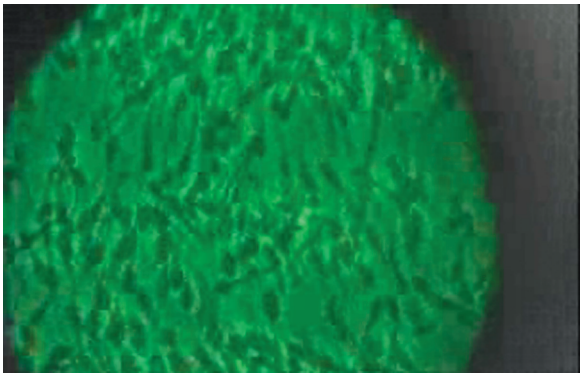
AGRICULTURAL SCIENTIST



ALSO CALLED

- Rural scientist
- Scientist

WHAT'S THE JOB ABOUT?

- **Working with the science that underpins agriculture**
  Plants, animals, soils, water, pest/weeds, microbes

- **Solving production and environmental problems in agriculture**
  Working to improve the profitability and sustainability of rural enterprises

Agricultural scientists often specialise in one of the following fields:

o AGRONOMY – The study of crop and pasture production
- Agronomists develop methods of improving the growth, yield and quality of crops and pastures
- Areas of research include plant growth mechanisms, water use efficiency, plant nutrition, soil/nutrient/fertiliser interactions, crop breeding and selection, weeds, pest management, plant pathology, crop protection

o ANIMAL SCIENCE – The study of livestock production
- Animal scientists work with sheep meat and wool production, beef and dairy cattle, goats, pigs, poultry and newer livestock industries such as alpacas
- Areas of research include growing conditions, livestock nutrition, breeding, genetic technologies, productivity and quality of animal produce, pest and disease management

o SOIL SCIENCE – The study of soils
- Soil scientists conduct research and advise on soil conservation and management
- Areas of research include soil biology, chemistry, physics, and hydrology, soil geology, formation and classification, nutrient cycles

o MICROBIOLOGY – The study of microorganisms including fungi, bacteria, viruses and prions
- Microbiologists study both harmful and beneficial organisms
- Areas of research include identification and control of disease organisms, food technology, environmental management

Advising

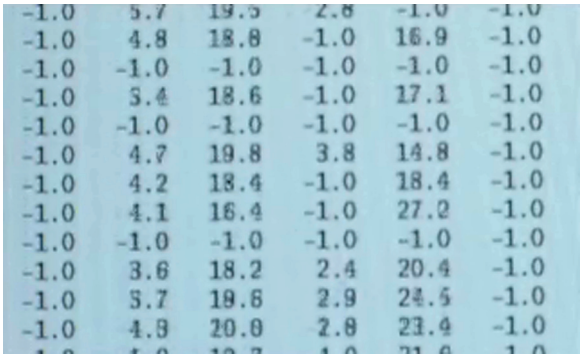
o GENETICS – The study of heredity and the genetic variation in organisms
- Agricultural geneticists investigate the genome of plants and livestock species and develop breeding strategies
- Areas of research include breed and variety evaluations and technologies, genetic engineering, artificial insemination and embryo technologies

o EPIDEMIOLOGY – The study of disease, usually in animals
- Epidemiologists study the occurrence, transmission and control of livestock diseases
- Areas of research include immunology, the development of vaccines and veterinary chemicals, parasites, exotic diseases

o ENTOMOLOGY – The study of pests, especially insects
- Agricultural entomologists study pest populations and damage, and develop integrated pest management programs using a range of control methods
- Areas of research include pest ecology and life cycles, biological, physical and chemical control methods, pest population dynamics, applications and impacts of genetic modification

o ECOLOGY – The study of relationships between organisms and their environment
- Agricultural ecologists/environmentalists develop methods of controlling and minimising the harmful effects of agricultural activities on the environment
- Areas of research include soil and water ecology, distribution and abundance studies, habitat protection, land and soil rehabilitation

o BIOTECHNOLOGY – The study of applying scientific and engineering principles and practices to develop new materials or modify microorganisms, plants and animals
- Agricultural biotechnologists develop methods for waste recycling, improving food quality, and producing hormones and vaccines
- Areas of study include fermentation, genetic engineering, plant cloning, tissue culture, quality assurance



Advising

WORK CONDITIONS

- Agricultural scientists work for government departments, universities, research organisations, large companies and producer organisations.
- Careers may be in research, extension and advisory roles, teaching, management, administration, marketing and the media.
- Work may take place in a laboratory and/or office, outdoors with field trials and animal work and in classrooms or lecture theatres
- The job can be theoretical but mostly requires practical and applied scientific research.
- The results of research are published and presented in reports and scientific papers.
- Depending on the workplace, the workday and hours may be structured or may be flexible with irregular, long hours depending on the activity.
- Agricultural scientists may work on their own, as part of a team or monitor the work of others.
- Opportunities exist to travel both within Australia and overseas to work and attend conferences.

EXPERIENCE AND RELATED TRAINING

- To be employed as an agricultural scientist you must have a degree in a relevant field of study.
- Specialisation usually occurs through postgraduate studies.

Advising

Career path	Training Requirements
• Graduate agricultural scientist You undertake broad training in a range of the above fields with some specialisation in either animal or plant science.	TERTIARY EDUCATION • Degree in Agriculture (or equivalent)
• Postgraduate agricultural scientist You specialise in one of the above fields with course work and/or research.	TERTIARY EDUCATION • Masters in Agriculture (or equivalent)
• Doctorate You undertake new research in a field related to agriculture.	TERTIARY EDUCATION • Doctor of Philosophy (PhD) in a field related to agriculture
Career paths in private industry, research organisations, the public sector and universities will depend on experience, published research and service.	

Related Jobs

- Agricultural engineer
- Agriculture teacher
- Company representative
- Extension officer
- Farm manager
- Farmer
- Food technologist
- Rural business manager/owner
- Technical officer
- Veterinarian

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