

Squab raising

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Introduction

There has been a gradual development in the Australian table pigeon industry since its introduction from overseas some years ago. Keeping pigeons for racing and showing has also become a popular hobby in New South Wales. Victoria is the major squab-producing state.

Rearing pigeons for meat is an accepted industry in overseas countries, particularly Europe and the United States. Young pigeons bred for meat are known as squabs. Squabs have never flown and have never usually eaten anything except 'pigeon milk', which is formed in the crops of both parents during the incubation period. Squabs are ready to fly and leave their nest at about 26–30 days of age. They then weigh about 500 g and are ready to market for the table.

Breeds

While several breeds and varieties of pigeons are available in New South Wales, the most popular and perhaps the best for squab production are the White King and Red Carneau (see photo at right). Crosses of these breeds with each other and with the Mondain are suitable for squab breeding.

The **White King** originated in the United States as a result of crossing fancy breeds with breeds of homing pigeons. The features of White King are:

- short, stocky body
- well-rounded breastbone
- fairly large head
- pinkish white skin
- tightly feathered
- adult birds weigh 750–850 g.

The variety White King belongs to the King breed. Other varieties of the King breed include:

- Red King
- Yellow King
- Blue King
- Dun King.

These are similar in body to the White King, but differ in colouring.

Figure 1. White King hen (on left) and Red Carneau cock (on right)



The **Red Carneau**, which originated in France, is the most popular of the Carneau varieties. Its features are:

- moderately sized head
- compact body
- erect carriage
- wings and tail slightly larger than those of the White King
- tail clears the ground
- preferred colour is a deep chestnut
- not as prolific a breeder as the White King



- adult birds slightly smaller than White King, weighing 650–740 g
- squabs also slightly smaller than White King squabs.

Other breeds include two varieties of Mondain, the French and the Swiss, which originated in the United States. The Mondain breed has been used overseas for squab production, but there are very few in New South Wales.

Homing pigeons have been used for squab production, as have the Hungarian, Maltese and Runt pigeons. However, homing pigeons produce squabs that are too small or too long in the leg, or which do not breed prolifically.

