

## CASE STUDY: EGGS

Kim and Jan Harwood have won many industry awards for their innovations, design, product and achievement but the Churchill Fellowship to investigate organic egg production in overseas countries cemented Kim's philosophy that good farming needs to be system led. The whole farm planning of *Mill Road Organic Farm* in the Margaret River Region of south west Western Australia is based on the organic principles of Biological Farmers of Australia. Kim currently produces eggs according to organic principles and uses biodynamic preparations to fertilise pastures and control worms. However, because of his need to buy feed that is not certified, he is currently uncertified but the plan is to source organic feed and eventually be certified.

Kim currently has 7000 Hyline Brown laying hens in one shed but plans to increase this to 8000 birds in each of four laying sheds. The poultry will continue to be free range from sun-up until sundown.

Homeopathic treatments are used if necessary. In the event of a severe outbreak of disease it can be permissible under Organic Standards to use antibiotics but the meat or eggs from treated livestock can never be sold as *certified organic*. The offspring of treated livestock however may attain organic certification status for meat or eggs if managed in accordance with organic standards.

Figure 74a : Predators are fenced out



Figure 74b: A zig-zag of trees prevents large birds swooping on the hens as they emerge from the shed at first light



Pastures are maintained with biodynamic preparations such as BD500 and if necessary, dead birds are used in compost which is spread over the pastures in which case care must be taken so that there is no likelihood of attracting vermin or causing disease.

### The laying shed.

After years of research and experimenting Kim designed the BEST Free Range Egg System (Barn Extension using Sustainable Technology). This system has many features but its sustainability comes from the supportive and integrated working of all elements.

For instance two long verandas (or extensions) that run down the north and south sides of the hens' housing form not only the basis of the solar passive heating and cooling systems, but also provide a structure for the polyurethane mesh feet cleaners and drinking water platforms, and work better because they are on a raised surface.

The system is described as an extra long hen house with verandas incorporating blinds and polycarbonate roofing to allow in light but not heat. The result is a light and airy atmosphere beneficial to the hens' health and productivity.

The floor is covered with 50 mm of sawdust to absorb the first droppings and the carbon in the sawdust starts the composting process. The litter is scratched and turned by the birds and remains relatively dry and friable. The constant turning aids the aerobic composting process.

Figure 75: Water drinking lines are separated from the main floor area so that any spillage does not wet the dry litter.



Each side of the shed has a three metre wide veranda with a raised and slatted floor.

The birds do not come into contact with the ground because the manure falls through the slats and accumulates on a dry sandy bed. This bed is initially covered with sawdust for some absorption. The manure dries quickly because of direct sunlight and airflow from sides of the shed.

Figure 76: Verandas are on each side of the shed



Figure 77: A dry sandy bed under the veranda slats. The mesh cover keeps birds' toenails clean



In the seven metre middle section of the shed, the concrete floor has a 400mm upstand down side to support the veranda floor slats. The floor is graded from the veranda edges into the centre of the shed and there is a fall of approximately one metre from the collection room end of the shed to the far end, a distance of more than 115 metres. This facilitates wash-down; waste water runs into the centre and then out the far end. The concrete apron is scraped with a bobcat as required and covered with sawdust in summer and winter to keep the temperature ideal and to keep the birds' feet clean as they enter the shed.

Figure 78: Hens in laying box

Kim used his experience as a Lighting Director to design blinds that allow diffused natural light into the shed. This means there are no shaded areas where the hens might lay in unwanted places in the shed but the light drops off over the laying boxes and the hens are encouraged to lay in them. You can see the blinds on the outside of the shed in Figure 76.



Figure 79: Temperature is automatically controlled by fans.

An automatic mister and fans control humidity and temperature in the shed.

### The new plan.

Kim has drawn on his research and experience to plan the new farm. The farm will have five laying houses and a rearing shed. Only four laying houses with a total of 32,000 birds will be in use at any one time and the fifth house rested.



Figure 80: Kim displays the new plan

**This is the plan:** Chickens are raised on-farm from day old in the rearing shed until at 14 weeks of age they are transferred to the laying houses. The birds are let out of the laying houses and are channelled to outer orchards via pastured laneways; the laneways are alternated each day. The laneways lead to three orchards on either side of the poultry house; one orchard is in use for a long interval and two are spelled. Dexter cattle are integrated with poultry and graze on the pasture and herbs under the orchard trees; cattle eat the longer grass and the hens follow closely because they prefer shorter pasture. The hens scratch and spread the cattle dung. Kim explains that the cow manure builds soil fertility because it is rich in microbial activity and it also builds humus. The hens spread the manure and keep the grass low and this activity suppresses soil borne pathogens and parasites; sun can penetrate and sterilise the soil surface.



An important feature of this system is the maintaining of healthy pastures for the hens because they can derive up to 40 per cent of the feed they need from quality grasses. Kim explains that this grass intake also increases the base levels of omega-3 fatty acids, foliate and Vitamin E in the eggs (a huge natural advantage of free range over caged eggs).

Some of the orchard produce is fed back to livestock: for example, apples pressed into cider and then fed to hens (and cows) as part of the health management. A little cows' milk is used as a feed supplement for the chicks.

Cow manure is used to make the biodynamic preparation BD500 to spread over the pastures.

### Packaging

Packs are made from recycled paper and are 100 per cent biodegradable and carbon neutral.

### Markets

Eggs are sold through supermarkets, stores and the local Farmers Market and served in restaurants and cafes in Perth and other places in Western Australia.