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NAWABGANJ NAGAR MAHAVIDYALAYA

NAWABGANJ, GONDA, U.P.-271303

M.Sc. (Ag.) AGRONOMY



SYLLABUS

:: AFFILIATED TO ::

Dr. R.M.L. Avadh University, Faizabad

From Session-2006-07

L.P. Sinha

L. Maurya

Principal

Dr. L. Maurya

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CONTENT

Ordinance Governing For M.Sc. (Ag) Agronomy

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R. S. Singh

G. P. Singh

Admission Rules

1. The course leading to the Master of Science in Agriculture (Agronomy) degree shall extend over two academic years.
2. For eligibility to enter the Master of Science in Agriculture (Agronomy) course a candidate must have passed the B.Sc. (Ag) examination with 50% marks from any recognised university.
3. Not more than 40 candidates should be admitted provided they qualify as per university rules.
4. This course will be completed in two years , the details of the different papers studied are as follows -
 - A- M.Sc. (Ag) Agronomy Part I (Previous Year)
 - Paper-1 Modern concepts in crop production.
 - Paper - II Soil fertility & fertilizer management.
 - Paper - III Weed management.
 - Paper - IV Seed Technology & Sustainable agriculture.
 - Paper-V Cereal & Commercial Crop Production.
 - B- M.Sc. (Ag) Agronomy - Part II (Final Year)
 - Paper-I Farm Management & Field Experimentation.
 - Paper-II Irrigation Management, Soil & Water Conservation.
 - Paper-III Pulse & Oil Seeds Production.
 - Paper-IV Crop Management in Problem Areas.

Paper-V Special paper

Agroforestry, Agrostology & Forage Production.

or

Project work on crops.

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R. Srinivas

L.P. Srinivas

Head of Institution, Laya

Examination Rules

1. The examination for the degree shall consist of two parts.
 - (i) M.Sc. (Ag) (Agronomy) Part - I
 - (ii) M.Sc. (Ag) (Agronomy) Part - II
2. Candidate will take M.Sc. (Ag) Part-I (Previous year) examination at the first year of the course & M.Sc. (Ag) Part- II (Final year) at the end of second year of the course.
3. A candidate shall be eligible for appearing at the Part I examination for the M.Sc.(Ag) (Agronomy) degree, if he/she has passed B.Sc. (Ag) examination.
 - (a) Being selected on the basis of admission tests prevailing in the year when admission is sought in the college.
 - (b) There should be minimum of 75% attendance in the theory & practical classes separately.
4. A candidate who after passing M.Sc. (Ag) (Agronomy) Part I exam. has completed regular course of studies for one academic year and has put in a minimum of 75% attendance in theory & practical separately shall be eligible for appearing in part II examination for the M.Sc. (Ag) (Agronomy).
5. There shall be annual examination at the end of each year and a candidate will have to pass separately in Part-I (Previous year) and Part-II (Final year) examination. { separately in theory & practical }
6. Candidates who will not complete 75% attendance in theory and practical separately will not be allowed to appear at the final examination.
7. The result of examination shall be given separately in mark sheets for each year under two heads {Theory & Practical}.
8. The degree will include the division on the basis of aggregate marks obtained in M.Sc. (Ag) Agronomy part I & II all the part i.e.

(A) Theory	(B) Practical
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L.P. Srinivas
 PRINCIPAL
 M. Sc. (Ag) Department
 K. J. Somaiya Institute of Technology & Management

To pass in theory papers in each of part I & II examination the candidate must secure at least 36% marks in theory and practical separately .

9. The candidates are permitted to write their answer in Hindi/English medium .
10. If a candidate is failing in a theory paper by getting less than pass marks, he will be declared successful by giving maximum 08 % marks as grace.
11. In M.Sc. (Ag) Agronomy Part I & II the candidates must obtain 36% marks in part A theory & practical separately shall be declared successful. The unsuccessful candidate shall be permitted to avail the facilities of re-examination in one theory paper under marks/division improvement.
12. A candidate must complete the course of study for the degree of Master of Science in Agriculture (Agronomy) and pass the final examination within a total period of four years commencing from his/her first admission in the M.Sc. (Ag) (Agronomy).
13. The division shall be assigned to the successful candidates on the following basis.
 Third division - 36% and above but below 48% of the aggregate marks.
 Second division - 48% and above but below 60% of the aggregate marks.
 First division - 60% and above of the aggregate marks.
 Distinction 75% or above.

A student securing 75% or above in any paper shall be declared to have obtained distinction in that provided he/she passed in all the papers in the first attempt and this fact shall be mentioned in the degree.

Distinction obtained in any theory papers shall be mentioned in the degree awarded to the candidates.