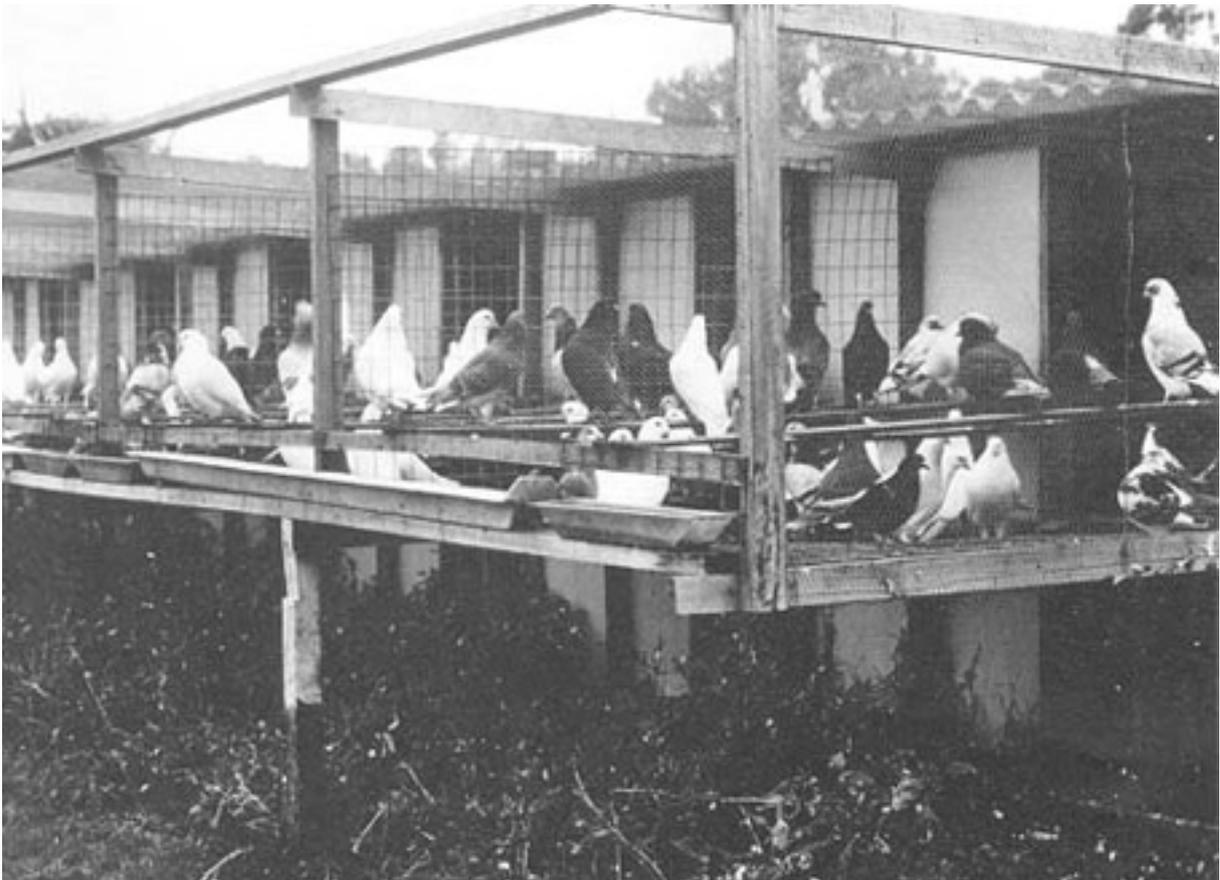
Housing

For maximum production and minimum disease risk, house pigeons in comfortable dry quarters, preferably facing north-east. Good ventilation and plenty of sunlight will keep the house dry.

Breeders can be housed either in a building with a flight area, or under fully intensive conditions. If wire floors are used, mesh should be not less than 18 gauge and 25 mm × 50 mm, or its equivalent. A breeding pair of pigeons needs a total floor area of about 0.6 m², including 0.4 m² nest area. Each pen should house 25–30 pairs of breeders.

A skillion-roofed shed (see photo below) is probably the most economical type of building. A comfortable shed height would be 2 m at the back and 2.25 m at the front. A 10 cm covering of wood shavings on the floor helps keep the shed dry. Build concrete or wooden floors where sheds are on poorly drained land. Provide perches in both the house and the flight area at several levels.

Figure 2. These squabs are housed in a skillion-roofed shed with a flight area (sundeck), both with perches



Nests

Double nests are essential. The female usually starts laying before the squabs are old enough to leave the nest, enabling the cock bird to continue feeding the squabs until they are ready for marketing.

Figure 3. Double nest boxes



A double nest box for a pair of pigeons (see photo above) should be about 40 cm high and 60 cm wide, and partitioned in the centre to provide 30 cm for each nesting box. Nests should be 40 cm deep, and fitted with a 20 cm wide external platform to allow pigeons easy access to the nest.

Nest bowls can be placed in the nesting boxes to facilitate cleaning. A board can also be fitted in front of and running the full length of the box to prevent nesting material from spilling.

Coarse materials such as pine needles, straw and wood shavings make good nesting materials. Place the nesting material on a rack in a corner of the shed to prevent wastage. The pigeons will then take their requirements from this supply during the breeding season. Floor nesting should be discouraged, as squabs on the floor are prone to cannibalism.

Breeding

Select breeders from proven stock using basic genetic principles. Progeny testing and record keeping will greatly assist selection. A pair of breeders should produce 12 marketable squabs a year with an average liveweight of 450–700 g. Cull breeders that do not attain this standard.

Pigeons may be mated from the age of 6 months. Some females will have a useful breeding life of up to 10 years, and males may be used successfully up to 5 years of age.

It is difficult to tell the age and sex of pigeons, so buy only from reputable breeding organisations.

- The female is usually smaller than the male, and is finer in the head. The female waddles rather than walks, and she holds her tail higher than the male does. The pelvic bones are spaced further apart in the female.
- The male is larger and more aggressive, and makes a louder cooing noise. He tends to strut around the female during the mating season.

Breeding pairs may be allowed to select their own mates, or they may be force mated:

- With natural mating, pairs can be identified by the male strutting around his mate. Mated pairs should be identified using numbered or coloured leg bands to prevent inbreeding.
- Force matings can be accomplished by placing the desired male and female pigeons together, either in enclosed nest boxes or in suitable pens, with feed and water, for about 2 weeks.

