.Sc., Assistant Research Officer: pelagic fisheries
- M. Mydeen Kunju, M.Sc., Assistant Research Officer: prawns
- M. D. K. Kuthalingam, M.Sc., Ph.D., Assistant Research Officer: off-shore fisheries

## Central Potato Research Institute, Simla

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Pushkarnath, M.Sc., Ph.D., Assoc. I.A.R.I., *Director:* botany, plant breeding, genetics and virus pathology

#### SECTION OF BOTANY

- M. L. Khanna, B.Sc. (Ag.), Assoc. I.A.R.I., Botanist: plant breeding Rajat De, M.Sc., Ph.D., Plant Physiologist: plant physiology
- D. Srinivasachar, M.Sc., Ph.D. (Wisc.), Assoc. I.A.R.I., Cytogeneticist: plant breeding, genetics, cytogenetics and cytology
- M. B. Patkar, B.Sc., Assoc. I.A.R.I., Seed Development Officer: seed certification
- Hari Kishore, M.Sc., Assoc. I.A.R.I., Assistant Botanist: plant breeding and genetics

- K. P. Sharma, M.Sc., Assoc. I.A.R.I., Assistant Botanist: plant breeding and genetics
- L. C. Sikka, M.Sc. (Ag.), Assistant Botanist: plant breeding, genetics and biometry
- M. D. Azariah, B.Sc. (Ag.), Assistant Botanist: plant breeding and genetics
- M. J. Deshmukh, M.Sc., Assoc, I.A.R.I., Assistant Botanist: plant breeding P. N. Mathur, M.Sc. (Ag.), Assistant Botanist: plant breeding and genetics

#### SECTION OF AGRONOMY

Mukhtar Singh, M.Sc., Ph.D. (Edin.), Agronomist: manurial, cultural and varietal studies

#### SECTION OF AGRICULTURAL ENGINEERING

D. N. Zutshi, B.Sc. (Ag.), Dip. G.M.T., A.M.I.R., Agricultural Engineer: agricultural engineering

#### SECTION OF CHEMISTRY

K. Swaminathan, B.Sc. (Hons.), Agricultural Chemist: agricultural chemistry

## SECTION OF ENTOMOLOGY

K. K. Nirula, M.Sc., Ph.D., Assoc. I.A.R.I., Agricultural Entomologist: agricultural entomology

#### SECTION OF PLANT PATHOLOGY

- K. D. Paharia, M.Sc., Ph.D., Plant Pathologist: plant pathology
- B. L. Dutt, M.Sc. (Hons.), Assistant Plant Pathologist: mycology and plant pathology

#### Central Rice Research Institute, Cuttack

R. H. Richharia, M.Sc., Ph.D. (Cantab.), F.B.S., F.R.S.A., Director: plant breeding and genetics, agronomy and cytology

#### DIVISION OF BOTANY

- B. Misra, B.Sc. (Ag.), Assoc., I.A.R.I., M.Sc., Geneticist and Botanist: genetics and plant breeding
- S. Sampath, M.A., Cytologist: origin and evolution of cultivated rice; rice cytogenetics
- W. T. Butany, Assoc. I.A.R.I., M.S. (Texas), Assistant Botanist: breeding, genetics and physiology of rice
- S. Govindaswamy, M.Sc., Ph.D., Assistant Botanist: rice, systematics, cytogenetics and breeding

#### DIVISION OF AGRONOMY

- Moti V. Vachhani, Ph.D. (Minn.), Agronomist: rice agronomy
- I. C. Mohapatra, B.Sc. (Hons.), (Ag.), Assoc. I.A.R.I., Research Officer: nutritional, cultural and water requirement of rice crop

## DIVISION OF PATHOLOGY

- S. Y. Padmanabhan, M.A., Assoc., I.A.R.I., Mycologist: diseases of rice and breeding for disease resistance
- D. Ganguly, M.A., D.Phil. (Cal.), Research Officer: diseases of rice
- N. K. Chakrabarti, M.Sc., D.Phil., Research Officer: diseases of rice

#### DIVISION OF ENTOMOLOGY

- P. Israel, M.A., F.R.E.S., *Entomologist:* ecology of rice pests in field and store; botanical insecticides; forecasting pest outbreaks; biological control
- Y. Seshagiri Rao, M.Sc., Research Officer: studies on environmental factors in relation to pest incidence; toxicity of insecticides; insect resistance in rice
- G. Vedamoorthy, M.A., Assoc. I.A.R.I.: systemic insecticides to control pests of rice; toxicology and storage ecology

## DIVISION OF AGRICULTURAL CHEMISTRY

C. T. Abichandani, Ph.D., A.R.I.C., Agricultural Chemist: chemistry of rice soils and rice plant nutrition

#### FARM DIVISION

M. Subbiah Pillai, B.A., B.Sc. (Ag.), Farm Superintendent: rice culture and agronomic practices

#### DIVISION OF STATISTICS

M. P. Jha, M.Sc., Statistician: design of experiments, sampling technique and application of statistics to genetics and plant breeding in rice

# Soil Conservation Research, Demonstration and Training Centre, Kotah

Tel: 147. Grams: SOILCONS JN.

- N. Patnaik, Ph.D., (Missouri), Assoc. I.A.R.I., Soil Conservation Officer Rajbans Dayal, B.Sc. (Ag.), M.S. (Mich.), Assistant Soil Conservation Officer (Ag.)
- O. N. Kaul, B.Sc., M.F. (U.S.A.), Assistant Soil Conservation Officer (Fr.)
- S. K. Gupta, B.Sc., (Agri. Engg.), Assistant Soil Conservation Officer: (Engg.)

# Soil Conservation Research, Demonstration and Training Centre, Ootacamund

Tel: 574. Grams: SOILCONS

S. C. Agrawal, M.Sc., D.D.R., Assistant Soil Conservation Officer (Forestry)

- N. D. Rege, M.Sc., Ph.D. (Chem.), Soil Conservation Officer
- S. Narayanaswamy, Upper Subordinate Engineering (Civil Engg.), Diploma of College of Engineering, Guindy, Madras, Assistant Soil Conservation Officer (Engg.)
- B. Raghunath, S.S.L.C., Licentiate in Civil Engineering, Senior Scientific Assistant (Engg.)
- B. B. Bhattacharya, B.Sc. (Hons.), (Ag.), Senior Scientific Assistant (Lab.)
- S. Seetharaman, B.Sc. (Hons.) (Ag.), Senior Scientific Assistant (Agro.)
- S. Chinnamani, Certificate in Forestry from Rangers' College, Coimbatore, Senior Scientific Assistant (Forestry)

# Soil Conservation Research, Demonstration and Training Centre, Dehra Dun

Tel: 142. Grams: SOILCONS

- J. S. Bali, B.Sc., B.Sc. (Agril. Engg.), Associate Member American Society of Agr. Engineers; Member American Geophysics Union, Soil Conservation Engineer and Officer-in-charge
- S. S. Dalal, B.Sc. (Hons.), Certificate in Forestry from Dehra Dun Forest Rangers' College, Forest Officer
- Balvir Verma, B.Sc. (Hons.), M.Sc. (Hons.) (Physical chem.), Assistant Soil Conservation Officer (Agro.)

# Soil Conservation Research, Demonstration and Training Centre, Cantt. Area, Bellary-1

Tel: 164. Grams: SOILCONS

Krishnamoorthy, B.Sc. (Chem.), B.Sc. (Ag.), Ph.D., Soil Conservation Officer

A. R. Bhaskaran, B.Sc. (Ag.), Assistant Soil Conservation Officer (Agronomy) Shri Mohan, B.Sc. (Agril. Engg.), M.Sc. (Agril. Engg.) (Pb. U.S.A.), A.M., A.S.A.E., Assistant Soil Conservation Officer (Engineering)

# Soil Conservation Research, Demonstration and Training Centre Grams: SOILCONS

- Bhagwan Singh Bhatia, B.Sc. (Ag.), D.R.E., Senior Scientific Assistant (Ag.): research on suitable agronomic practices for conservation of water and soil and also on reclamation of the gullied area in Gujerat
- H. M. Gidwani, B.Sc., Higher Standard Certificate for Rangers' Course, Assistant Soil Conservation Officer (Forests): forestry aspects connected with soil and water conservation

# Soil Conservation Research, Demonstration and Training Centre, Vasad, Bombay

Tamminayana Satyanarayana, B.Sc., B.Tech. (Hons.), Senior Scientific Assistant (Engg.): research in soil and water conservation; engineering

- measures, reclamation of gullied area in Gujerat and water shed studies in the area
- V. Srinivasan, B.Sc. (Ag.), Assistant Soil Conservation Officer (Agronomy): research to evolve suitable agronomic practices to control the soil and water loss by erosion in rayine lands
- Wasudeo Champatrao Bonde, B.Sc. (Ag.), Assoc. I.A.R.I., Senior Scientific Assistant (Groups): studies on soil conservation works, nitrogen and its optimum dose to cotton crop and agronomic practices in minimizing the soil and water loss from the cultivated area
- Manik Chandra Prajapati, B.Sc., Coimbatore Rangers' Course, Senior Scientific Assistant (Forests): research in soil and water conservation and finding out best technique to afforest the gullied areas of Gujerat at Vasad and to determine the best forest species to reclaim the gullies
- Mohanbhai Somabhai Mispy, B.Sc. (Hons.), Junior Scientific Assistant (Laboratory): soil survey and analysis of samples collected from Kotar areas etc., collection of meteorological data; evolving of suitable cropping pattern for the area
- Dave Madhusudan Natwarlal, B.Sc. (Ag.), Junior Scientific Assistant (Agronomy): incharge of agronomical experimental warles, and carrying out suitable agronomic practices for soil and water conservation for the raying land of Gujerat
- K. G. Tejwani, B.Sc. (Hons.), M.Sc., Assoc. I.A.R.I., Ph.D., (Adelaide): Soil Conservation Officer: soil fertility, soil survey, soil chemistry, soil and water conservation
- M. S. Mistry, B.Sc. (Hons.), Senior Scientific Assistant (Laboratory): soil survey and soil fertility
- V. V. Dhruva Narayana, B.Sc., B.Tech. (Hons.), Assistant Soil Conservation Officer (Engineering): research in soil and water conservation with particular reference to control of gully erosion and reclamation of gullied land in Gujerat (engineering aspects)
- T. Satyanarayana, B.Sc., B.Tech. (Hons.), Research Assistant (Engineering): research in soil and water conservation with particular reference to control of gully crosion and reclamation of gullied land in Gujerat (engineering aspects)
- V. Srinivasan, B.Sc. (Ag.), Assistant Soil Conservation Officer (Agronomy): research to evolve suitable agronomical practices to control soil and water losses by crosion in ravine lands
- Wasudeo Champatrao Bonde, B.Sc. (Ag.), Assoc. I.A.R.I., Research Assistant: research to evolve suitable agronomical practices to control soil and water losses by erosion in ravine lands

- Madhusudan Natwarlal Dave, B.Sc. (Ag.), Senior Scientific Assistant (Agronomy): research to evolve suitable agronomical practices to control soil and water losses by erosion in ravine lands
- H. M. Gidwani, B.Sc. (Chem.), D.D.R., research in soil and water conservation to find out the best technique and species to afforest the ravine lands of Gujerat
- Manik Chandra Prajapati, B.Sc., Coimbatore Ranger's Course, Research Assistant (Forests): research in soil and water conservation to find out the best technique and species to afforest the ravine lands of Gujerat Bhagwan Singh, B.Sc. (Ag.), Research Assistant (Agronomy): farm management

#### Indian Statistical Institute, Calcutta

- P. C. Mahalanobis, B.Sc. (Hons.), B.A. (Cantab.), M.A. (Cantab.), D.Sc (Hony.), F.N.I., F.R.S., Founder-Director of the Institute
- J. B. S. Haldane, M.A., LL.D. D.Sc., (Hony.), Hon. F.N.I., F.F.R.S, Research Professor: biometry for twenty years at the University College, London; author of 200 papers and 25 books on scientific subjects; joined Indian Statistical Institute in June 1957 (contributions: biometry covering genetics, zoology, biology, etc.)
- S. H. Haldane, Ph.D. (Lond.), Professor: genetics, zoology
- B. C. Das, M.Sc., Ph.D. (Illin): plant, animal and fish culture, hormone treatment
- S. K. Roy, M.Sc., biological investigations
- S. L. Jain, M.Sc., Ph.D., Vertebrate Fossil Zoologist
- C. Radhakrishan Rao, M.A. (Math., Stat.), Ph.D. (Stat.), (Cantab.), F.N.I., Head of the Division of theoretical Research and Training