The marks of the part I and part II examination of theory & practical respectively M.Sc. (Ag) Agronomy will count together for a place on the basis of pass list for determination of division.

R. M. Singh

L. P. Srivastava

Head of the Department

SCHEME OF EXAMINATION

FOR

M.Sc. (Ag) AGRONOMY Part I (Previous Year)

<u>Part A Theory</u>	✓	✓
Paper- I Modern concepts in crop production.	50	18
Paper - II Soil fertility & fertilizer management.	50	18
Paper - III Weed Management.	50	18
Paper - IV Seed Technology & Sustainable agriculture.	50	18
Paper- V Cereal & Commercial Crop Production.	50	18
<u>Part B Practical</u>	✓	✓
Paper- I Modern concepts in crop production.	50	20
Paper - II Soil fertility & fertilizer management.	50	20
Paper - III Weed Management.	50	20
Paper - IV Seed Technology & Sustainable agriculture.	50	20
Paper- V Cereal & Commercial Crop Production.	50	20
<u>Part C Sessional</u>	100	40
Grand Total	600	230

R. S. Sanyal

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G. P. Sanyal
PROFESSOR

SCHEME OF EXAMINATION

FOR

M.Sc. (Ag) AGRONOMY Part II (Final Year)

<u>Part A Theory</u>		
Paper- I Farm Management & Field Experimentation.	50	18
Paper -II Irrigation Management, Soil & Water Conservation.	50	18
Paper -III Pulse & Oil Seeds Production	50	18
Paper -IV Crop Management in problem Areas.	50	18
Paper- V Special paper Agroforestry, Agrostology & Forage Production.	50	18
or Project work on crops		
<u>Part B Practical</u>		
Paper- I Farm Management & Field Experimentation.	50	20
Paper - II Irrigation Management, Soil & Water Conservation.	50	20
Paper - III Pulse & Oil Seeds Production	50	20
Paper - IV Crop Management in problem Areas..	50	20
Paper- V Special paper :- Agroforestry, Agrostology & Forage Production.	50	20
or Project work on crops		
<u>Part C Sessional</u>	100	40
Grand Total	600	230

R. M. Singh

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G. P. S. S. S. S.
PROFESSOR

Department of Agronomy, U. P. Mandalaya

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M.Sc. (Ag) Agronomy

Part-I (Previous Year)

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L.P. Srinivas
PRINCIPAL
Ranghri P. O. - Chittoor
N. S. S. Chittoor

PAPER -I

Modern concepts in crop production

Theory –

- Historical development of crop production, origin of agriculture characteristic of primitive, traditional and modern agriculture.
- Crop growth in relation to environment, agro-climatic & agro-ecological zones of India.
- Growth & growth analysis, concept of potential yield & its realization.
- Modern Concepts in tillage : zero/minimum tillage , conservation tillage etc.
- Optimization of plant population and planting geometry & concepts of ideal plant population, crop modeling , crop response production function.
- Concepts regarding cropping systems monoculture rotation & multiple cropping , mixed cropping & intercropping.
- Concepts of balanced fertilization, Mitscherlich, Baule & Inverses-yield nitrogen laws , crop logging & critical nutrient concentration.
- Organic farming: crop residue recycling and management. Precision agriculture, cropping & farming systems for sustainable agriculture.
- Air & water pollution and it effects on plants.

Practical –

- Planning of agronomic experiment.
- Field studies of agronomic experiment.
- Practical experience in fitting response curve.
- Determining the growth analysis.
- Practical record and viva-voce.

Ref. Books.

R. Mary

H. P. Srivastava
PRINCIPAL

Chief, Dept. of Agriculture
NEW DELHI, INDIA

PAPER -II

Soil Fertility & Fertilizer Management

Theory -

- Soil fertility & productivity, factors affecting it, fertility losses & maintenance.
- Mineral nutrition of crop plants, essential elements for crop growth and development, criteria of essentiality, classification of essential elements nutrient availability, nutrient deficiency symptoms in crops.
- Bulky organic manures, concentrated organic manures & amendments, bio fertilizers.
- Classification of manures & fertilizers.
- Study of primary, secondary and micro nutrients fertilizer.
- Fertilizers dose and their calculation, time and methods of fertilizer application.

Practical -

- Procedure of plant & soil sampling, determination of electrical conductivity and soil pH.
- Nutrients content of different manures & fertilizers.
- Organic matter and N,P,K, calculation of manurial doses.
- Identification of visual symptoms of nutrient deficiency.
- Practical record and viva-voce.