To avoid fighting and breaking of eggs, place only mated birds in the same pen. Mated breeders should be disturbed as little as possible and may remain together for life. The mates of dead birds should be removed, and it may be necessary to mate high-producing females with younger, more vigorous males.

Matings should be staggered to allow continuous production. Each pair of breeders should produce 12 squabs per year. During the main breeding season (spring and summer) a pair of pigeons will produce squabs ready for market every 4 weeks. Sixty per cent of the squab crop will be produced in this main breeding season.

As with laying hens, artificial light can be used to shift the peak of production from spring to autumn. There is no particular advantage to be gained by artificial lighting, as demand for table pigeons is currently greater than supply.

Hatching and rearing

The incubation period of pigeon eggs is 17 days. There is often a break of 1 or 2 days between the

laying of the first and second eggs; because of this, the first squab may not hatch until the 18th or 19th day.

Both parents build the nests and take turns to sit on the eggs. The hen will usually start laying again when the squabs are 2 weeks old.

Although both parents will feed the squabs, most feeding will be left to the male after the next eggs are laid.

As the hen starts laying before the squabs have left the nest, you must provide a [double nest](#) to prevent disturbance of the squabs and interruption of egg incubation. Since the parents will feed the squabs you should not need to disturb the birds – in fact the birds must not be disturbed during feeding.

If one of the squabs dies in the first couple of weeks, it is possible to put another one in with the remaining squab, if it is about the same age and size. This allows the mated pair that are now without a squab to begin laying sooner than if the squab had not been removed.

Should the parents become sick or die it is possible to handfeed the squabs if they are at least 1 week old. By soaking the grain ration, the squabs can be fed on the smaller grains.

Squabs to be kept for breeding should be identified and then allowed to remain with the parents for about 6 weeks, to learn to eat and drink independently of their parents. When selecting squabs for the breeding flock, do not select only the largest out of each nest – the one not selected may be a female. Continuous selection of the largest bird may result in a flock of more males than females.

Feeding

Pigeons are not fussy eaters but do best on a diet of whole grains. It may be advantageous to crack large grains such as maize. The following is a list of the **main nutritional requirements of pigeons**:

Crude protein:	13.5%
Carbohydrates:	65%
Crude fibre:	3.5%
Fat:	3%

Cost and availability largely determine the types of grain used in a pigeon ration. However, it is a good idea to include some grains such as yellow maize and peas at all times. The ingredients commonly used in formulating pigeon rations, and their analysis, are given in Table 1.

Table 1. Analysis of commonly fed grains

Ingredient	Protein (%)	Carbohydrate (%)	Crude fibre (%)	Fat (%)
Wheat	11	70	2.5	1.9
Maize	10	70	2.0	4.4
Sorghum	10	70	2.5	2.3
Oats	11	61	11.0	6.6
Peas	23	57	6.0	1.6
Millet	11	64	9.0	3.6
Soybeans	38	37	5.0	16.8
Rape	19	22	6.0	44.0
Vetch	27	54	3.5	1.2

Pigeons normally moult and stop breeding in **autumn and winter**, requiring a lower-protein diet than during the height of the breeding period. While there is no real disadvantage in feeding a higher-protein diet during the autumn and winter months, it is less economical to do so.

Grains such as wheat, maize and sorghum are interchangeable, as are rape, vetch and millet, but allowances must be made for differences in protein.

Suitable rations for **breeding pigeons** in autumn/winter and spring/summer are given in Table 2.

Table 2. Suggested pigeon ration

Ingredient	Autumn/winter (kg)	Spring/summer (kg)
Wheat	15	8
Peas	20	30
Maize	10	7
Millet	5	5
Total	50	50

Pigeons may be fed either by hopper (so feeding is unrestricted) or by daily handfeeding.

- For hoppers or self-feeders, allow 5 cm feeding space for each bird. Self-feeders are labour saving and the pigeons have feed at all times, but they can be wasteful and attract rats and mice.
- Feed the birds twice daily when handfeeding, and give them only as much as they can eat in half an hour.

Note that pigeons eat more feed in the colder months and when caring for squabs.

In addition to the grain ration, pigeons require minerals, vitamins and grit. As all grains have only a low mineral content, give pigeons access to a mineral mix at all times (see Table 3). Vitamin A and riboflavin supplements improve fertility and hatchability. Grit is needed for grinding up food in the gizzard.