#### Indian Veterinary Research Institute, Izatnagar

P. G. Pande, M.Sc., M.R.C.V.S., Director

#### DIVISION OF ANIMAL GENETICS

- P. Bhattacharya, M.Sc., Ph.D., *Head:* direction and research on animal genetics
- S. S. Prabhu, Ph.D., D.Sc., Research Officer (Inheritance)
- S. N. Luktuke, G.V.Sc., Research Officer (Sterility)
- S. Guha, Ph.D., Research Officer (Artificial Insemination)
- Gajjan Singh, G.V.Sc., G.M.V.C., M.Sc. Assistant Research Officer (Artificial Insemination)
- S. V. Chandiramani, B.Sc., (Ag.). M.S., Assistant Research Officer (Genetics)
- D. P. Mukherjee, M.Sc., Ph.D., Assistant Research Officer (Training) Prakash Narain Srivastava, M.Sc., Assistant Research Officer (Hormones)

- Prem Narain, M.Sc., Assistant Research Officer: (Inheritance)
- B. C. Joshi, B.V.Sc. & A.H., Assistant Research Officer: (Climatology)
- Chet Ram, B.A., L.V.P., Assistant Research Officer: (Immunogenetics)
- S. N. Chatterjee, G.V.Sc., Assistant Research Officer: (Sterilization)
- P. G. Nair, B.Sc., G.M.V.C., B.V.Sc., M.Sc., Ph.D., Assistant Research Officer: Skin Studies
- S. B. Goswamin, M.Sc., (Ag.), Ph.D., Assistant Research Officer: reproductive physiology

## DIVISION OF ANIMAL NUTRITION

- V. Mahadevan, M.A., D.Sc., F.R.I.C., Head: direction and research on animal nutrition
- D. N. Mullick, M.Sc., Ph.D., Research Officer: physiology
- R. Mukherjee, M.S., Ph.D., Research Officer: paddy straw
- B. N. Mujamdar, Ph.D., Assistant Research Officer: biochemistry
- K. Chandra, Ph.D., Assistant Research Officer: biochemistry
- Brahm Dutt, B.A., L.V.P., Assistant Research Officer: trace element
- P. C. Sawhney, M.Sc., Ph.D., Assistant Research Officer: urea
- Kedar Nath, M.Sc., Ph.D., Assistant Research Officer: coordination
- B. C. Joshi, M.Sc., Assistant Research Officer: biochemistry
- M. M. Jayal, B.Sc. (Agric.), Assistant Research Officer: feed Processing

#### DIVISION OF POULTRY RESEARCH

- S. B. V. Rao, L.V.P. (Hons.),: Offg. Head
- S. Bose, M.Sc., Ph.D., Research Officer: farm
- V. N. Murty, M.Sc., Ph.D., Assistant Research Officer: biochemistry
- T. D. Mahadevan, Ph.D., Assistant Research Officer: poultry technology
- H. P. Tandon, L.V.P., Assistant Research Officer: poultry
- R. B. L. Srivastava, B.V.Sc., Assistant Research Officer: egg production
- B. R. Gupta, B.V.Sc., Poultry Officer
- C. M. Sen Gupta, G.V.Sc., Assistant Research Officer: duck breeding

#### DIVISION OF PARASITOLOGY

- H. D. Srivastava, D.Sc., Head: direction and research on animal parasitology
- R. P. Chaudhary, M.Sc., Ph.D., Research Officer: entomology
- B. N. Soni, B.Sc., B.Sc. (Ag.), Research Officer: hides and skins
- B. S. Gill, M.V.Sc., Assistant Research Officer: protozoology
- P. G. Deo, M.Sc., Ph.D., Assistant Research Officer: helminthic aspect
- S. C. Dutt, B.Sc. (Hons.), M.Sc., Ph.D., Assistant Research Officer: helminthiasis
- G. A. Shivnani, G.B.V.C., M.Sc., Ph.D., Assistant Research Officer: entomology

#### DIVISION OF BIOLOGICAL PRODUCTS

- C. Seetharaman, B.Sc., G.M.V.C., B.V.Sc., M.Sc., (Vety.)., Head: biological products
- T. S. Gulrajani, G.B.V.C., Ph.D., Research Officer: vaccine
- B. M. Thakral, L.V.P., Research Officer: sera
- K. C. Sinha, G.B.V.C., Research Officer: rinderpest
- R. N. Seth, L.V.P., Assistant Research Officer: sera
- S. S. Jawa, L.V.P. (Hons.), Assistant Research Officer: veterinary
- S. L. Mukherjee, Assistant Research Officer: bacterial vaccine
- P. Madusudan, B.V.Sc., Assistant Research Officer: virus vaccine
- S. Dutta, L.V.P., B.V.Sc., Ph.D., Assistant Research Officer: L.V. vaccine
- S. S. Nangia, L.V.P., Assistant Research Officer: H. S. and adjuvant vaccine

#### DIVISION OF PATHOLOGY AND BACTERIOLOGY

- M. R. Dhanda, L.V.P., M.S. (Mich.), Dip. Bact. (Lond.), Head: direction and research on animal pathology and bacteriology
- J. M. Lal, L.V.P. (Hons.), Research Officer: tuberculosis and Johne's disease
- G. L. Sharma, L.V.P., M.S., Ph.D., Research Officer: pathology and bacteriology
- P. R. Nilakantan, G.M.V.C., M.Sc., B.V.Sc., Research Officer: bacteriology
- C. F. Matoney, G.B.V.C., Research Officer: disease investigation
- M. S. Menon, G.V.Sc., Research Officer: rinderpest
- Gajendra Singh, B.Sc., L.V.P., Assistant Research Officer: tuberculosis and Johne's disease
- P. C. Gangulee, B.Sc., G.V.Sc., Assistant Research Officer: bacteriology
- S. S. Negi, M.Sc., Ph.D., Assistant Research Officer: biochemistry
- P. K. Ramchandran, B.Sc., M.R.C.V.S., Assistant Research Officer: disease investigation
- H. S. Dhillon, B.A., L.V.P., Assistant Research Officer: rinderpest
- M. S. Jayaraman, G.M.V.C., Assistant Research Officer: anaerobes
- D. R. Uppal, B.A., G.B.V.C., Veterinary Officer
- M. S. Sethi, L.V.P., Assistant Research Officer: mastitis
- B. K. Kathuria, G.B.V.C., Assistant Research Officer: rabies

#### POST-GRADUATE COLLEGE OF ANIMAL SCIENCES

- N. D. Kehar, M.Sc., Sc.D. (John Hopkins), Principal
- K. Sahai, M.Sc., Ph.D., Professor: animal nutrition
- A. K. Pal, M.Sc., Ph.D., Professor: animal physiology
- U. D. Sharma, B.V.Sc., M.Sc., Ph.D., Professor: animal genetics
- Suresh Singh, M.Sc., Ph.D., Professor: veterinary parasitology
- Inder Kumar, M.Sc., Ph.D., Lecturer: animal nutrition

- M. N. Razdan, Lecturer: animal physiology
- P. R. V. Nayadu, B.A. (Hons.), B.V.Sc., Lecturer: animal genetics
- G. Subramanian, M.Sc., Lecturer: veterinary parasitology
- P. C. Sekariah, B.V.Sc., B.Sc., G.B.V.S., Lecturer in Vety. Bacteriology
- S. S. Khera, B.V.Sc., Lecturer in Vety. Pathology

#### Coffee Board

Research Department, Coffee Research Station, Balehonnur, Mysore State

#### DIRECTORATE

B. T. Narayanan, B.A., Ph.D. (Lond.), D.I.C. (Lond.), D.Sc. (Honoris causa), Director and Chief Liaison (Advisory) Officer: training, extension, quality control

#### DIVISION OF BOTANY

- R. L. Narasimhaswamy, M.Sc., *Botanist*: direction and research on coffee breeding, genetics and cytology—vegetative propagation of coffee—farm management
- S. Vishveshwara, M.Sc., Assistant Botanist: cytology and genetics of coffee

#### DIVISION OF CHEMISTRY

- N. G. Chokkanna, M.Sc., D. Phil. (Breslau), Chemist: direction and research on classification and indexing of coffee soils, problems in nutrition of coffee and manurial experiments; processing for quality of coffee
- P. K. Mathew, M.Sc., Assistant Chemist (on O.D. as Assistant Soil Chemist with I.A.R.I., Soil Testing Centre, Balehonnur): soil and plant analysis-field experimentation

#### DIVISION OF ENTOMOLOGY

P. Somasekhar, M.Sc., Ph.D. (Mass.), F.R.E.S., F.Z.S., Entomologist: direction and research on bionomics and control of pests of coffee; insects and nematodes; advisory

#### DIVISION OF MYCOLOGY

K. V. George, M.Sc. (Ag.), *Mycologist:* direction and research on coffee diseases and their control; advisory

#### Tea Board

27 & 29 Brabourne Road, Calcutta-1

Dwariknath Das, M.Sc., Junior Scientific Officer (Department of Applied Chemistry, University of Calcutta): nutritional aspects of tea Amiya K. Hazra, Research Assistant

- Nirmal Kumar Sen, M.Sc., Junior Scientific Officer (Department of Applied Chemistry, University of Calcutta): preparation of soluble tea
- Ramkrishna Ghosh, M.Sc., Research Scholar (Department of Zoology, University of Calcutta): helopeltis of tea
- R. Venkateswara Rao, Senior Scientific Assistant (Central Food Technological Research Institute, Mysore)
- N. Rajasekharan, Junior Scientific Assistant (Central Food Technological Research Institute, Mysore)
- K. Viseswariah, Junior Scientific Assistant
- K. K. Mitra, B.Sc. (Hons.), Ph.D., Dip. Chem. Engg., Assoc. I. I. S., Research Liaison Officer

#### Rubber Board

- K. N. Kaimal, B.A., Rubber Production Commissioner
- T. S. Ramakrishnan, B.A. (Hons.), M.A., Pathologist
- C. K. Narayanan Nair, B.Sc. (Chem.), M.Sc. (Soil), Ph.D. (Ag.), D.R.I.P., Agronomist
- K. M. Joseph, B.A., Botanist
- P. N. Radhakrishnan, B.Sc., B.Sc. (Hons.), Assistant to Pathologist
- C. M. George, M.Sc., Assistant to Agronomist
- V. K. Bhaskaran Nair, M.Sc., Research Assistant (Bot.)

#### **COMMODITY COMMITTEES**

#### Indian Central Arecanut Committee, Kerala

CENTRAL UNIT, KOZHIKODE, KERALA

- B. S. Varadarajan, B.Ag., Secretary: co-ordination and administration of research and development of arecanut
- K. Shamanna, B.A., LL.B., Co-operative Marketing Officer: research and marketing development of arecanut
- S. Suryanarayana Pillai, M.Sc., Statistical Officer: statistical survey
- K. G. Biddappa, B.Sc. (Ag.), Agricultural Officer: manurial trials on arecanut

## CENTRAL ARECANUT RESEARCH STATION, VITTAL .

- G. I. Patel, M.Sc., Ph.D. (Calif.), Arecanut Specialist: genetics, breeding, and different agricultural aspects of arecanut
- G. Mohiyuddin, B.Sc. (Ag.), Agronomist: agronomy of arecanuts

#### REGIONAL ARECANUT RESEARCH STATION, MYSORE

G. V. B. Naidu, B.Sc. (Hons.), Research Officer: arecanut research

# REGIONAL ARECANUT RESEARCH STATION, WEST BENGAL

S. C. Paul, B.Sc., B. (Ag.), Assoc., I.A.R.I. Research Officer: arecanut research and studies on 36 varieties of short duration paddy (Aus.) varieties

- REGIONAL ARECANUT RESEARCH STATION, TRICHUR, KERALA
  - K. P. Padmanabhan Nambiar, B.Sc. (Ag.), D.I.H., Research Officer: arecanut research.
- REGIONAL ARECANUT RESEARCH STATION, PALODE, KERALA Dr. Radha Menon, D.Sc., Research Officer: arecanut research
- REGIONAL ARECANUT RESEARCH STATION, ASSAM
  - S. Roy Choudhury, B.Sc. (Ag.), I.H.D., Research Officer: arecanut research
- ARECANUT TECHNOLOGY UNIT, CENTRAL FOOD TECHNOLOGICAL UNIT, MYSORE
  - V. S. Govindarajan, M.A., M.Sc., Technologist: arecanut research

#### Indian Central Coconut Committee, Ernakulam, Kerala

- CENTRAL COCONUT RESEARCH STATION, KAYANGULAM, DISTRICT QUILON-KERALA
  - K. P. V. Menon, B.Sc., Ph.D. (Lond.), D.I.C., Director and Coconut Pathologist: plant pathology and mycology, direction and research on coconuts
  - E. J. Verghese, M.Sc., Soil Chemist: soil and plant chemistry including analytical chemistry
  - T. A. Davis, B.A., Plant Physiologist: physiology of the coconut palm
  - C. Kurian, M.Sc., Ph.D., F.R.E.S., Entomologist: pest control
  - Srimati K. Radha, Ph.D., Assistant Plant Pathologist: plant pathology and mycology
  - Kumari P. Shanta, M.Sc., Ph.D., Assistant Virus Pathologist: plant pathology including viruses