R. S. Singh

C. P. Singh
PRINCIPAL
NANDALAL P. S. COLLEGE, GATEWAY
N. S. ROAD, GATEWAY

PAPER -III

Weed Management

Theory –

- Weed : Introduction & Definition, Classification of weeds, harmful effects & Importance of weeds.
- Weed ecology, characteristics of weeds- Seed production ability, seed viability, dormancy, growth ability, Soil water requirement, Reproduction of weeds, dissemination of weeds.
- Crop weed competition, component of competition, factors affecting crop weed competition, allelopathy.
- Principles of weed management, methods of weed management: Preventive measures, eradication & control methods – Mechanical methods , agronomical methods , biological methods & chemical methods , integrated weed management .
- Classification of herbicides , herbicide formulations , selection of herbicide , time & methods of herbicide application , critical stage for weed control , Precautions in using herbicides , mode of action herbicide , Selectivity of herbicide.
- Persistence of herbicide in soil , herbicide residues management, effect of herbicides on environment .
- Weed sampling technique , weed composition analysis , calculation of herbicide doses.

Practical –

- Identification & collection of common weeds of the locality.
- Weed survey in crops & cropping systems .
- Growth analysis of crop-weed growing in association & study of crop. Weed competition.
- Calculation of herbicide requirement , weed control efficiency , weed index.
- Identification & use of tools for weed control.
- Identification of herbicide & biological agents for controlling major weeds under field conditions.
- Preparation of spray solution of herbicides.
- Preparation of herbarium.
- Practical record & viva-voce.

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PAPER -IV

Seed Technology & Sustainable Agriculture

Theory –

Seed technology

- Seed technology : Definition, importance and scope in crop production, characteristic of good quality seeds.
- Seed dormancy: causes of dormancy, method of breaking dormancy.
Seed treatment.
- Seed production techniques & agronomical practices for important crops. Its harvesting & threshing, drying, cleaning, grading, storage.
- Types of seed, seed sampling, seed testing: purity, germination, real value, viability, seedling valuation, moisture test. Seed certification and its importance in quality seed production, provision of seed Act.

Sustainable agriculture

- Introduction, meaning and definition of sustainable agriculture.
- Problems of modern agriculture, management practices in sustainable agriculture, difference between sustainable and modern agriculture. Factors responsible for sustainable agriculture.

Practical –

- Seed quality testing: Purity, germination, real value, viability, and seedling evaluation.
- Calculations of seed rate, test weight procedure.
- Seed production techniques & agronomical practices for important crops.
- Study of sustainable and modern agriculture.
- Tours and visits.
- Practical record and viva-voce.

R. Mary

C. P. Srinivas

PAPER -V

Cereal and commercial crop Production

Theory -

Study of the following crops with special reference to Uttar Pradesh :-
Origin, history, distribution, improved varieties, improved agronomic practices, harvesting and yield, crop production and latest research on various agronomic aspects of crop cultivation:-

Cereal crops :

Paddy, Maize, Sorghum, Pearl millet, Wheat, Barley and Smaller millets :- Sawan, Kodo, Kakun, Ragi & Cheena.

Commercial crops :

Sugarcane, Potato, Tobacco, Cotton, Jute, Sunn-hemp.

Practical

- Study of different farm operations for successful growing of above mentioned crops.
- Judging of quality, seed treatment, calculation of seed rate, fertilizer requirement.
- Cropping schemes and cost of crop production studies.
- Tours and visits.
- Practical record and viva-voce.

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L.P. Srivastava
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M.Sc. (Ag) Agronomy

Part-II (Final Year)

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Wang, J. and J. S. Allen, 1993. The effects of the 1992-1993 El Niño on the marine fishery of the Gulf of California. *U.S. Fish. Bull.* 91:103-114.

PAPER -I

Farm Management & Field experimentation

Theory -

(a) Farm Management:

Definition, Objectives and scope of farm management, Principles underlying successful management of farms. Maintained for Experimental Demonstration & Commercial farms.

Farm layout:

General survey of land, Layout of field, roads, irrigation & drainage channels & building, fencing for different farms .

(b) Field experimentation:

Objectives & Principles of field experimentation , Study of CRD, RBD, LSD, SPD and confounding design. Planning of field experiments, criteria of selection of treatments, conduct of trials, selection of field, allocation of treatment, layout of experiment, precautions during sowing, harvesting, threshing, principles of sampling, recording of biometrical observation and selection of design. Experiments to study the effect of treatment. Compilation, presentation & interpretation of data, sources of errors in field experimentation & method of reducing it. Uniform fertility trials, crop cutting & estimation.