Table 3. Suggested mineral mix (ad lib)

Mineral	Kilograms
Shell grit	17
Granite	20
Limestone	10
Salt	3
Total	50

Cafeteria-style feeding (placing various feed ingredients in separate containers) allows birds to choose grains of their choice. However, this system tends to be rather wasteful, as birds flick through the different seeds. Pigeons can be fed pellets, but some birds have trouble with pellets caking inside their crops.

- 25 breeding pairs will eat about 3 kg of feed daily.
- 1 breeding pair will eat about 45 kg of feed and 4 kg of grit yearly.
- 1 pair of birds will eat 22 kg of feed to breeding age.

A 500 g squab is produced from 3 kg of feed, giving a feed conversion ratio (FCR) of 6:1.

Squab feeding

The parents feed their squabs on 'pigeon milk', a fluid they secrete in their crops. Pigeon milk looks like thick custard and is very high in protein.

Improved weights can be obtained by handfeeding squabs from when they are 10 days old. Handfeed them three times a day on a pigeon grain ration that has been soaked in water for 4 hours. Handfeeding is very time-consuming and is not popular in Australia because labour costs are too high.

Water

Pigeons need water for bathing to remove external parasites, and for drinking.

- A dish can be used for both quite satisfactorily. Clean it at least daily and refill it with clean water.

- Otherwise provide water in concrete or galvanised troughs about 1 m long, 60 cm wide and 10 cm deep.
- Provide each breeding pair of birds with 2.5 cm of watering space.
- Shade the watering facilities.
- Each pair of breeders will consume approximately 180 L of water a year.

Management for parasite and disease control

Pigeons have the same external parasites as poultry: lice, mites and ticks. If there are enough bathing facilities, external parasites will be kept to a minimum. As an additional precaution, nest boxes and nesting material should be treated with an approved spray or dust. Woodwork should be painted at least annually with a wood-preserving oil.

All farms need a strict hygiene program to keep diseases to a minimum:

- avoid dampness
- clean pens frequently
- apply fresh litter or sand to the floor of the sheds
- isolate diseased birds from the rest of the flock.

Before selecting any preparation for treatment of birds it is important to ensure that it is registered under the New South Wales [Stock Medicines Act 1989](#) or the [Pesticides Act 1999](#), for the particular purpose for which it is to be used.

ALWAYS READ THE LABEL

Users of agricultural (or veterinary) chemical products must always read the label and any Permit before using the product, and strictly comply with the directions on the label and the conditions of any Permit. Users are not absolved from compliance with the directions on the label or the conditions of the Permit by reason of any statement made or not made in this publication.

Internal parasites

The large roundworm (*Ascaridia galli*) is the most common worm affecting pigeons. Treatment with either of the drugs piperazine or levamisole effectively controls roundworms. These drugs can be given to flocks in the feed or in the drinking water – administration via the drinking water is recommended because the total required dosage

can be given in only a few hours. The dose rate varies according to the drug used.

External parasites

Lice are the most common of the external parasites that can live only on the bird; when separated from their host, they will die. There are a number of different types of lice, the most common being body lice. Apart from affecting the general thriftiness of birds, lice will also cause reduced weight gains and reduced egg production.

Before selecting a preparation to treat lice, make certain it is registered under the New South Wales [Stock Medicines Act 1989](#) or the [Pesticides Act 1999](#) for use on poultry. An infestation of lice can best be controlled by dusting or spraying birds with an approved insecticide. **Always read the label** of any chemical product.

The red mite (*Dermanyssus gallinae*) is the mite most likely to trouble pigeons. Mites are very small, only just visible to the naked eye. They live in crevices of woodwork in buildings and feed on the birds at night. To control mites, paint woodwork with a wood-preserving oil, and spray the building with an insecticide registered for this purpose.

Diseases

The main diseases affecting pigeons are:

- chronic respiratory disease
- ornithosis
- canker
- pigeon pox
- coccidiosis
- tuberculosis
- paratyphoid.

A vaccine is available under permit to prevent pigeon pox.

Commercial and home processing

Producers who plan to slaughter, process or transport their own squab products on a commercial basis **must** conform with the Food Regulation 2004 under the NSW [Food Act 2003](#). The Act is administered by the NSW Food Authority – Contact Centre, phone 1300 552 406 or website www.foodauthority.nsw.gov.au. Poultry meat processors **must** comply with Australian Standard (AS 4465:2005) for the Construction of Premises and Hygienic Production of Poultry Meat for Human Consumption (FRSC Technical Report No.1).