## CENTRAL COCONUT RESEARCH STATION, KASARAGOD

- K. M. Pandalai, M.Sc., Ph.D., F.R.I.C., Joint Director, Head of Research Station and Incharge of Chemistry Section: direction and research on the various interrelationships of plant nutrients in the coconut palm tissues
- S. R. Gangolly, B.Sc. (Ag.), M.Sc., Cyto-Anatomist and Head of the Cyto-Anatomy Section: direction and research on cytological, anatomical and embryological investigations on coconuts
- M. M. K. Marar, B.Sc. (Ag.), Agronomist and Head of the Agronomy Section: direction and research on fertilizer and cultural experiments; study of green manure crops in relation to the coconut crop
- C. A. Ninan, M.Sc., Ph.D., Botanist and Head of Botany Section

## Indian Central Cotton Committee, Bombay

#### SECRETARIAT

B. L. Sethi, M.Sc., Ph.D. (Wales), Secretary: plant breeding, cytogenetics and economic botany

K. Dharmarajulu, M.Sc., *Deputy Secretary*: mycology, plant pathology, plant anatomy, disease and pest resistance, plant breeding

## The Technological Laboratory, Matunga, Bombay-19

#### DIRECTORATE

R. L. N. Iyengar, D.Sc., F.T.I., *Director:* cotton technology, textile physics, fibre structure and development, designing instruments, ginning

#### PHYSICS SECTION

- V. Sundaram, M.Sc., Ph.D., A.R.I.C., Senior Research Officer: physical chemistry, X-rays, fibre-technology
- Jai Prakash, M.Sc., Junior Research Officer: textile physics, fibre technology
- N. Balasubramanian, B.Sc., B.Sc. (Tech.), Junior Research Officer: textile physics, yarn evenness
- V. G. Munshi, M.Sc.: physics and fibre technology

#### MICROSCOPY SECTION

S. M. Betrabet, M.Sc., Ph.D., Junior Research Officer: microscopy, fibre structure

#### SPINNING SECTION

V. V. Gupte, B.Sc. (Tech.) (Manch.), B.Sc., Spinning Master: spinning technology, designing machinery

## STATISTICAL SECTION

- V. Venkataraman, M.A., Junior Research Officer: application of statistics in textile research
- SEA ISLAND COTTON DEVELOPMENT AND IMPROVEMENT SCHEME, TRICHUR, KERALA
  - N. Kesava Iyengar, M.A., M.Sc. (Lond.), Sea Island Cotton Development Officer: plant breeding, genetics and cytogenetics
  - V. Ramaswami Mudaliar, B.A., Assistant Sea Island Cotton Development Officer: plant breeding and genetics
  - K. I. James, B.Sc. (Ag.), Survey Officer: plant breeding

## INSTITUTE OF PLANT INDUSTRY, INDORE, MADHYA PRADESH

- Bholanath, M.Sc., *Director:* genetics and plant breeding on cotton, rice and sorghum
- K. M. Samant, M.Sc., Ph.D., Bio-chemist: scheme on pre-soaking seeds in (nutritional) salts
- J. L. Merh, Plant Pathologist: mycology and plant pathology
- V. B. Sahasrabudhe, M.Sc., Statistician: planning analysis and interpretation of agronomic and plant breeding investigations, sample surveys

- D. Ganesan, M.A., M.Sc.: Plant breeding, genetics and cytology Sardar Singh Verma, B.Sc., Assoc., I.A.R.I., M.Sc. (Illin.), Agronomist: agronomic research
- J. G. Bhatt, M.Sc., Biochemist: biochemical and physiological research

# Indian Central Jute Committee, Calcutta

#### DIRECTORATE

B. C. Kundu, M.A., Ph.D. (Leeds), F.L.S., F.N.I., *Director:* anatomy, breeding, cytogenetics and agronomical investigation on jute and other fibre plants

#### AGRONOMY SECTION

- B. K. Das, B.Sc. (Ag.), Agronomist: cultural, manurial and rotational experiments on jute and other crops coming in sequence
- K. L. Gurnani, B.Ag., Post-Graduate (I.A.R.I.), M.S. (Texas), Extension Agronomist: improved methods of jute cultivation in cultivators' fields; agro-economic survey

#### BREEDING AND GENETICS SECTION

B. Das Gupta, M.Sc., Botanist: breeding and genetics of jute and allied bast fibre plants

#### CYTOGENETICS SECTION

R. S. Sandhu, M.Sc., Ph.D (Minn.), Assistant Cytogeneticist: cytogenetical investigations and X-ray studies in jute and other fibre plants

# PHYSIOLOGY SECTION

B. K. Kar, M.Sc., Ph.D. (Leipzig), *Physiologist:* vernalization, photoperiodic effects and physiological studies on jute, kenaf and roselle

#### AGRICULTURAL CHEMISTRY SECTION

M. K. Mukherjee, M.Sc., Ph.D., F.N.A.Sc., F.L.C., Chemist: physiochemical, chemical and microbiological studies on jute and other bast fibre crops

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- S. G. Misra, M.Sc., D.Phil., Assistant Professor of Chemistry: studies in phosphates
- G. P. Ghosh, M.Sc., Research Scholar: studies in complex compounds of phosphoric and other acids and their salts
- S. R. Hasan, M.Sc., Research Scholar: photochemical reactions
- P. N. Singh, M.Sc., Research Scholar: studies in alkali soils
- G. C. Shukla, M.Sc., Research Scholar: phosphates in nitrogen fixation
- N. K. Banerji, M.Sc., Research Scholar: properties of phosphates in nitrogen fixation
- P. S. B. Naidu, M.Sc., Research Scholar: studies in yeasts
- V. P. Gupta, M.Sc., Research Scholar: influence of light and phosphates in the slow oxidation of organic matter
- G. N. Pant, M.Sc., Research Scholar: physico-chemical investigations in phosphates

Miss Vimla Yadav, M.Sc., Research Scholar: studies in yeasts

Miss Nandita Mazumdar, M.Sc., studies in basic slags and rock phosphates

- J. Sanyal, M.Sc., Research Scholar: influence of light on nitrogen changes Gulab Singh, M.Sc., Research Scholar: studies in the influence of light in nitrogen changes in decomposing organic matter
- R. G. Chatterji, M.Sc., Research Scholar: studies in colloids

#### ANDHRA UNIVERSITY

# Government College of Agriculture, Bapatla

T. V. Reddy, M.Sc. (Ag.), P.G.A. (U.S.A.), *Principal:* plant breeding and genetics, millets, fodder grasses and legumes

#### DIVISION OF AGRONOMY

- M. K. Adeni, B.Sc. (Ag.), P.G.A. (U.S.A.), Headqrs. Dep. Director Agric. (Extension): agronomy and extension education
- I. S. Rao, B.Sc. (Ag.), Lecturer in Agronomy
- B. Narasimham, M.Sc. (Ag.), D.I.H., Lecturer in Horticulture: horticulture

### DIVISION OF AGRICULTURAL ECONOMICS

I. V. Parthasarathy, M.A.B.T., *Head*: agricultural economics, cooperation and farm economics

# DIVISION OF BOTANY

- B. A. Naidu, M.A., M.Sc., F.B.S., Head
- T. Lohidas, B.Sc., Assistant Lecturer: agricultural botany

# DIVISION OF ENTOMOLOGY

- N. R. Rao, M.Sc. (Ag.), F.R.E.S., *Head:* agricultural entomology and agricultural zoology
- A. Perraji, M.Sc. (Ag.), Assistant Lecturer: agricultural entomology and agricultural zoology

#### DIVISION OF CHEMISTRY

- V. V. K. Sastry, M.Sc., I.A.R.I., Head: agricultural chemistry
- D. N. Rao, B.A., B.Sc. (Ag.), Lecturer: agricultural chemistry
- B. A. Rao, M.Sc., Lecturer: agricultural chemistry and analytical chemistry

## DIVISION OF MYCOLOGY

P. G. Rao, B.Sc. (Ag.), Head: plant pathology

## ANNAMALAI UNIVERSITY

# Agricultural College

- G. Rangaswami, B.Sc. (Ag.), Assoc. I.A.R.I., Ph.D. (Rutgers), Prof. and Head Dept. of Agric.: direction and research on plant pathology, microbiology and antibiotics
- Rama Rao, B.Sc. (Ag.), M.Sc., Lecturer: research in soil actinomycetes
- A. R. Lakshmanan, B.Sc. (Ag.), M.Sc., Lecturer: research on the effects of hormones on root crops
- C. N. Sambandam, B.Sc. (Ag.), Lecturer: research in plant pathology
- S. Chandrasekaran, B.Sc. (Ag.), Lecturer: research in mycology
- S. V. Pandurangan, B.Sc. (Ag.), Lecturer: research in microbial genetics
- S. Kaliaperumal, M.Sc., Demonstrator
- N. Karinathan, B.Sc. (Hons.), M.Sc., Demonstrator

## BANARAS UNIVERSITY

# College of Agriculture

Jaswant Singh, Ph.D. (Wales), Principal and Irwin Professor of Agricultural Science: agriculture

Akshaibar Lal, M.Sc., Ph.D. (Lond.), D.I.C., Reader Mycology and Plant Pathology: plant pathology, bacteriology, microbiology and mycology

- R. S. Choudhri, M.Sc. (Ag. Bot.), Ph.D. (Cornell), D.Sc., Reader in Botany and Physiology: agricultural botany, plant physiology
- Sant Singh, M.Sc. (Chem.), Ph.D. (Lond.), Reader in Agricultural Chemistry: agricultural chemistry
- K. Kumar, M.Sc. (Bot.), Lecturer in Plant Physiology: plant physiology
- K. Das, M.Sc., Ph.D. (Minn.), Lecturer in Genetics and Plant Breeding: agricultural botany, genetics and plant breeding
- R. N. Desai, M.Sc. (Mich.), Ph.D. (Minn.), G.B.V.C., Assoc. I.D.R.I., Lecturer in Veterinary Science, Animal Husbandry and Dairying: animal husbandry and diarying
- G. S. Lavania, M.A., M.Sc. (Ag.), Ph.D., Lecturer in Agricultural Economics: agricultural economics
- Jai Ram Singh, M.Sc. (Ag. Bot.), Ph.D., Lecturer in Horticulture: horticulture
- S. P. Mukerjee, M.Sc. (Zool.), LL.B., Lecturer in Entomology: entomology and zoology
- U. S. Singh, M.Sc. (Ag. Bot.), M.S. (U.S.A.), Lecturer in Agriculture: agronomy
- M. S. Pavgi, M.Sc. (Ag. Bot.), Assoc. I.A.R.I., Lecturer in Mycology: mycology and plant pathology
- V. P. Tewari, M.Sc. (Ag.), Lecturer in Plant Pathology: mycology and plant pathology
- S. B. Lal Gupta, M.Sc. (Ag.), Lecturer in Agricultural Economics: agricultural economics
- N. M. Misra, M.Sc. (Ag.), Lecturer in Agronomy: agronomy
- V. B. Bhatnagar, M.Sc. (Ag.), Ph.D., Lecturer in Crop Physiology: plant physiology, biology and botany
- N. K. Jain, M.Sc. (Ag.), Lecturer in Agriculture: agriculture
- R. M. Singh, M.Sc., Lecturer in Physics: physics and mathematics
- R. N. Kaul, B.Sc. (Agri. Engg.), Lecturer in Agricultural Engineering
- M. L. Gupta, M.Sc. (Chem.), Lecturer in Chemistry: chemistry

# **BOMBAY UNIVERSITY**

### Marathwada Agricultural College, Parbhani

- N. Narayana, M.Sc., Ph.D., Principal
- T. K. T. Achari, B.Sc. (Ag.), M.A., M.Sc. (Ag.), Lecturer in Agronomy
- V. P. Limaye, M.Sc. (Ag.), Lecturer in Horticulture
- S. G. Abhyankar, M.Sc. (Ag.), Lecturer in Plant Pathology and Entomology
- S. B. Lall, M.Sc., Ph.D., Lecturer in Botany
- G. V. Dani, M.Sc. (Ag.), Lecturer in Animal Husbandry
- P. D. Diskalkar, M.Sc. (Ag.), Lecturer in Agricultural Economics
- V. H. Joshi, B.Sc. (Ag.), M.S. (U.S.A.), Lecturer in Extension

- G. P. Gokhale, M.Sc. (Ag.), Lecturer in Agricultural Chemistry
- T. V. Kaushikkar, M.Sc. (Bot.), Assoc. I.A.R.I., Farm Superintendent
- N. T. Sarnaik, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Farm Superintendent: Government Main Agricultural Experimental Farm

## CALCUTTA UNIVERSITY

# Birla College of Agriculture, Haringhata, Dist. Nadia

- A. T. Sanyal, B.Sc. (Ag.), Assoc. I.A.R.I., Professor of Agronomy: jute and rice agronomy
- A. B. Mukherjee, M.Sc., Lecturer in Zoology and Entomology: biology and control of important crop pests
- Miss Bina Dutta, M.A., Lecturer in Agricultural Botany: cytogenetical problems of crop-plants
- M. R. Das, I.D.D. (Alld.), B. Ag. (N.Z.), Dip. Dairying (M.A.C.), C.O.P. (N.Z.), Assistant Professor of Animal Husbandry and Dairying: study of the significance of thermoduric organisms in milk
- S. P. Maity, B.Sc. (Agril. Engg.) (Alld.), Assistant Professor of Agricultural Engineering: possibilities of designing a paddy transplanting machine, and work on the improvement of existing bullock-drawn implements
- S. P. Chakravorty, M.Sc., Lecturer in Agricultural Chemistry: nitrogen supply to paddy plants (water culture technique)

# **DELHI UNIVERSITY**

#### DEPARTMENT OF BOTANY

- P. Maheshwari, D.Sc., F.N.I., F.A.Sc., F.B.S., Professor and Head
- B. M. Johri, D.Sc., F.N.I., B.F.S., Reader
- S. L. Tandon, Ph.D., Associate I.A.R.I., Reader

#### Lecturers

- C. S. Venkatesh, Ph.D.
- V. P. Singh, Ph.D.
- N. P. Chowdhury, M.Sc.
- H. Y. Mohan Ram, Ph.D. (on study leave)
- S. C. Maheshwari, Ph.D. (on study leave)
- R. C. Sachar, Ph.D.
- R. N. Chopra, Ph.D.
- R. N. Konar, Ph.D.
- I. K. Vasil, Ph.D.
- R. N. Kapil, Ph.D.
- N. S. Ranga Swamy, Ph.D.

