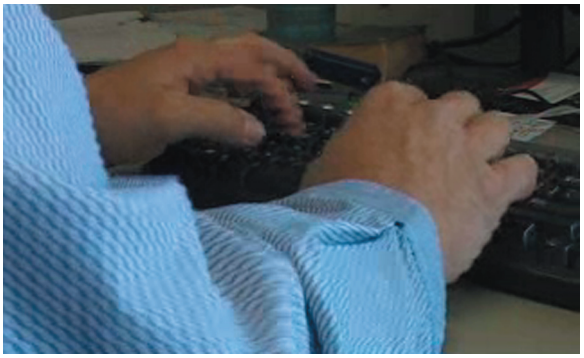
# AGRICULTURAL ENGINEER



## ALSO CALLED

- Mechanical engineer
- Civil engineer
- Hydraulic engineer
- Hydrologist
- Soil engineer

## WHAT'S THE JOB ABOUT?

- **Solving engineering and technical problems relating to agriculture**
  Sustainable agricultural production, management of natural resources, efficient use of machinery and equipment, production systems, post-production handling, storage and transport

- **Conducting research**
  Surveying existing literature, proposing hypotheses, designing experiments to test hypotheses under both laboratory and field conditions, analysing results, writing and presenting reports

- **Developing and applying new technologies**
  Minimum tillage, computer and satellite applications, controlled environments, packaging solutions, resource use efficiencies

## Advising

**Agricultural engineers often specialise in one of the following fields:**

o HYDROLOGY– The distribution, conservation and use of water.
- Planning, supervising the building of and managing irrigation, drainage, flood and water control systems and effluent schemes

o MACHINERY AND EQUIPMENT– Designing agricultural machinery components and equipment
- Developing new instrumentation such as sensing, measuring and recording devices
- Designing, building and testing machinery and equipment to ensure adequate performance

o PROPERTY STRUCTURES – Planning and supervising the building of farm and related structures such as animal housing and handling facilities, greenhouses, aquaculture sheds and processing and storage facilities

o SOIL AND WATER CONSERVATION – Designing soil conservation works, repairing sites of degradation, controlling water retention, water logging and soil salinity
- Providing advice on water quality and pollution issues
- Carrying out environmental impact studies and monitoring construction sites for environmental problems
- Designing and supervising environmental and land reclamation projects and the construction of water storage facilities
- Assessing irrigation and drainage requirements of soils

o ALTERNATIVE ENERGY PRODUCTION – Designing and installing solar, wind and water energy supply systems and biofuels

o CROP PRODUCTION – Supervising ground preparation, sowing and harvesting
- Determining crop water requirements and designing and evaluating irrigation sy tems for efficient production
- Examining soil compaction effects of controlled traffic systems

o POST-HARVEST OPERATIONS – Supervising processing, packaging and transport of produce
- Managing cleaning, grading, milling, mixing and processing of grains and fibres
- Sorting of fruits and vegetables based on colour and size
- Supply chain and “cool” chain analysis of refrigerated produce

# Advising

## WORK CONDITIONS

- Agricultural engineers work for government departments, universities, research organisations, large companies and private consulting firms.
- Careers may be in research, extension and advisory roles, teaching, management, administration, production and product development.
- Work may take place in a laboratory and/or office, testing facilities, factories, 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.
- There may be involvement in the stages of product development and marketing.
- Depending on the workplace, the workday and hours may be structured or may be flexible with i regular, long hours depending on the activity.
- Agricultural engineers 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 engineer you must have a degree in a relevant field of study.
- Initial specialisation occurs during undergraduate studies.
- Further specialisation usually occurs through postgraduate studies.

# Advising

| Career path | Training Requirements |
|---|---|
| • Graduate agricultural engineer<br><br>You undertake broad training in a range of the above fields with some specialisation. | TERTIARY EDUCATION<br><br>• Degree in Engineering<br>With a major in Agricultural Engineering<br>(or equivalent) |
| • Postgraduate agricultural engineer<br><br>You specialise in one of the above fields with course work and/or research | TERTIARY EDUCATION<br><br>• Masters in Engineering<br>(or equivalent) |
| • Doctorate<br><br>You undertake new research in a field related to agriculture. | TERTIARY EDUCATION<br><br>• Doctor of Philosophy (PhD)<br>in a field related to agricultural engineering |
| Career paths in private industry, research organisations, the public sector and universities will depend on experience, published research and service. | |

## Related Jobs

- Farm manager
- Farmer
- Rural business manager/owner
- Company representative
- Extension officer
- Agriculture teacher

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