SYLLABUS IN SHEEP HUSBANDRY AND WOOL SCIENCE

FORMS II – IV

ADVANCED LEVEL

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SYLLABUS IN SHEEP HUSBANDRY AND WOOL SCIENCE

ADVANCED LEVEL

The objective of the advanced level syllabus is to equip pupils to engage in sheep husbandry at the practical level and to provide them with appropriate background theoretical knowledge of the sheep and wool industry.

The syllabus is designed to stimulate students who express an interest in animals and who may have reasons for following a vocation in either wool production, wool commerce or wool research.

The course contains a high content of practical work but also deals with the principles of sheep management and wool science at greater depth than the ordinary and credit level courses.

SHEEP HUSBANDRY

THEORY	PRACTICAL
The Importance of Wool and other textile fibres.	Microscopic examination of wool, hair etc.
Wool and the Australian Economy.	
The Types of Sheep. Differences in their wool type and uses made of their wool.	Examination and observation of types of sheep. Showing of appropriate movies.
Classification of Breeds of Sheep. Basis of classification, length of fibre, fibre diameter, country of origin or evolution.	Examination of various sheep breeds in the field, collection of photographs, project activities.
The salient characteristics fitting them to specific purposes, covering, conformation, faults, uses and economic relationships of the more important sheep breeds used in Australia.	
Classification:	
Australasian Breeds:	(Australian) Merino, Corriedale, Polwarth, Zenith.
Long Wool British Breeds:	Border Leicester, Lincoln Leicester, Romney Marsh.
Short Wool British Breeds:	Dorset Horn, Hampshire Down, Ryeland, Shropshire, Polled Dorset Horn.
Mountain Breeds:	Cheviot, Scotch Blackface.
Sheep Biology.	Examination of external features of wool and mutton sheep types.
The Points of a Sheep.	
General Physical Structure and Physiology.	Post mortem examination, films, charts to illustrate the various body systems. Recording by simple labelled diagrams.
Detailed treatment of anatomy—physiology of the alimentary canal.	Preparation from study of specimens, diagrams indicating the chief divisions of alimentary canal.
Ruminant Digestion.	Comparison of development of rumen and associated organs in animals of various ages (eg lambs on milk and mature sheep on pasture).
Study of Reproductive System. General structure and physiology.	Selected specimens, slides, charts, etc.
The sexual cycle in the ewe — the role of the ovary — breeding cycle — fertility — mating — gestation, parturition.	Examination of selected specimens to illustrate stages of sexual cycle. Films on use of vasectomised rams, and the role of artificial insemination.
Dentition.— number and arrangement of teeth in the sheep — time of eruption — importance in age determination and food utilisation.	'Mouthing' of sheep of various ages. Preparation of models, charts and diagrams.
Points of Constitution with particular reference to Merino ram and ewe.	Comparative field study of the points of constitution with suitably selected animals of each sex.
Cull points.	

THEORY	PRACTICAL
Sheep and Wool Terms. (See Glossary of Sheep and Wool Terms.) Introduce at appropriate times in the course particular terms and ensure that pupils fully appreciate their meaning and importance.	Application of correct term especially when working with sheep or wool in the field or shed.
The History of Sheep and the Wool Industry.	
The Spanish Merino and its spread in the 18th and 19th century — early types and strains — Vermont — Rambouillet — Saxony.	
Evolution and Development of the British Breeds.	
The Merino in Australia and the development of industries associated with sheep. Growth and expansion of the industry. Mudgee type, Peppin type, influence of Vermont.	
Sheep Areas in the Commonwealth with particular reference to New South Wales. An outline of the areas devoted to sheep in the Commonwealth with reference to density of sheep population. The sheep districts in New South Wales — Coastal Tablelands, Western Slopes, near Western Plains, or Marginal Country, far Western Plains.	Study of maps and charts. Preparation of graphs etc.
Distribution of Sheep Types. Relative importance of the main types in the different States and broad regions of occurrence. More particular study for New South Wales, percentage of Merino and crossbred wools from each State.	
Sheep Numbers. Fluctuations in sheep numbers and causes.	Suitable charts and graphs.
Density of Sheep Numbers in various districts especially in New South Wales.	Showing of strip or movie films relating to farm details.
Carrying Capacity and its significance.	
Size of Holdings. General study of areas devoted to individual holdings and why farm size varies.	Visits to typical farms. Plans, diagrams and models displaying general layouts of farms.
Sheep Management.	
Feeding of Sheep. Natural pastures in sheep areas of New South Wales. Edible shrubs and trees. Pasture conservation, hay and silage. Pasture Improvement: The value of legumes; introduced grasses; pasture management effect on output of wool, lamb and mutton.	Collection of samples.
The effect of Sheep and Beef Cattle on pastures.	
Digestion and Feeding requirements.	
Principles of Nutrition. — Carbohydrates; proteins, minerals, vitamins, fibre, and water.	
Supplementary Feeding. Fodder conservation. Why, when and how much. Drought feeding.	Films.
Diseases of Sheep. Principal sources of important economic loss. A brief study of the life-cycle, in sufficient detail to classify control methods, distribution, symptoms and treatment of the following parasitic diseases.	
External. Blowfly, lice, ked, itch mite.	Films and collection of parasites.