#### DEPARTMENT OF ZOOLOGY

M. L. Bhatia, Ph.D., D.Sc., F.N.I., F.Z.S., F.Z.S.I., Professor

L. N. Johri, M.Sc., D.Sc., Reader

Miss Mary Chandy, M.A., Ph.D., F.Z.S.I., Reader

K. N. Saxena, M.Sc., D.Phil., Reader in Entolmology

#### Lecturers

H. S. Vishnoi, M.Sc., Ph.D., entomology

M. K. Dutt, M.Sc., Ph.D., cytogenetics

C. M. S. Dass, M.Sc., Ph.D., cytogenetics

H. L. Sarkar, M.Sc., fisheries

N. N. Majumdar, M.Sc., Ph.D., fisheries

#### GAUHATI UNIVERSITY

# Assam Agricultural College, Jorhat

M. C. Das, M.Sc., Ph.D., F.L.S., F.R.M.S., Principal: agronomy

#### AGRONOMY DEPARTMENT

M. N. Bora, M.Sc. (Ag.), Professor: agronomy, field crops

B. C. Borthakur, M.Sc. (Ag.), Professor: agronomy, field crops

A. K. Sarmah, M.Sc. (Ag.), Lecturer: agronomy, field crops

M. D. Sarmah, M.Sc. (Ag.), Lecturer-cum-Farm Superintendent: farm management

## AGRICULTURAL ENGINEERING DEPARTMENT

R. K. Srivastava, B.Sc. (Agril. Engg.), Lecturer: improved agricultural implements

# Animal Husbandry and Dairying Department

K. C. Mahanta, M.Sc. (Ag.), Professor: dairy bacteriology

L. C. Bora, G.V.Sc., P.G. (I.V.R.I.), Professor of Veterinary Science and Animal Husbandry: anacrobiasis in farm livestock

#### HORTICULTURE DEPARTMENT

- S. Barooah, M.Sc. (Ag.), F.R.H.S. (Lond.), Professor: horticulture problems
- B. N. Saikia, M.Sc. (Ag.), Lecturer: horticultural problems

# PHYSICS, MATHEMATICS AND CLIMATOLOGY DEPARTMENT

Debeswar Pathak, M.Sc., B.L., Professor of Mathematics and Physics

L. N. Bora, M.Sc., Lecturer in Physics and Climatology

# AGRICULTURAL CHEMISTRY DEPARTMENT

N. N. Majumdar, M.Sc. (Chem.), Professor: soil chemistry

L. Dutta, M.Sc. (Chem.), Professor: soil chemistry

A. K. Nath, M.Sc. (Tech.), Lecturer: soil chemistry

AGRICULTURAL ECONOMICS DEPARTMENT

M. N. Bhattacharya, M.Com., Lecturer

# ENTOMOLOGY AND ZOOLOGY DEPARTMENT

- M. Sharifullah, M.Sc., Professor of Entomology
- D. Sohoria, M.Sc., Lecturer in Zoology and Entomology

## AGRICULTURAL BOTANY DEPARTMENT

- A. M. Das, M.A., Professor of Soil Micro-biology
- D. N. Borthakur, M.Sc., Lecturer in Plant Pathology
- P. C. Bora, M.Sc., Lecturer in Plant Physiology

# Assam Veterinary College, Gauhati

- R. R. Ghulati, M.R.C.V.S., Principal
- L. R. Bora, B.Sc. (Vety.) (Hons.), M.R.C.V.S., P.G., Professor
- R. N. Hazarika, G.V.Sc., D.T.V.M., F.Z.S., P.G., Professor
- B. P. Barkakati, G.B.V.C., P.G., Professor of Parasitology
- H. K. Gohain, G.B.V.C., P.G., Professor of Pathology
- A. Raquib, G.V.Sc. & P.G., Lecturer

# JABALPUR UNIVERSITY

# College of Agriculture, Jabalpur

R. L. Gupta, B.Ag., Ph.D., Assoc. I.A.R.I., F.R.E.S., F.E.S.I., Principal and Professor of Entomology: research on entomological problems

# DEPARTMENT OF AGRICULTURAL CHEMISTRY

- D. C. Bisen, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer
- V. K. Mutatkar, B.Sc. (Ag.), Assoc. 1.A.R.I., Lecturer
- S. M. Rishi, M.Sc. (Ag.), Lecturer

# DEPARTMENT OF AGRICULTURAL ECONOMICS

S. S. Gour, M.Sc. (Ag.), Lecturer: research on rural employment in upper Narmada Valley

# Department of Agricultural Engineering, Survey and Mathematics

- H. M. Agrawal, B.Sc. (Agril. Engg.), Dip. E./M., Lecturer
- Y. C. Arya, B.Sc. (Agril. Engg.), Dip. E/M., Lecturer in Agricultural Engineering: research of indigenous implements in M.P.

Basharat Khan, B.Sc. (Agril. Engg.), Lecturer in Agricultural Engineering

# DEPARTMENT OF AGRONOMY

- R. P. Agarwal, B.Sc. (Ag.), Assoc I.A.R.I., Lecturer + agronomical trials
- K. S. Cheema, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer: agronomical trials
- J. P. Patel, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer: research on Japanese method of rice cultivation
- B. L. Nema, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer: agronomical trials
- B. R. Chandravanshi, M.Sc. (Ag.), Lecturer

#### DEPARTMENT OF BOTANY

- D. K. Tiwari, M.Sc., Ph.D., Lecturer: research on range management, grassland, ecology and forage; crop breeding
- P. S. Shrivastava, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer: genetics studies
- S. A. Stevenson, M.Sc. (Ag.), Lecturer

Ashok Chauhan, M.A., Lecturer in English

#### DEPARTMENT OF ENTOMOLOGY

G. A. Gangrade, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer in Biology and Bionomics of Agricultural Insects: pests of economic importance and study of parasites

#### DEPARTMENT OF EXTENSION

- D. K. Sharma, B.Sc. (Ag.), M.A., M.S. (Cornell), *Professor:* participation of peoples in community development programmes with special reference to agricultural problems
- A. K. Varma, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer
- V. B. Ghai, M.Sc. (Ag.), Dip. in Extension, Lecturer
- S. P. Khare, M.Sc. (Ag.), Lecturer

## DEPARTMENT OF HORTICULTURE

R. P. Jyotishi, B.Sc. (Ag.), Ph.D. (Florida), Senior Lecturer: cultural studies on potato; propagation studies on potato; propagation studies with mango and ornamentals

# DEPARTMENT OF PLANT PATHOLOGY

K. G. Nema, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer: research on parasitic fungi, parasitism and plant disease control

#### DEPARTMENT OF VETERINARY

- R. C. Chouby, G.B.V.C., P.G. (Vety.), P.G. (Animal Husbandry), Lecturer: research problems on electemiology of rinderpest; economics of livestock
- D. D. Shrivastava, M.Sc. (Ag.), Lecturer in Animal Husbandry: economic studies on dairy farming and specially on milk production

# KERALA UNIVERSITY

# Agricultural College and Research Institute, Vellayani

M. C. Cherian, B.A., B.Sc. (Ag.), D.I.C., Principal

# DEPARTMENT OF AGRONOMY

K. Madhavan Nair, M.Sc., M.S. (Cornell), Dip. in Extension, Junior Professor: mixed cropping, manurial trials

- C. M. George, B.Sc. (Ag.), M.S.A. (Toronto), Junior Professor: varietal trials, cultural trials
- A. G. Gopinatha Menon, B.Sc. (Ag.), M.Sc., Lecturer

# DEPARTMENT OF AGRICULTURAL STATISTICS

E. J. Thomas, M.Sc., Senior Lecturer: design and analysis of field experiments

#### DEPARTMENT OF ANIMAL HUSBANDRY

- K. C. Mathew, B.Sc. (Ag.), (C.D.D.) (Wales), Junior Professor
- K. Parameswaran Nair, B.V.Sc., Senior Lecturer in Veterinary Science
- J. B. Rose, B.Sc. (Ag.), Lecturer

#### DEPARTMENT OF AGRICULTURAL ENGINEERING

- J. J. Fenn, B.Sc. (Agril. Engg.), *Head:* farm implements, investigation on the home-made animal drawn ploughs, development of small harvesting machines
- K. V. Varghese, B.Sc. (Engg.), Lecturer: farm buildings, low cost rural roads, irrigations (consumption studies)
- Jose Samuel, B.Sc. (Agril. Engg.), Lecturer: soil conservation practices, run-off plot studies; soil conservation on tapioca lands

## DEPARTMENT OF AGRICULTURAL CHEMISTRY

- A. P. A. Brito-Mutunayagam, B.Sc. (Ag.), M.Sc. (Cornell), Professor: agricultural chemistry, soils, fertilizer
- N. Subramoney, M.Sc., Ph.D., Junior Professor: agricultural chemistry, bacteriology, fertilizer, soils
- M. M. Koshy, M.Sc., Senior Lecturer: agricultural chemistry and soil science
- R. Subramony, M.Sc., Lecturer: agricultural chemistry, soil science
- N. A. Sarma, B.Sc., Assoc. I.A.R.I., Lecturer: agricultural chemistry, soil science

# DEPARTMENT OF ENTOMOLOGY

- K. V. Joseph, B.A., M.Sc., Entomologist and Junior Professor: supervisory control of entomological research
- M. R. Gopalakrishnan Nair, M.Sc., Assoc. I.A.R.I., Senior Lecturer: insect toxicology, tissue borers
- G. Renga Iyer, M.Sc., Assoc. I.A.R.I., Lecturer: insect defoliators

#### DEPARTMENT OF MYCOLOGY

- J. Samraj, M.A., Assoc. I.A.R.I., Mycologist
- P. V. Paily, M.Sc. (Ag.), Lecturer: research on control of plant diseases, soil microbiology
- K. I. Wilson, M.Sc. (Ag.), Lecturer in Plant Pathology: research on control of plant diseases

# DEPARTMENT OF AGRICULTURAL BOTANY

- P. Kumara Pillai, M.Sc. (Agril. Bot.), M.S. (U.S.A.), Junior Professor and Head: taxonomy, anatomy, crop botany, genetics and plant breeding
- K. Srinivasan, M.Sc. (Ag.), Senior Lecturer
- N. Gopinathan Nair, M.Sc. (Ag.), Lecturer: plant pathology, crop botany
- A. T. Abraham, M.Sc. (Ag.), Lecturer: taxonomy, anatomy, cytology

# Veterinary College, Mannuthy, Trichur

#### ANATOMY SECTION

M. N. Menon, B.V.Sc., G.M.V.C., Assoc. I.D.R.I., F.R.C.V.S., Professor of Surgery and Principal: anatomy and surgery

V. Padmanabhan, M.S.A., L.V.P., Junior Professor

# Animal Husbandry Section

R. Krishnan Nair, B.A., B.V.Sc., G.M.V.C.. Senior Lecturer: animal management, farm economics and statistics

# DAIRY SCIENCE SECTION

M. Subramanyam, B.V.Sc., Senior Lecturer

#### EXTENSION SECTION

G. R. Nair, B.Sc. (Vety.), Senior Lecturer

## MEDICINE SECTION

C. T. Peter, B.Sc., B.V.Sc., G.M.V.C., M.Sc., Ph.D., Professor

## NUTRITION SECTION

K. Chandran Menon, G.M.V.C., B.V.Sc., M.Sc., Ph.D., Senior Lecturer

## OBSTETRICS AND GYNAECOLOGY SECTION

C. K. Surendravarma Raja, B.V.Sc., F.R.V.C.S., State Cattle Sterility Officer

# PARASITOLOGY SECTION

C. T. Peter, B.Sc., B.V.Sc., G.M.V.C., M.Sc., Ph.D., Professor

R. Kalyanasundram, G.V.Sc., D.V.M., Senior lecturer

#### PHARMACOLOGY SECTION

K. P. Damodaran Nayar, G.M.V.C., B.V.Sc., Senior Lecturer

#### PATHOLOGY SECTION

C. G. Sivadas, B.Sc., G.M.V.C., B.V.Sc., Senior Lecturer

#### Physiology Section

- K. J. Simon, G.V.Sc., D.V.M., Junior Professor
- S. Gopinathan Nair, M.Sc., Ph.D., Senior Lecturer