Squabs are usually ready for slaughter at about 28 days of age. They should be fully feathered under the wings – at least the pin feathers under the wings should be big enough to be plucked easily. The liveweight of the squabs will vary according to the breed and the method of management, but should be 450–700 g.

1. The night before slaughtering, collect squabs from the nests to ensure their crops are empty next morning – otherwise the crops must be flushed out with water to remove the feed.
2. Squabs can be slaughtered by placing them headfirst into a killing funnel and cutting the jugular vein with a sharp knife.
3. Squabs can be either wet or dry plucked. If birds are to be wet plucked, immerse them in water at 55°C for 60 seconds. Rotary plucking machines can be used to remove feathers – 20 to 30 seconds in the plucking machine is sufficient time.
4. After draining, place squabs on a stainless steel or metal table that can be easily cleaned.
5. Whether or not birds are to be eviscerated at this stage will depend on the consumer's requirements. In commercial enterprises, birds produced for sale that are not eviscerated are required to be labelled 'New York dressed'. Full-dressed birds have an expected 'dressing out' percentage of 74% (a loss of 26%); when only blood and feathers are removed, a dressing percentage of 87% can be expected (a loss of 13%).
6. As soon as the squabs are killed, plucked and eviscerated, wash them in clean water and place them in iced water for at least 1 hour to remove body heat.
7. Commercially produced birds are graded according to size and quality.
8. They are then packed in a suitably prepared container with drainage holes and crushed ice placed between layers. They are packed with the neck downwards and the breast facing upwards.
9. Squabs may also be individually wrapped in parchment paper or polythene bags. Thick cardboard boxes are ideal and should be large enough to hold one dozen or two dozen squabs. Packing any more than this in one container may cause disfiguration to carcasses.

Preparation for cooking

One squab is sufficient for a single serving, and a plump mature pigeon, when stuffed, serves two. Pigeon flesh is delicate and should not be subjected to intense heat because it tends to lose flavour.

Dressing a pigeon

Dry pluck immediately after killing, then remove the skin and feathers from the head. Cut off the lower part of the beak and remove the tongue. Incise beneath the vent, press on the stomach and remove the gizzard; as the liver contains no gall it can be left in to be used later in stuffing. Remove the claws and tuck the feet into a slit in the skin of the stomach, taking care not to damage the flesh. Tuck the beak into a slit made at the front of the breast.

To spatchcock a bird

Split the bird down the back, open and flatten. Fold the pinions back beneath the wings and secure with toothpicks, poultry pins or small skewers. Remove the feet and ease back the flesh from the leg, leaving the end of the drumstick bare. Double the leg back and insert the drumstick end into a small incision made at the base of each thigh. Secure with a poultry pin if necessary.

Cooking pigeon

Pigeon can be cooked and served in many ways. Your favourite chicken, duck or quail recipes can be adapted to cooking pigeon. It is necessary to vary the mode of cooking because the flavour of pigeon can quickly become monotonous.

Pigeon tends to lose flavour, so cook it soon after it is processed, unless it has not been eviscerated and left to hang.

- Young birds have pale rosy skin. The breast is flexible, the neck is thick and the flesh is plump, juicy and tender. They are ideal for roasting and grilling.
- Older birds have darker skin, the neck tends to be scrawny, the feet thin and the flesh firm. They are good eating but are better suited to the moister type of cooking such as a casserole.

The flesh of pigeon is delicate. Approximate cooking times at moderate temperatures are as follows:

Grilling:	20–35 minutes
Casserole:	1–1½ hours
Roasting:	25–35 minutes

Recipes

Grilled pigeon

- 2 squabs, [spatchcocked](#)
- butter
- lemon juice
- bacon
- salt and pepper

Wipe birds with damp cloth, sprinkle with lemon juice, brush with melted butter, and season. Heat the grill and start cooking the underside. Turn, and, if desired, cover with bacon slices (remove bacon during final 5 minutes of cooking to brown the birds). Brush with butter frequently during cooking. Time: 20–25 minutes.