THEORY	PRACTICAL
Internal. Barbers pole or large stomach worm *(Haemonchus contortus).* Black scour worms (Trichostrongylus) spp. Medium brown stomach worm *(Ostertagia circumcineta)* and *(Cooperia)* spp. Nodule worm *(Oesophagostomum colum bianum).* Large mouthed bowel worm *(Chabertia ovina).* Tapeworm, hydatid disease, liver fluke *(Fascioloa hepatica).*	Collection of parasites.
Infectious Diseases. A study of symptoms, preventive measures and treatment of:	
Anthrax.	Films.
Pulpy kidney (Entero-toxaemia).	
Scabby mouth (Contagious Ecthyma).	Films to be screened.
Foot rot and foot abscess.	Films to be screened.
Non-lnfectious Diseases and Nutritional disorders. Pregnancy toxaemia, mineral deficiencies, poison plants.	Collection of plants.
Operations on a Sheep Property. Purchase and care of rams, classing of rams and ewes, considerations of productivity.	
Mating, care and management of the breeding ewe.	
Vaccination.	
Lambing, weaning, care of young animals.	
Earmarking, castration, tailing or docking, shearing, crutching and wigging and dipping. Jetting and mulesing.	Visits to properties when these operations are in progress.
Sheep Judging.—points for consideration.	Participation in sheep judging competitions at agricultural shows and field days.
Preparation of Stock Years in detailed tabular form to show the various operations on a basis of feeding, breeding and general management for a typical year (eg for a given sheepraising district).	Preparation of models, plans and diagrams.
Shed Management. General outline of the arrangement of typical shearing shed and the purpose and organisation of each section.	
Shed labour required and the duties of the various shedhands.	Showing of selected films.
Economic background to Sheep and Wool Production. Introductory treatment of cost structure in relation to sheep and wool production.	
Trends and possible development in the pastoral industry.	

WOOL SCIENCE

THEORY	PRACTICAL
Biology of the Skin and of the Wool Fibre, skin structure; growth of wool fibre; follicle development; sebaceous glands; sudoriferous glands; structure of wool fibre; chemical composition.	Microscopic examination of wool, hair, etc with diagrammatic recording in form of labelled sketches. Examination of slides, charts and models.
Properties of Wool and Wool Goods. Felting capacity; elasticity; non-conductivity; affinity for dyes; chemical stability; non-inflammability; hygroscopic power; heat of wetting.	Simple experiments with wool and other fibres to illustrate and emphasise various properties.
New added properties. Si-Ro-Moth'd, Sironized, Si-Ro-Set, shrink proofing, machine washability.	

THEORY	PRACTICAL
Relation of these properties to fibre structure.	Brief recordings only.
Fundamentals of Wool Quality. Fibre diameter and definition of fineness. The relationship of quality number and micron measurement. Types of fabric; factors affecting wool prices; spinners and top-makers; carding wools; the fleece and the environment of the sheep.	Practical exercises using wool types.
Principles Underlying Wool Type Recognition. Length; density; fineness; character; soundness; colour; softness; dust and burr.	Practical exercises in sorting wool to type.
Wool Faults:	
Hereditary Environmental } faults.	Recognition from suitable material of faults in wool.
Hairiness, heterotypic fibres, unevenness, coloured fibres.	
Tenderness.	
Cotted, webby, stringy, stains.	
Vegetable fault, dust and weathering.	
Emphasis must be placed on the effect of wool faults on manufacture.	The collection, mounting and correct labelling of wool displaying faults indicated.
Wool Yield. The components of greasy wool and the assessment and testing for washing yield.	Scouring of greasy samples to ascertain washing yield.
The principles of core sampling.	The use of a core sampling instrument. Grading Merino and crossbred wool to light and heavy condition within each quality number.
Principles of Worsted and Woollen Yarn Production. Elementary principles of yarn and cloth production.	Visits to mills. Use of film strip or suitable movie films.
Differences in fabric structure and materials used in cloth and yarn production.	Collection and appropriate mounting of samples of processed and semi-processed wools.
Manufacturer's Types. Warp wools, spinners and topmakers' wools, weft, French combing, preparing wools, combing, carding, clothing wools, hosiery, felts, lamb's wool.	Detailed identification and assessment of wool type samples.
Picking up, Skirting and Rolling. Picking up, throwing out, skirting, rolling, picking up lamb's wool.	Practical experience in these operations in shed and classroom.
Principles Underlying the Preparation of Wool for Market. Free Merino, free crossbred, inferior wools, such as tick-stained, overgrown, cotted, dusty, etc.	Practical exercises in sorting each type of wool.
Preparation of Lower Lines for Market. Principles of sorting, Merino pieces, Merino lambs, come-back pieces, crossbred lambs.	Preparation of lines in small and large clips.
Structure and Properties of Other Textile Fibres. Groups of fibres, hair, mohair, alpaca and vicuna, cashmere, camel hair, horse and cow hair, fur fibres, silk cotton, flax, hemp, jute, china, grass, asbestos, man-made fibres, alginic acid.	Collection, examination and mounting of samples. Observation of fibres under microscope with suitable recordings of observations.
Economic Influence of Synthetic Fibres on the Status of Wool. Blending and the importance of other influences on world wool prices.	Collection and discussion of appropriate data relative to 'Synthetics versus Wool'. Class debates.