#### BACTERIOLOGY SECTION

S. R. Chandran, G.V.Sc., M.S.A., P.G., Junior Professor

#### PATHOLOGY SECTION

P. K. Abdulla, B.V.Sc., Senior Lecturer

#### MADRAS UNIVERSITY

# Madras Veterinary College, Madras

Bertie A. D'Souza G.M.V.C., B.V.S., Principal, Professor and Head of the Department of Hygiene

# ANATOMY DEPARTMENT

- D. Mariappa, G.M.V.C., *Professor and Head:* direction and research in comparative anatomy
- A. Lakshminarasimhan, G.M.V.C., B.V.Sc., Additional Lecturer: studies on the sympathetic nervous system of abdomen and pelvis of Indian buffalo
- V. K. Seshadri, B.V.Sc., Additional Lecturer: studies on the lobulation of lungs in Indian buffalo

## ANIMAL HUSBANDRY DEPARTMENT

- M. Dharmarajan, M.A., M.Sc., Ph.D., F.L.S., Professor and Head Animal Genetics: direction and research in animal breeding and genetics
- V. Ratnasabapathy, B.V.Sc., Ph.D., Reader in Animal Breeding and Genetics
- R. D. Michael, G.M.V.C., B.V.Sc., Lecturer in Hygiene: research on barn hygiene in relation to clean milk production under Indian conditions
- G. Venkatachalam, B.Sc., G.M.V.C., M.S., Ph.D. (Mich.), Professor and Head of the Department of Animal Nutrition: direction and research in animal nutrition
- A. R. Vedanayagam, G.M.V.C., B.V.Sc., Additional Lecturer in Animal Husbandry: research in dairy science

#### BIOLOGY DEPARTMENT

K. Harris, M.A., Professor and Head

#### CHEMISTRY DEPARTMENT

V. Satchidanandam, B.Sc., B.V.Sc., Lecturer and Head: studies on the motility of the alimentary tract in the domestic fowl (Galluso domesticus)

#### FLAYING AND MEAT INSPECTION DEPARTMENT

R. H. Sundaram, G.M.V.C., B.V.Sc., Lecturer and Head: research on meat hygiene and bacteriology of meat

# MEDICINE DEPARTMENT

- I. D. Mantramurti, G.M.V.C., B.V.Sc., Professor and Head
- M. Ranganathan, G.M.V.C., B.V.Sc., Lecturer

# PARASITOLOGY DEPARTMENT

- M. Anantaraman, M.A., M.Sc., F.Z.S., F.H.S., Professor: direction and research in parasitology
- V. S. Alwar, G.M.V.C., B.V.Sc., M.Sc., F.H.S., Reader: teaching and research in veterinary parasitology
- M. V. Sankaranarayanan, G.M.V.C., B.V.Sc., D.V.P., Research Officer: helminthology
- D. A. Victor, G.M.V.C., B.V.Sc., *Lecturer*: research on studies in host parasite relationship

#### PATHOLOGY AND BACTERIOLOGY DEPARTMENT

- K. P. Chandrasekharan, G.M.V.C., B.V.Sc., Professor and Head: direction and research in animal pathology
- S. Damodaran, G.M.V.C., B.V.Sc., M.Sc., Reader in Pathology: research on pathology
- G. Balasubramanian, G.M.V.C., B.V.Sc., D.V.P., Lecturer in Pathology
- S. Vancheswaran, G.M.V.C., M.S. (Mich.), Professor of Bacteriology and Superintendent, Institute of Veterinary Preventive Medicine, Ranipet, Madras
- B. Narasinga Rai, G.M.V.C., B.V.Sc., D.T.V.Sc. (I.V.R.I.), Reader in Bacteriology: teaching and research
- R. A. Balaprakasam, G.M.V.C., B.V.Sc., Research Officer (Mastitis)

#### PHARMACOLOGY DEPARTMENT

- C. K. Velayudhan Nayar, G.M.V.C., *Professor and Head:* direction and research in veterinary pharmacology, indigenous drugs and plant principles
- M. S. Ganapathy, G.M.V.C., B.V.Sc., Professor and Head of the Department of Therapeutics and Toxicology: research in clinical medicine and diagnostics

## PHYSIOLOGY DEPARTMENT

- K. N. Govindan Nayar, G.M.V.C., M.S. (Tenn.), Member Society of Sigma XI (U.S.A.), *Professor and Head:* direction and research on comparative physiology and physiological chemistry; special fields—ruminant digestion, metabolism studies with radioactive isotopes
- K. T. Kunnhikumaran Nambiar, G.M.V.C., B.V.Sc., Lecturer: research on haematology of domestic fowl

#### SURGERY DEPARTMENT

- F. D. Wilson, G.M.V.C., B.V.Sc., Professor and Head
- M. N. Dhandapani, G.M.V.C., B.V.Sc., Lecturer
- M. C. Chellam, G.M.V.C., F.R.V.C.S. (Sweden), Professor and Head of Gynaecology Department

#### AGRICULTURE DEPARTMENT

G. Venkataramana, B.Sc. (Ag.), Lecturer

# **MYSORE UNIVERSITY**

# Agricultural College, Hebbal

- B. Venkoba Rao, B.Sc., M.S. (U.S.A.), Principal
- S. R. Chandrasekhariah, M.Sc., Assistant Professor of Botany
- K. A. Jalihal, B.Sc. (Ag.), Professor of Agronomy
- D. K. Veeranaryana Gowda, B.Sc., B.V.Sc., G.M.V.C., Assistant Professor of Animal Husbandry
- V. M. Mallaraj Urs, B.E., Assistant Professor of Mechanical Engineering

# Veterinary College, Hebbal

- P. Satyendra Rao, B.V.Sc., Professor of Animal Husbandry
- N. S. Krishna Rao, B.A., L.V.P., Ph.D., Professor of Physiology
- R. D. Nanjaiah, B.Sc., B.V.Sc., Ph.D., Professor of Anatomy
- R. F. Ratil, B.Sc. (Vety.), Lecturer
- K. T. Rao, G.M.V.C., B.V.Sc., Lecturer
- R. Hegde, G.M.V.C., B.V.Sc., Lecturer

# NAGPUR UNIVERSITY

# College of Agriculture, Akola

- R. C. Shrivastava, B.Sc., M.Sc., Tech. (Vict.), A.M.C.T. (Manch.), Dip., R.T.C. (Glasgow), *Principal*
- G. R. Shirpurkar, B.Sc. (Ag.), M.Sc. (Adelaide), Professor of Extension
- G. C. Padoley, M.Sc., Assoc. I.A.R.I. (Chem.), Lecturer in Chemistry
- P. R. Chopde, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer in Botany
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- G. C. Bhatt, M.Sc. (Ag.), Lecturer in Plant Pathology

- T. P. Singh Tomar, M.Sc. (Ag.), Lecturer in Horticulture
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- D. S. Umat, M.Sc. (Ag.), Agronomist (Sugarcane Research Scheme)

# College of Agriculture, Nagpur

R. P. Asthana, M.Sc., Ph.D. (Lond.), D.I.C. (Lond.), F.A.Sc., F.B.S. Principal and Head of the Plant Pathology and Dean, Faculty of Agriculture, plant pathology, mycology and bacteriology

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- D. D. Harshey, G.B.V.C., Lecturer

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- W. B. Rahudkar, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer
- B. T. Khaladkar, M.Sc. (Ag.), M.S. (Extn.), Lecturer
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#### AGRICULTURAL BOTANY SECTION

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# Government Agricultural College, Rewa

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P. P. Sharma, M.Sc. (Ag.), Visharad: manurial and irrigational studies on wheat

V. B. Mishra, M.Sc. (Ag.): manurial cultural studies in linseed

## DEPARTMENT OF AGRICULTURAL CHEMISTRY

M. M. Roy, M.Sc. (Ag.), D. Phil., F.N.A.Sc.: study of nitrogen fixation, available phosphate and fertilizer

# DEPARTMENT OF ENTOMOLOGY AND ZOOLOGY

V. N. Upadhyaya, M.Sc. (Ag. Zoo.): chaetotaxy of lepidopterous larvae

# College of Veterinary Science and Animal Husbandry-cum-Livestock Research Institute, Mhow

R. L. Kaushal, L.V.P., P.G. (Serology), P.G. (Viruses), Principal and Joint Director and Head of Pathology and Bacteriology

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- N. A. N. Rao, M.Sc., Assistant Research Officer (Biochemistry)
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- A. N. Sawhney, B.V.Sc., Demonstrator
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- P. Srinivasan, G.M.V.C., M.Sc., Reader in Anatomy
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# Animal Husbandry and Veterinary Department

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- K. P. Singh, M.Sc. (Ag.), Assistant Professor of Animal Husbandry: poultry nutrition

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## PLANT PATHOLOGY DEPARTMENT

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# College of Agriculture, Poona

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- V. K. Leley, Ph.D., Assistant Soil Chemist: plant biochemistry and soil survey
- A. K. Desai, B.Sc. (Ind. Chem.), Biochemist: biochemistry, and soil survey
- N. N. Badhe, M.Sc., Officer-in-Charge: band disease scheme

#### AGRONOMY SECTION

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- J. R. Kakade, B.Sc. (Ag.), Assoc. I.A.R.I., M.S. (Kansas), Assistant Professor of Agronomy: agronomic field trials
- A. K. Kolhe, B.Sc. (Ag.), Vegetable Research Officer: research on vegetable crops

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- P. S. Duduskar, M.Sc. (Ag.), Lecturer: animal breeding and dairy technology
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- G. P. Argikar, B.Sc. (Ag.), Research Officer (Grass Breeding Scheme): breeding of forage and other major food crops of Bombay State
- J. G. Oke, M.Sc. (Ag.): breeding of grasses and fodder legumes
- A. V. Gokhale, B.Sc. (Bot.), Assoc. I.A.R.I., M.S. (Wisc.), Research Officer (Phytohormone Scheme): application of synthetic hormones to cereals, pulses, vegetables and tuberous crops to increase yield
- M. M. Kurlisenapati, G.B.V.C., Professor of Veterinary Science

#### ENTOMOLOGY SECTION

- S. R. Bagal, M.Sc. (Ent.), Agricultural Entomologist and Professor
- S. K. Dorge, M.Sc. (Ag.), Ph.D., Senior Lecturer

#### HORTICULTURE SECTION

- N. Gopalkrishna, B.Sc., M.S. (U.S.A.), *Professor and Horticulturist:* plant and vegetable breeding, rice breeding, fruit culture, ornamental gardening
- G. S. Karandikar, B.Sc. (Ag.), Lecturer: fruit nursery, fruit preservation and storage of fruits

# PLANT PATHOLOGY SECTION

- M. K. Desai, B.Ag., M.Sc. (Ag.), Plant Pathologist: direction and research on plant pathology
- L. Moniz, M.Sc. (Ag.), Assistant Plant Pathologist (Cotton Wilt Breeding Scheme)
- N. B. Kulkarni, M.Sc. (Ag.), Ph.D., Assistant Plant Pathologist: blast disease of rice and foot rot of wheat
- G. W. Dhande, M.Sc. (Ag.), Assistant Plant Pathologist: control of nematodes on betelvine in Nasik district
- B. P. Patil, B.Sc. (Ag.), Assistant Plant Pathologist

#### Extension Wing

- N. P. Sinnarkar, B.Sc. (Ag.), Assoc. I.A.R.I.
- T. Y. Patil, B.Sc. (Ag.) (Hons.), M.A., M.S. (Mich.), Assistant Professor of Evaluation
- P. V. Salvi, B.Sc. (Ag.), M.S. (Cornell), Assistant Professor of Social Sciences

# AGRICULTURAL ECONOMIC SECTION

- P. N. Driver, M.A., F.R. Econ. (S) London, Principal and Agricultural Economist: (department of Agriculture, B.S., Poona-1) Prof. of Agricultural Economics
- Shri R. S. Sawale, M.Sc. (Agri.), Lecturer in Agricultural Economics

#### PUNJAB UNIVERSITY

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- P. N. Mehra, D.Sc., F.N.A.Sc., F.N.I., F.B.S., Prof. and Head
- R. S. Chopra, M.Sc., F.N.A.Sc., Reader
- K. S. Thind, M.Sc., Ph.D., F.N.A.Sc., F.A.Sc., Reader
- T. N. Khoshoo, M.Sc., Ph.D., Senior Lecturer

#### Lecturers

- S. C. Verma, M.Sc.
- R. S. Pathania, M.Sc.
- D. S. Loyal, M.Sc.