Grill variation 1

- 2 squabs, halved
- French mustard
- lemon juice
- white breadcrumbs
- salt and pepper
- butter

Sprinkle each portion with lemon juice, and season. Grill the underside for about 10 minutes, brushing with butter frequently. Remove from heat, turn, coat top with mustard, sprinkle with breadcrumbs, and drizzle with melted butter. Return to grill and continue cooking until birds are tender and the topping crisp and brown. Baste continually. Serve with sliced dill pickles.

Grill variation 2

- 2 squabs, halved
- breadcrumbs
- lemon juice
- melted butter
- seasoned flour
- eggs

Sprinkle portions with lemon juice, dip in flour, then eggs and breadcrumbs, firming the coating with a knife. Drizzle with butter. Start grilling the underside of each portion, turn carefully and complete cooking the top side. Baste frequently with butter throughout cooking. Serve with sauce tartare.

Fried pigeon*

*Young tender birds can be fried.

- 2 pigeons
- 2 tablespoons seasoned flour
- chopped parsley
- egg and breadcrumbs
- garlic clove, crushed
- cooking oil
- salt and pepper
- 2 tablespoons tomato paste
- fried parsley
- 1 cup white wine
- lemon wedges
- 2 tablespoons chopped chives

Cut birds into serving pieces, and add to marinade of wine, chives, parsley, garlic and seasoning. Allow to stand overnight. Lift pigeon pieces and drain. Flour, egg and breadcrumb each piece, and fry in hot oil. Put aside on a hot serving plate. Heat marinade and blend in the tomato paste. Garnish pigeon pieces with fried parsley and lemon wedges. Serve sauce in a separate dish.

Roast pigeon

- 1 plump pigeon (to serve two)
- lemon juice
- cooking fat
- stuffing*
- bacon rashers

*Any favourite stuffings, particularly those used for duckling, are suitable. Watercress, parsley or lettuce mixed with chopped pigeon livers imparts good flavour. Fruit stuffings like apricot, almond and raisin are very good.

Stuff and truss bird, rub the skin with lemon juice, and lard with bacon rashers. Cook in moderately hot oven for 15 minutes, basting twice. Remove bacon to allow bird to brown, and cook for another 10–15 minutes, or until done. To test, prick the thigh flesh – if the juices run clear, the bird is done. Serve the bacon with the bird. Other suggested accompaniments are watercress, gherkins, marinated cucumber slices, and fried parsley.

Pigeon pie

- 3 plump pigeons
- flaky pastry
- 250 g rump steak, cubed
- butter
- 250 g mushrooms, sliced
- pigeon livers, chopped
- seasoned flour
- salt and pepper

Marinade

- 2 tablespoons chopped parsley
- ½ cup chopped chives or shallots
- juice and rind of 2 lemons

Bone and cut pigeons into serving-size pieces and add to marinade. Allow to stand overnight, or at least 2–3 hours. Roll steak cubes in seasoned flour. Sauté mushrooms and pigeon livers in a little butter, and season with salt and pepper. Fill a pie dish with layers of pigeon, steak and mushrooms; top with sauce (see below) and cover with flaky pastry. Glaze, and cook in hot oven for 30 minutes. Protect pastry edges with foil, reduce heat and continue cooking for 1–1¼ hours.

Sauce

- 2 bacon rashers, chopped
- 1 cup chicken stock
- 1 tablespoon flour
- ½ cup red wine
- 1 dessertspoon butter

Crisp the bacon in a little butter, add flour and brown lightly. Add wine and stock and bring to the boil. Adjust seasoning.

Savoury pigeon casserole

- 3 or 4 trussed squab
- 1 bay leaf
- bacon rashers
- 1 rounded tablespoon flour
- 1 carrot, diced
- 1 stick celery, diced
- 1 cup chicken stock
- 1 onion, chopped
- 1 cup white wine
- 1 garlic clove, crushed
- salt and pepper
- pinch of thyme
- butter

Use a casserole dish large enough to fit the birds side by side. Line with bacon. Sauté the carrot, celery, onion and garlic in butter. When lightly browned, add to casserole. Place birds on top of vegetables with a pinch of thyme and the bay leaf. Blend flour smoothly with stock and wine, then pour over the birds. Adjust seasoning. Cover the casserole and cook in a moderate oven for 1½ hours or until tender. Serve with creamed potatoes or plain boiled rice.

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (April 2007). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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