Practical -

- Land survey, layout plan of the farm, calculation of field under layout, cost of fencing.
- Selection of treatments & design, laying out of field experiments recording, compilation, presentation & interpretation of data, missing plot technique, analysis of Variance.
- Tours and visits.
- Practical record and viva-voce.

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PAPER -II

Irrigation Management , Soil & Water Conservation

Theory –

(A) Irrigation Management

- Water & its role in plants, water resources of India and irrigation projects and extent of area and crops irrigated in India and different states.
- Soil plant water relationship, water movement in soil, measurement of soil moisture.
- Soil moisture stress & plant growth, scheduling & methods of irrigation: when to irrigate, how much to irrigate & how to irrigate.
- Measurement of irrigation water, consumptive use of water, irrigation requirement of important crops, irrigation efficiencies and water use efficiency.
- Quality of irrigation water and management with poor quality of irrigation water. Cropping Pattern in relation to water supplies.
- Excess water and drainage requirement of crops, methods of field drainage, their lay out & spacing.

(B) Soil & Water Conservation

- Erosion, factors, affecting it, types of erosion.
- Soil conservation definition, methods of soil conservation agronomic measures contour cultivation, strip cropping , cover crops, wind breaks & shelter belts. Mechanical measures: bunding, gully control, bench terracing.
- Watershed management: definition, scope, approach, component, steps in implementation of water shed.
- Alternate land use systems: agro forestry, ley farming.

Practical –

- Measurement of soil moisture.
- Determination of bulk density, porosity, irrigation measurement devices & their use.
- Study of irrigation experiment, visit and study of the operational research project at farmers field.
- Study of different type of erosion, identification of grasses & legumes.
- Use of implements & legumes in soil conservation.
- Practical record and viva-voce.

R. Maurya

L. P. Srivastava
Principal
H. P. S. College, Ghalana
Distt. Sonbhat, U.P.

PAPER -III

Pulse and Oil Seed Crops

Theory -

Study of the following crops with special reference to Uttar Pradesh:-
Origin, history, distribution, improved varieties, improved agronomic practices, harvesting and yield, crop production and latest research on various agronomic aspects of crop cultivation:-

Pulse crops :

Arhar, Moong, Urd, Cowpea, Gram, Pea, lentil, soybean .

Oil seed crops :

Rape seed and mustard, Linseed, Safflower, Til, Sunflower, Castor, Groundnut.

Practical -

- Study of different farm operations for successful growing of pulses and oil seed crops.
- Judging of quality, seed treatment, calculation of seed rate, fertilizer requirement.
- Cropping scheme and cost of crop production studies.
- Tours and visits.
- Practical record and viva-voce.

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PAPER – IV

Crop Management in Problem Areas

Theory —

- Origin, nature, distribution and properties of saline, sodic, calcareous, acid & water logged soils.
- Plant response to soil reaction, nutrient imbalance in problem soils, crop tolerance to salinity, sodicity, acidity and water logging.
- Reclamation of problem soils agronomic practices in relation to problem soil, cropping pattern for problem soils.
- Definition, concept, characteristic of dry land and rain-fed farming, significance of dry land farming in Indian agriculture.
- Constraints limiting crop production in dry land areas.
- Drought, type of drought, adaptation of crop plant to drought, drought management strategies, preparations of appropriate crop plan for dry land areas, mid season correction for aberrant weather conditions.

Practical –

- Determination of soil pH, electrical conductivity & lime requirement.
- Measurement of soil & water losses; in situ soil moisture conservation practices, mulches.
- Measure to manage prolonged drought during crop season, dry seeding practices due to delayed monsoon rain.
- Visit to problematic areas to acquaint with production constraints.
- Practical record and viva-voce.

PAPER – V

Agro forestry, Agrostology & Forage Production

Theory –

- Agro forestry introduction, definition & its importance in agriculture. Type of agro forestry, suitable trees for different agro forestry systems & their advantages .
- Agrostology: Definition & scope, Study of ley farming & agri-silvi-pastoral system & its importance.
- Forage Production: Study of the following crops with special reference to U.P. origin, history, distribution, improved varieties, agronomic practices & harvesting like Jowar, Bajra, Maize, Napier grass, Guinea grass, Oats, Berseem, Dinanath grass.
- Silage & hay making practices & their study.

Practical –

- Study of different systems of agro forestry .
- Study & practices of agrostology & agri-silvi-pastoral system .
- Identification of fodder crops grasses & their seeds. Testing the quality & germination of forage crops. Practical study of agronomic practices for production of fodder crop & grasses.
- Study of procedure for silage & hay making.
- Maintenance of herbarium of different grasses & fodder crops.
- Practical record and viva-voce.

R. Manoj

L. P. S. S. S. S.
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Head of the Department
National Institute of Technology