#### ZOOLOGY DEPARTMENT

- G. P. Sharma, M.Sc., Ph.D. (Pb.), Ph.D. (Edin.), F.A.Z., F.I.A.Z., F.Z.S., F.Z.S.I., F.R.M.S., Professor and Head
- G. L. Arora, M.Sc., Ph.D. (London), D.I.C. (London), F.R.E.S., F.A.Z., Reader in Entomology
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# CHEMISTRY DEPARTMENT

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- V. Seetha Rama Rao, B.Sc., Analytical Chemist: soil surveys; mineral nutrition of rice
- T. Seshgiri Rao, B.Sc., Assistant Agricultural Chemist: soil survey; mineral nutrition
- C. Venkat Naidu, B.Sc., Assistant Agricultural Chemist (Bapatla): soil survey and problems connected with citrus orchards and genetic study of soils
- W. Thirmala Rao, B.Sc. (Ag.), Assistant Agricultural Chemist (Land Reclamation, Bapatla): soil surveys and physiology of sugarcane
- A. Karumaker Rao, B.A., B.Sc. (Ag.), Soil Chemist (Narasaraopet): soil surveys
- C. Dharma Rao, B.Sc., Soil Chemist (Ongole): soil surveys
- M. Nagi Reddy, B.Sc. (Ag.), Soil Chemist (Guntur): soil surveys
- P. Krishna Murthy, B.A., B.Sc. (Ag.), Soil Chemist: soil surveys

#### FRUIT SECTION

- C. Bhujanga Rao, B.Sc. (Ag.), Fruit Specialist: guidance and
- L. Venkataratnam, B.Sc. (Ag.), M.Sc., Government Horticulturist: guidance and supervisory control of horticultural research
- V. S. Rangacharlu, B.Sc. (Ag.), Superintendent (Fruit Research Station): research work on mango and citrus
- S. N. Rao, B.Sc. (Ag.), M.S. (Calif.), Ph.D. (Mich.), F.R.H.S. (Lond.), Assistant Fruit Specialist: research work on the utilisation of growth regulating substances on horticultural crops
- K. Sambamurthy, B.Sc. (Ag.), D.I.H., Assistant Fruit Specialist: (Fruit Farm, Rampachodavaram): investigation in acclimatising fruits in Agency areas
- G. Siddalinga Reddi, M.Sc. (Ag.), D.I.H., Assistant Mycologist: investigations on citrus diseases

- C. Ramachandra Chari, B.Sc. (Ag.), Assistant Entomologist: control of fruit pests
- P. Suryaprakasa Rao, B.Sc. (Ag.), I.I.F.T., Biochemist: problems on fruit preservation
- Y. R. Sundara Rao, B.Sc. (Ag.), D.I.H., Assistant Horticultural Development Officer: problems on fruit development
- T. B. Dasaradhi, B.Sc. (Ag.), D.I.H., Assistant Fruit Specialist (Banana Research Station, Tanatan, West Godavari): agronomic research on bananas
- A. Subba Rao, B.Ag., D.I.H., Cashew Development Officer (Bapatla P.O., Guntur District): problems on cashew development
- R. Narayana Moorthy, M.Sc. (Ag.), D.I.H., Vegetable Research Officer, (Vegetable Research Station, Kurnool): improvement of indigenous vegetable crops
- S. Sampathkumar, L.Ag., Assistant Fruit Specialist: locating superior horticultural plants
- G. Ramachandran, B.Sc., Vegetable Research Officer: vegetable crop improvement

#### MILLET SECTION

- S. Ramachandrarao, B.Sc. (Ag.), Millet Specialist (Lam Farm P.O., Guntur): guiding research on millets, turmeric, chillies and mesta; organisation of seed development work on millets
- B. L. Narasimhamurthy, B.Sc.(Ag.), Assistant Millet Specialist, Nandyal: breeding improved varieties of Jowar and Korra; control of striga on sorghum
- B. Suryanarayana Murthy, B.Sc. (Ag.), Assoc. I.A.R.I., Chillies Research Officer, Lam: breeding of chillies, manuring of chillies and dry land crops; supervision of work on cotton, coriander and pulses
- S. Sangameswara Sarma, B.Sc. (Ag.), Turmeric Research Officer, Podapalem: breeding of turmeric, agronomical trials and manuring of turmeric

#### Maize Section

- S. Vittal Rao, B.Sc. (Hons.) (Ag.), M.S. (Cornell), Maize Breeder: plant breeding and genetics with special reference to maize
- M. Sankara Rao, B.Sc. (Bot.), Assistant Maize Breeder: plant breeding with special reference to maize

## OILSEEDS SECTION

- M. P. Narasimha Rao, B.Sc. (Ag.), Assoc. I.A.R.I., Oilseeds Specialist and Head: direction and research on breeding of oilseeds, tobacco and their multiplication and distribution
- M. Krishna Reddy, B.Sc. (Ag.), Assoc. I.A.R.I., Agronomist: study of manurial irrigational and other agronomic aspects of fodder grasses and legumes

- M. Sree Ramloo, B.Sc., M.S. (Minn.), Assistant Oilseeds Specialist: improvement of oilseed crops
- T. Kailasa Rao, B.Sc. (Ag.), Superintendent, Regional Coconut Research Station, Ambajipet: research work on coconut with special reference to crop improvement and agronomic aspects
- Prabhakara Reddy, B.Sc. (Ag.), D.I.H., Assistant Oilseeds Specialist, Regional Oilseeds Research Station, Kadiri: crop improvement work with special reference to groundnut and castor
- T. Narasimha Das, B.Sc. (Ag.), Assistant Oilseeds Specialist, Rajendranagar: co-ordination of research and development work in respect of coconut crop
- A. V. Purushottama Chari, B.Sc. (Ag.), Tobacco Research Officer, Madhira: tobacco with special reference to crop improvement
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- M. P. Singh, M.Sc. (Ag., Hort.), Professor of Agriculture: fodder production
- S. S. Solanki, M.Sc. (Ag.), Lecturer in Agronomy
- D. V. S. Chaudhan, M.Sc. (Ag.), Lecturer in Agronomy
- H. R. Tyagi, B.Sc. (Agril. Engg.), Lecturer in Agricultural Engineering: agril. implements
- R. K. Sharma, B.Sc. (Agril. Engg.), Lecturer in Agricultural Engineering
- P. S. Indapurkar, M.Sc. (Ag.), Post-graduate training in soil conservation, Lecturer in Agronomy-cum-Farm and Estate Manager: comparative study on the cost of production of milk in Gwalior town and suburbs; ravine reclamation in the Jamuna and Chambal Basin
- R. K. Tiwari, B.Sc. (Ag.), Assoc. I.A.R.I., Lecturer in Agronomy
- O. P. Dahama, M.A., M.Sc. (Ag.), Lecturer in Agricultural Economics: mixed farming, Agro. economic conditions in Israel
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- R. A. Gaur, M.Sc. (Ag.), Lecturer in Agricultural Economics
- D. P. Motiramani, M.Sc. (Ag.), Assoc. I.A.R.I., Professor of Agricultural Chemistry: adverse effects of Sorghum (jowar) on soil and subsequent crops; preliminary diagnosis of gram diseases; study of soil of Andaman, Bhopal and Patna; studies on phosphate fixation in some soils of Madhya Bharat; volatisation of nitrogen from soils
- S. B. Sinha, M.Sc., D. Phil. (Alld.), Junior Professor of Agricultural Chemistry: soil chemistry
- M. L. Purohit, B.Sc. (Ag.), Assoc. I.A.R.I., Professor of Entomology and Zoology: toxicology and bionomics of important pests of the region
- U. S. Mishra, M.Sc. (Ag.), Lecturer in Entomology: toxicology and bionomics studies
- S. K. Singh Gaur, M.Sc. (Agril. Bot.), LL.B., Professor of Agricultural Botany: plant breeding and plant physiology
- L. K. Joshi, M.Sc. (Ag.), Junior Professor of Plant Pathology: coriander wilt
- G. C. Bhatt, M.Sc. (Ag.), Lecturer in Plant Pathology: plant pathology
- T. P. Singh Tomar, M.Sc. (Ag.), Lecturer in Horticulture
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- B. G. Nikam, B.Ag. (Hons.), M.Sc. (Ag.), Assistant Plant Pathologist: plant pathology
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- S. M. Wakankar, M.Sc., Assistant Economic Botanist and Plant Breeder
- O. S. Bindra, B.Sc., (Hons.) (Ag.), Assoc. I.A.R.I., Assistant Entomologist: entomological studies
- P. M. Tamboli, B.Sc., Assoc. I.A.R.I., Chief Chemist
- V. G. Deshmukh, B.Sc. (Agril. Engg.), Assistant Engineer: agricultural implements
- D. S. Umat, M.Sc. (Ag.), Agronomist: sugarcane research scheme

## Wheat Research Station, Powerkheda

R dist: breeding of

Wheat Breeder:

DECOURTED OF ME IS

W. R. C<sup>1</sup> drought resistance in wheat

aystotegist: research on

K. L. Nakhtore, B.Sc. (Ag.), Assoc. I.A.R.I., Extra Assistant Director of Agriculture: agronomical experiments on wheat

# Rice Research Station, Raipur

- S. N. Dubey, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Botanist: plant breeding and genetics with special reference to rice
- A. B. S. Verma, B.Sc. (Ag.), M.A. (Econ.), M.S. (Cornell), Soil Conservation Officer
- S. L. Vishnoi, B.Ag., M.S. (Cornell), Professor of Agricultural Extension, Agric. College, Jabalpur
- B. P. Tiwari, B.Sc. (Ag.), Assoc. I.A.R.I., Agriculturist to Government of Madhya Pradesh

Pradyumnsingh, M.Sc., Horticulturist

- C. S. Iyer, B.Sc. (Ag.), B.Sc. (Agril. Engg.), M.S. (Canada), A.M.A.S. A.E., Agricultural Engineer
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- R. S. Bhatt, M.Sc., Ph.D., Principal, R.A.K. Institute, Schore
- R. R. Rawat, B.Sc., Assoc. I.A.R.I., Ph.D., Professor of Entomology
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- M. S. Lal, M.Sc. (Ag.), Lecturer in Botany
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- Balwant Singh, M.Sc. (Ag.), Lecturer in Horticulture
- D. C. Beohar, M.Sc. (Bot.), Lecturer in Bolany
- V. J. Shrikhande, M.Sc. (Maths.), Dip. in Applied Ag. & A.H., Senior Lecturer in Statistics
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- B. P. Singh, M.Sc. (Ag.), Ph.D. (Zoo.), Plant Protection Officer, Rewa: Aulacophora Spp., effect of weather condition on activity of air-borne insects, problems connected with control of insect pests; study on many parasites

## Department of Veterinary and Animal Husbandry

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- H. L. Shah, Assistant Research Officer (Parasitology)
- N. A. N. Rao, Assistant Research Officer (Biochemistry)
- D. S. Bhatnagar, Assistant Research Officer (Animal Genetics)
- M. Sanjwerao, Assistant Research Officer (Poultry)
- Lalchand, Statistician Veterinary College, Mhow
- Hardeo Singh, Estate Manager
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- R. D. Patil, Assistant Research Officer (Serology)

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- M. M. Jamder, Professor of Anatomy
- S. R. Nadgir, Assistant Professor of Zootechnic
- B. C. Ghoshal, Assistant Professor of Materia Medica and Pharmacology
- U. C. K. Rao, Assistant Professor of Pathology, Bacteriology and Parasitology
- S. K. Kamalpur, Assistant Professor of Pathology, Bacteriology and Parasitology
- M. L. Mehta, Assistant Professor of Medicines
- R. S. Ranjan, Assistant Professor of Survey
- S. P. Netke, Assistant Professor of Physiology
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- K. C. Chandy, B.Sc. (Ag.), M.Sc., Apiculturist
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- P. K. Chandrasekar, B.Sc. (Ag.), Cytogeneticist
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- I. D. Mantremurti, G.M.V.C., B.V.Sc., Deputy Director and Principal, Madras Veterinary College: disease investigation and care and management of animals
- Joseph Charles Victor, G.M.V.C., B.V.Sc., Animal Husbandry Statistician: agriculture and animal husbandry statistics, survey and design of experiments
- T. Ananthapadmanabhan, G.M.V.C., Deputy Director (Livestock): livestock breeding, sheep husbandry, milk recording and dairying
- C. K. Subbu Singh, G.M.V.C., P.G. (Reading), Deputy Director (Key Villages): animal breeding and artificial insemination

## Institute of Veterinary Preventive Medicine, Ranipet

- S. Vancheswera Iyer, G.M.V.C., M.S. (Mich.), Superintendent: bacteriology and manufacture of biological products
- K. S. Gopalakrishnan Iyer, G.M.V.C., Research Officer: manufacture of biological products
- K. Ramani, G.M.V.C., Research Officer (Virus Vaccines): animal viruses, veterinary bacteriology
- S. Shanmugam, G.M.V.C., Special Officer (Freeze Dried Vaccine): freeze dried vaccine
- R. Srinivasan, G.M.V.C., B.V.Sc., Research Officer (Brucellosis Scheme): research on Brucellosis
- K. S. Shanmugasundaram, G.M.V.C., B.V.Sc., Superintendent, District Livestock Farm, Chettinad: farming and dairying
- K. Kandaswami Raju, G.M.V.C., Assoc. I.D.R.I., Superintendent, District Livestock Farm, Pudukkottai: livestock farming

G. B. Radhakrishan, G.M.V.C., Assoc. I.D.R.I., Field Officer (Milk Costing Scheme): livestock and pastures

#### **MYSORE**

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- A. D. Desai, B.Sc., B.Ag., Ph.D., (Aberdeen), Deputy Director of Agriculture, Raichur
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- S. Perumal, B.Sc., Assoc. I.A.R.I., Assistant Agricultural Chemist
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#### ENTOMOLOGY SECTION

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#### AGRICULTURAL CHEMISTRY SECTION

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## Department of Agriculture

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- K. N. Mohapatra, G.B.V.C., P.G. and A.A.H., Reader
- S. K. Misra, G.M.V.C., B.V.S.C., P.G., Specialisation in Medicine (U.K.), Special training in Remmant Discases (Sweden), Reader
- L. D. Panda, G.B.V.C., P.G. and A.A.H. (I.V.R.I.), Assistant Professor
- R. C. Tripathy, B.V.Sc., Specialised training in Pharmacology and Standard Disease of Drugs in Central Drug Research Institute, Lucknow, Assistant Professor
- T. L. Murty, B.Sc., B.V.S., Training in Biochemistry (I.V.R.I.,) Assistant Professor
- D. N. Das, B.V.S.C., D.V.P., Assistant Professor

- S. N. Pani, B.V.S.C.; Training in Animal Genetics (I.V.R.I.), Assistant Professor
- N. C. Panda, B.V.S.C.; Training in Animal Nutrition (I.V.R.I.), Assistant Professor
- L. N. Das, G.B.V.C., P.G. (I.V.R.I.); Specialised training in Sheep Breeding and Wool Technology, Assistant Professor

## **PUNJAB**

## Department of Agriculture

Arjan Singh, Director

Gursham Singh, Economic Botanist (Cotton and Oilseeds), Jullundur City Gurcharan Singh, Economic Botanist (Cereals and Pulses), Jullundur City Hardial Singh, Economic Botanist (Sugarcane), Jullundur Cantt.

Kirpal Singh, Fruit Specialist, Patiala

- D. S. Atwal, Economic Botanist (Millets), Ferozepore Cantt.
- K. S. Bahans, Maize Botanist, Naraingarh Farm, P.O. Amloh., District Patiala
- H. C. Malik, Assistant Economic Botanist (Fodder), Sirsa
- J. C. Bakhshi, Assistant Horticulturist, Abohar
- J. S. Jawanda, Assistant Horticulturist, Patiala
- K. S. Grewal, Assistant Horticulturist, Attari
- S. D. Dewan, Assistant Horticulturist, Patiala
- B. S. Sidhu, Assistant Horticulturist, Patiala
- A. S. Harike, Superintendent, Horticulture, Patiala
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- T. S. Sandhu, Horticultural Development Officer, Patiala

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- C. B. Faugat, Assistant Wheat Breeder, Gurdaspur
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- K. S. Thandi, Assistant Cane Development Officer, Jullundur Cantt.
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- K. L. Bhagat, Assistant Agricultural Chemist, Ludhiana
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- Sucha Singh, Assistant Plant Physiologist
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# Govt. Agricultural College, Ludhiana

- S. S. Purewal, Vegetable Botanist-cum-Principal
- P. A. Adlakha, Professor of Botany
- M. S. Pannun, Professor of Agronomy
- K. S. Bedi, Plant Pathologist
- J. S. Kanwar, Agricultural Chemist

Sardar Singh, Entomologist

G. S. Sidhu, State Biochemist (Compost)

Pal Singh, Assistant Professor of Agriculture

Harbans Singh Rataul, Assistant Professor of Entomology

- S. L. Chopra, Assistant Professor of Chemistry
- M. R. Ahlawat, Assistant Professor of Agriculture

Balkar Singh, Assistant Professor of Agriculture

- C. S. Pracer, Assistant Professor of Botany
- J. R. Bhambota, Assistant Professor of Horticulture
- D. R. Bhumbla, Reclamation Officer
- N. S. Randhawa, Analytical Chemist

Avtar Singh, Assistant Professor of Entomology

Baxish Singh, Assistant Professor of Chemistry

## Irrigation Research Laboratory (Soil Wing), Amritsar

- H. L. Uppal, M.Sc., Ph.D., F.N.I., *Director:* direction and research on land reclamation, green manures, saline and alkali soils, soil chemistry, soil analysis, farm experiments etc.
- C. L. Dhawan, M.Sc., Ph.D. Physical Chemist and Head of Chemical Section: soil science (soil chemistry and analysis)
- S. R. Sehgal, M.A., Certificate in Statistics, Mathematician and Statistician and Head of Mathematics and Statistics Section: planning and design of experiments; collection, compilation and analysis of data
- U. S. Dalal, B.Sc. (Ag.), Land Reclamation Officer: farm experiments, reclamation of saline, alkaline and water logged lands
- B. B. L. Bhatnagar, M.Sc., Assistant Research Officer: soil chemistry and soil analysis
- J. C. Bahri, M.Sc., Assistant Research Officer: soil chemistry
- K. D. Bhola, M.Sc., Assistant Research Officer: soil analysis

- M. M. L. Malhotra, B.Sc. (Ag.), Assistant Land Reclamation Officer
- K. R. Chaudhry, B.Sc. (Ag.), Assistant Land Reclamation Officer
- K. S. Dhanjoon, B.Sc. (Ag.), Assistant Land Reclamation Officer
- Jagir Singh, B.Sc. (Ag.), Assistant Research Officer (Soil Survey)

## Department of Animal Husbandry and Veterinary Science

## Government Poultry Farm, Gurdaspur

Harbhajan Singh, L.V.P., M.Sc. (Maryland), M.S. (Texas): poultry problems

## Disease Research Laboratory, Patiala

F. C. Malhotra, B.V.Sc., Disease (Vety.) Investigation Officer: investigations in calves, bovines, sheep, goats and poultry

## Government Livestock, Hissar

Girdhari Lal, L.V.P., Assistant Superintendent: livestock and research

- R. M. Sharma, L.V.P.S., Bact. P.V.S.I., Disease Investigation Officer: direction and research on animal bacteriology and virology
- Gurbux Singh, L.V.P., M.S. (U.S.A.), Research Officer, Sheep Research Station: research on sheep and wool
- M. L. Bhandari, L.V.P. (Hons.), Assoc. I.D.D.I., C.O.P., Assistant Dairy Development Officer: work on analysis of milk and milk products and dairy husbandry
- D. S. Kalara, M.V.S.C., Assistant Disease Investigation Officer: investigation and research on disease in pigs
- K. R. Suri, B.V.Sc., Research Officer: training in artificial insemination

# Research Laboratory, Batala

D. V. Khanna, V.Sc., Post-Graduate training in fisheries, investigations in breeding and rearing of fish

## RAJASTHAN

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- M. P. Bhatnagar, B.Sc. (Hons.), Assoc. I.A.R.I., Economic Botanist: plant breeding
- K. M. Mehta, M.Sc., Assoc. I.A.R.I., M.S. (U.S.A.), Agricultural Chemist: supervisory control of research in agriculture, chemistry, soil science and soil survey
- N. Prasad, M.Sc. (Alld.), Assoc. I.A.R.I., Ph.D. (Calif.), Plant Pathologist: guide research work
- K. M. Simlot, M.Sc. (Ag.) (Hons.), B.Ag., LL.B., Ex-Nuffield foundation Fellow in Plant Breeding and Genetics (1951), Cotton Botanist: Incharge of cotton breeding and agronomical work in the State

- P. D. Bhargava, M.Sc., Assoc. I.A.R.I., F.B.S., Assistant Economic Botanist: breeding of wheat, barley, sorghum and bajra
- C. M. Mathur, B.Sc., Assoc. I.A.R.I., Assistant Agricultural Chemist: manures and fertilisers and soil survey
- R. L. Mathur, M.Sc., LL.B., Assistant Plant Pathologist: research on corandum wilt
- S. K. Sharma, M.Sc., Assoc. I.A.R.I., Assistant Entomologist (Research): research of entomology
- Batuk Nath, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Agronomist: agronomical trials, mixed cropping, manures and fertilisers
- J. N. Johari, B.Sc. (Ag.) (Bot.), Assistant Botanist: millets and pulses, plant breeding
- S. M. Gandhi, M.Sc., Wheat Botanist: breeding rust resistant vulgara wheat for Rajasthan
- B. L. Mathur, M.Sc., Junior Specialist: (Zeera) research on cumin wilt
- R. P. Chandola, M.Sc., Ph.D., Cytologist: crop cytogenetics, mutation, radiation genetics
- S. P. Seth, M.Sc., Assistant Chemist: soil testing
- B. N. Handa, B.Sc., M.R.C.V.S., Director of Animal Husbandry
- Budh Singh, G.B.V.C., P.G., Disease (Vety.) Investigation Officer:
- H. A. Shivnani, G.B.V.C., M.S., Assistant Disease (Vety.), Investigation Officer (Sheep and Wool)
- K. L. Chadda, G.B.V.C., P.G., Superintendent, Sheep Research Station, Jorbear (Bikaner)
- H. B. Loohmi, G.B.V.C., P.G., Sheep Research Officer

# Desert Afforestation and Soil Conservation Station, Jodhpur

- C. P. Bhimaya, B.A., M.R. (Hons.), special training in soil conservation for 2 years, *Chief Research Officer*: supervision in the conduct of research work in agrostology, agronomy and silviculture
- P. M. Dabadghao, M.Sc. (Bot.), Soil Conservation Officer (Agrostology): research on arid and semi-arid grasslands, forage and fodder crops
- D. K. Misra, B.Sc. (Ag.), M.Sc. (Agron.), Assoc. I.A.R.I., M.S. (Kans.), Ph.D. (Kans.), Soil Conservation Officer (Agronomy): arid and semi-arid zone agronomic research with special reference to soil and moisture conservation; wind strip cropping, stubble mulching; study of drought resistance in crops
- R. N. Kaul, B.Sc. (Ag.), M.Sc. (Agron.), Assoc. I.A.R.I., A.I.F.C., Soil Conservation Officer (Silviculture): arid and semi-arid zone silviculture research with special reference to soil and water conservation; wind break and shelter-belts and arid zone plant ecology

- Mahendra Prakash, M.Sc., B.Sc. (Edin.), Soil Conservation Officer (Grassland Improvement): afforestation of arid zones; grassland management
- R. B. Das, M.Sc. (Bot.), Advanced training with special reference to arid zones grassland ecology in Australia under UNESCO fellowship, Junior Research Officer: botanical and ecological survey, arid zone grassland ecological research and management and related pasture development; arid zone soil conservation
- I. S. Tyagi, B.Sc., Soil Conservation Assistant: arid zone research
- M. D. Chowdhury, B.Sc., Forest Rangers' Certificate from Dehra Dun, Soil Conservation Assistant: arid zone research
- P. N. Bhatt, B.Sc. (Hons.), M.Sc. (Chem.), Soil Conservation Assistant: arid zone research

#### UTTAR PRADESH

## Department of Agriculture

- B. K. Mukherji, Ph.D. (Lond.), D.Sc., Director: soil chemistry, microbiology and sugarcane, agronomical and chemical problems
- Ram Surat Singh, B.Sc. (Reading), Officiating Additional Director of Agriculture: horticulture
- R. N. Mathur, M.Sc., Ph.D., Officiating Joint Director of Agriculture (Extension): plant breeding and genetics
- A. D. Khan, L.Ag., M.Sc., Ph.D., Officiating Deputy Director, Soil Conservation (Research): soil conservation
- A. S. Srivastava, M.Sc., D. Phil, Ph.D., Entomologist: entomological problems including plant protection
- B. N. Singh, D.Sc., M.Sc., F.N.I., F.N.A.S., F.A.C., F.R.H.S., Crop Physiologist: crop physiology
- G. N. Pathak, M.Sc., Ph.D., Officiating Economic Botanist (Oilseeds): genetics and plant breeding
- H. C. Mirchandani, B.Ag., Assoc. I.A.R.I., Ph.D., Officiating Maize Breeder, Tarai State Farms, Phoolbagh, Naini Tal: agronomy, genetics and plant breeding
- J. G. Shrikhande, M.Sc., Ph.D., A.R.I.C., Officiating Director, Sugarcane Research, Shahjahanpur: chemistry (Agriculture) and general microbiology
- K. Kishen, M.A., Ph.D., Chief Statistician: Statistics
- Kirti Kar, M.Sc., Assoc. I.A.R.I., Officiating Sugarcane Pathologist, Shahjahanpur: sugarcane mycological problems
- L. B. Singh, B.Sc., Ph.D., F.R.H.S., Director of Horticultural Research Institute, Saharanpur: horticulture
- N. K. Das, M.Sc., Assoc. I.A.R.I., Deputy Director (Fertilizers and Manures): soil science, organic and inorganic manures

- P. S. Gupta, M.Sc., M.Sc. (Lond.), Economic Botanist (Cotton): breeding and genetics of cotton, paddy and tobacco crops
- R. R. Agrawal, M.Sc., Ph.D., Agricultural Chemist: agricultural chemistry including soil survey
- R. S. Mathur, M.Sc., Ph.D., W.Va. (U.S.A.), Assoc. I.A.R.I., Plant Pathologist: plant pathology and mycology
- Y. R. Mehta, Ph.D., Officiating Economic Botanist (R): genetics and breeding of rabi cereals, vegetables and potatoes
- H. V. Bhargava, Agricultural Engineer: agricultural engineering
- B. N. Pramanik, M.Sc., Ph.D. (Lond.), D.I.C., F.I.C.S., Assistant Agricultural Chemist (Sugarcane), Shahjahanpur: sugarcane chemistry
- D. C. Agrawal, L.Ag., Assoc. I.A.R.I., Cane Agronomist: Gorakhpur, sugar-cane agronomy
- P. Mukerji, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Soil Chemist, Kanpur: soil chemistry
- C. L. Mehrotra, M.Sc., Ph.D., Assistant Soil Chemist, Kanpur: soil chemistry
- B. K. Singh, B.Sc., M.Sc., Principal, Agricultural School, Gorakhpur: organic chemistry
- B. R. Shukla, M.Sc., Town Compost Officer, Lucknow: manure and fertilizers including composting
- M. P. Singh, M.Sc., Ph.D., Assistant Chemist, Saharanpur: soil chemistry Hari Har Prasad Singh, M.Sc. (Ag.), Soil Chemist, Shahjahanpur: soil chemistry
- P. S. Bhatnagar, M.Sc., Assoc. I.A.R.I., Assistant Economic Botanist (Paddy), Nagina: plant breeding and genetics
- Man Singh, B.Sc. (Ag.), Cane Agronomist, Muzaffarnagar: sugarcane agronomy
- O. N. Mchrotra, M.Sc., Ph.D., Assistant Crop Physiologist, Lucknow: physiology
- A. N. Misra, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Soil Chemist, Rudrapur, District Naini Tal: soil chemistry
- T. N. Shukla, M.Sc. (Ag.), Ph.D., Assistant Economic Botanist (Tobacco), Saraimiran, District Farrukhabad: plant pathology and plant breeding
- A. N. Khanna, M.Sc. (Agril. Bot.), Assoc. I.A.R.I., Horticulturist, Vegetable Breeder, Kanpur: breeding and genetics
- Ram Lal Bhoj, M.Sc. (Ag. Bot.), B.Sc. (Ag.), Cane Agronomist Shahjahan-pur: sugarcane agronomy
- B. R. Gangwar, B.Sc. (Ag.), Assoc. I.A.R.I., Assistant Soil Chemist, Kanpur: soil chemistry
- B. P. Tyagi, M.Sc. (Ag., Bot.), Assistant Economic Botanist (Cotton), Raya, Mathura: plant breeding and genetics
- R. N. Singh, M.Sc. (Ag.), Ph.D., Junior Horticulturist, Saharanpur: horticulture

- I. N. Tandon, M.Sc. (Ag.), Assoc. I.A.R.I., Ph.D., Assistant Mycologist, Saharanpur: mycology
- H. N. Singh, M.Sc. (Ag.), Ph.D., Officer-in-charge, Regional Research Station, Amrokh (Jhansi): plant breeding and genetics
- N. K. Bajpai, B.Sc. (Ag.), Plant Breeder, Flood Research Station, Gographat: breeding and genetics
- S. M. Singh, M.Sc. (Ag.) (Zool.), Assistant Entomologist, Saharanpur: entomology
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## Agricultural College, Kanpur

- R. K. Tandon, B.Sc. (Ag.), M.Sc., Assoc. I.A.R.I., Ph.D., Officiating Principal: plant agronomy
- Babu Singh, M.Sc. (Bot.), Ph.D., D.I.C., Officiating Professor of Botany: agricultural botany and plant pathology
- U. S. Sharga, M.Sc., Ph.D., Post Graduate (Cornell), F.R.E.S. (Zool.): zoology and entomology
- S. S. Khanna, M.Sc. (Zool.), Assistant Professor of Zoology,: zoology
- H. K. Saxena, Ph.D., Assoc. I.A.R.I., Assistant Professor of Botany: plant pathology
- A. N. Pathak, M.Sc. (Ag.), Ph.D., Assistant Agricultural Chemist and Professor of Chemistry: soil chemistry
- S. P. Dhondyal, M.A., B.Sc. (Ag.), Ph.D., Assistant Professor of Agricultural Economics: agricultural economics
- S. S. Saxena, M.Sc., Ph.D., Assistant Professor of Botany: plant breeding, genetics and physiology
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- J. S. Garg, M.A. (Economics), M.Sc. (Ag.), Asisstant Professor of Agricultural Economics: agricultural economics
- N. S. Kushwaha, Ph.D., Assistant Professor of Animal Husbandry and Dairying: animal husbandry and dairying

## Department of Animal Husbandry

- B. N. S. Chowdhary, B.Sc., M.R.C.V.S., Director: direction of research in livestock products, fisheries, animal breeding and animal disease
- H. K. Lall, B.Sc., M.R.C.V.S., Deputy Director (Headquarters), Lucknow: direction of research in animal diseases, animal breeding and farm management and livestock economics and sheep husbandry research, sheep breeding and wool improvement work

## BIOLOGICAL PRODUCTS SECTION

- K. G. Rau, B.A., G.M.V.C., *Deputy Director:* investigations on toxic plants to livestock, blood and vitamin assays in animals, manufacture of veterinary biological products
- J. L. Govil, B.Sc., LL.B., G.B.V.C., P.G. (Mukt.), Bacteriologist
- K. A. Raza, G.V.Sc., P.G. (Mukt.), P.G. (Lahore) Serologist
- N. S. Verma, L.V.P., P.G. (Mukt.), Assistant Research Officer (Production of Rinderpest Vaccine Scheme)

#### KEY VILLAGE SCHEME

S. N. Singh, G.B.V.C., M.S., Ph.D. (U.S.A.), Deputy Director: artificial insemination in cattle and buffaloes

#### POULTRY SECTION

N. R. Michael, B.A., L.V.P., P.G. (Canada), Poultry Development Officer: research in poultry development and poultry disease investigation

#### FISHERIES SECTION

- D. S. Sarbahi, M.Sc., M.S. (A.P.I., U.S.A.), D.Sc., Deputy Director (Fisheries): anatomy and histology of fishes, a study of digestive tract and digestive enzymes of fishes
- R. K. Saxena, M.Sc., Assistant Director of Fisheries: artificial induction of spawning in carps
- G. K. Sarbahi, M.Sc., Assistant Fisheries Development Officer (Stocking): fisheries experiments and artificial breeding of major carps
- K. N. Joshi, B.Sc., Fish Marketing Officer, Allahabad Circle: induced breeding of fishes
- R. N. Misra, M.Sc., Fish Marketing Officer, Bareilly Circle: study of fishes of U.P.; plankton and food and feeding habits of major carps and major cat fishes
- P. S. Pratap, M.Sc., Fish Marketing Officer, Agra Circle: study of Kumaon fishes and induced breeding of carps
- R. D. Katiyar, G.B.V.C., P.G., Assistant Disease Investigation Officer: disease investigation of sheep and goats
- S. S. Rajkumar, G.V.Sc., P.G., Officer-in-Charge, Cross Breeding (Cross Breeding Scheme)

## Amar Singh Jat College, Lakhaoti

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- B. S. Chowdhry, M.A., M.Sc. (Ag.), Head of Agriculture Department Mahabir Singh, M.Sc. (Ag.), Head of Chemistry Department
- B. P. Singh, M.Sc., Head of Entomology Department
- V. D. Gaur, M.Sc., Incharge Botany Section

#### WEST BENGAL

## Department of Agriculture

#### DIRECTORATE

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- S. K. Mukherjee, M.Sc., D.Sc., Joint Director (Research and Education)
- D. Basu, M.A. (Stat.), M.A. (Econ.), D. Phil. (Oxon.), Statistician
- N. C. Roy, M.Sc., B.L., Dip. Ag. (Edin.), Joint Director (Marketing)
- B. N. Banerjee, B.E., C.E., A.M.I.E., Joint Director of (Engineering)
- B. K. Bhattacharjee, B.Sc. (Ag.), Assistant Engineer (Research)
- B. N. Sen, B.Sc., I.D.D., Animal Husbandry Development Officer

## State Agricultural Research Institute

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- B. N. Ghosh, M.Sc., D. Phil., Assistant Botanist, Chinsurah Rice Research Station, P.O. Chinsurah, Dist. Hooghly
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- S. Sen, M.Sc., Assoc. I.A.R.I., Special Officer, (Crop Research)
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- S. B. Chattopadhyaya, M.Sc., Ph.D., D.I.C. (Lond.), Mycologist
- G. N. Das, B.Sc., B.Ag., M.S., Ph.D. (Texas), Assistant Mycologist
- Subodh Sen Gupta, M.Sc., Assistant Mycologist (Plant Protection Scheme)
- S. N. Banerjee, M.Sc., Ph.D. (Lond.), F.Z.S., Entomologist
- B. Chatterjee, M.Sc., Assistant Entomologist (Plant Protection Scheme)
- A. C. Basu, M.Sc., D. Phil., Assistant Entomologist (Paddy Pest Scheme)
- S. K. Mukherjee, M.Sc., D. Phil. (Alld.), Agricultural Chemist
- S. K. Ghosh, Assistant Agricultural Chemist
- S. Banerjee, M.Sc., Ph.D. (Wisc.), Research Officer (Soils)
- S. M. Chatterjee, B.Sc. (Ag.), Sugarcane Specialist
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- M. N. Basak, M.Sc., Biochemist
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- A. T. Sanyal, B.Sc. (Ag.), Assoc. I.A.R.I., Professor of Agronomy, P.O. Mohanpur, Haringhata, Dist., Nadia

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#### DEPARTMENT OF BOTANY

- K. T. Jacob, M.A., Ph.D., *Head*: radiation and cytogenetics, plant breeding
- S. K. Roy, M.Sc., Ph.D., D.I.C., Research Fellow: crown gall tissues, nucleic acid metabolism, and tracer technique
- S. Bose, M.Sc., Fil., LIC., D. Phil., Research Fellow: cytogenetics, chemical mutegenisis, and tissue culture
- R. K. Basu, M.Sc., Research Fellow: radiation genetics, cytology and anatomy in jute
- U. K. Rai, M.Sc., D. Phil., Botanist: radiation and cytogenetics in sesamum and mustard
- A. Das, M.Sc., Cytologist: ionizing radiation, radiations of different wave lengths in plants
- J. G. Bhowal, M.Sc., Ph.D., Cytogeneticist: radiation and cytogenetics for groundnuts

#### DEPARTMENT OF MICROBIOLOGY

- P. N. Nandi, M.Sc., Ph.D. (Lond.), D.I.C., Head: soil micro-organisms and antibiotic production
- K. L. Chaudhuri, M.Sc., Research Fellow: biochemical genetics of microorganisms
- P. P. Mukherjee, M.Sc., Research Assistant: biochemistry of microorganisms and fermentation technology
- A. K. Mishra, M.Sc., Research Assistant: radiation and induced mutation of micro-organisms
- A. C. Das, M.Sc., Ph.D. (Leeds), Senior Research Fellow: ecology of soil fungi
- A. K. Roy Chowdhury, M.Sc., Statistician: agricultural statistics and plant genetics
- A. K. Basu, M.Sc., Research Assistant: radiation and cytogenetics in aman paddy
- B. Mazumdar, M.Sc., Research Assistant: radiation and cytogenetics in aus and boro paddy
- G. Gopalan Nair, M.Sc., Assistant Botanist: radiation and cytogenetics in sesamum and mustard

- V. S. Sarma, M.Sc., Research Assistant: radiation genetics and cytology in tomato
- A. K. Adhikary, M.Sc., Research Assistant: cytogenetics in cotton and other species of Malvaceae
- S. B. Sarkar, M.Sc., Dr. Res. Nat.: plant viruses
- V. N. Gadgil, M.Sc.: plant tissue culture and crown gall disease

# DIRECTORATE OF CINCHONA, GOVERNMENT OF WEST BENGAL, MUNGPOO, DARJEELING

- S. Mukherjee, M.Sc., F.R.I.C., Director: soils and fertilizers; growth of alkaloids in cinchona plants
- R. P. Chatterjee, M.Sc., Soil Chemist (Research Section): soil analysis; survey, manuring
- S. K. Chatterjee, M.Sc., Horticulturist (Research Section): plant propagation and breeding; introduction of new plants

## Bengal Veterinary College, Calcutta

- K. C. Mukherjee, M.Sc., M.R.C.V.S., Principal and Head, Department of Pathology and Preventive Veterinary Medicine
- M. S. Das, B.Sc., M.R.C.V.S., Professor of Pathology and Preventive Veterinary Medicine
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