

# ZiMUNDA

## FARMING

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# Cover Crops Setting up Tobacco for Success

By Simon Hodgson and Vimbai Ruwengo

Tobacco, like most cash crops is a high input-oriented crop and under certain conditions has a very high per-hectare requirement of pesticides and fertilisers. The cropping system is associated with high production costs, environmental issues, soil degradation, nutrient mining, soil acidification, reduced soil biology and fertility. This is forcing today's tobacco farmer to think differently.

Across the agriculture sector, tobacco farmers, researchers and the industry policy makers are suggesting and innovating measures for effective implementation of sustainable alternatives to current practices in tobacco growing. Based on the documented potential benefits associated with **Regenerative Agriculture** i.e., cover crops and the additional weed/pest management opportunities it offers; researchers and farmers are seen to be adopting the practice in tobacco crop production, exploring the soil, growth, yield, and leaf quality benefits as well as new weed management opportunities it presents.

**A cover crop** is defined as any type of plant grown to improve any number of conditions associated with sustainable or conservation or regenerative agriculture. Cover crops are natural tools used to manage soil fertility, soil quality, water, weeds, pests, diseases, diversity and wildlife in an agro-ecosystem.



Tobacco following cool season cover crop

## BENEFITS OF COVER CROPS IN TOBACCO PRODUCTION

When one plants cover crops the above ground entomology changes, habitats are created and biodiversity increases. The cover crops will also act as **weed control** tools due to their quick establishment, fine and dense cover which prevents the growth of weeds; the allelopathic properties that chemically inhibit weed germination or growth; the creeping and canopy (broad-leaved and high growing species) effect which deprives weeds of light for growth and; leaving cover crops residues on the tobacco field will further reduce weed population.

Below ground, cover crops offer a wide array of benefits when in rotation with tobacco.

- Rotations recommended from the standpoint of tobacco **disease control** may decrease soil infestation by tobacco pathogens, which can be in evidence by a reduction in the incidence of the soil-borne disease on the succeeding tobacco crop. The species include black rape (*Brassica napus*) for the control of Black shank caused by *Phytophthora* (see reference journal article link).
- The intense tillage and cultivation operations in tobacco farming greatly increase the potential for **soil erosion**, hence cover crops help protect the soil during 'fallow' periods.
- Cover crops scavenge nutrients for use by the tobacco crop and cycle particular nutrients such as phosphorous. Buckwheat (*Fagopyrum esculentum*) is especially good for this purpose.
- The increase in organic matter represented by cover crops have a significant advantage to improved **soil moisture conservation**. There is decreased evaporation, improved water holding capacity and water infiltration. According to Graeme Sait, a 1% increase in organic matter means that soil can hold 170,000 litres per hectare it could not previously hold.

## WHY IMPLEMENT COVER CROPS?

As objectives and challenges differ from farm to farm, each approach to cover cropping will be unique. The design of the cover crop approach must meet your specific objectives and challenges, therefore being clear on what your objectives are for your cover cropping enterprise is essential.

Examples of how to choose cover crops to meet objectives:

1. In a tobacco field infested with **nematodes**, the correct species to include in your cover crops for are;

Warm season species	Cool season species
Black seeded sun hemp ( <i>Crotalaria juncea</i> )	Saia Oats or Black seeded oats ( <i>Avena strigosa</i> )
Forage Sorghum ( <i>Sorghum x Sudan grass spp.</i> )	Forage radish / <i>Bladrammenas</i> ( <i>Raphanus sativus</i> )
Dwarf French Marigolds ( <i>Tagetes patula</i> )	Black rape ( <i>Brassica napus</i> ) which is a brassica.
Tall African Marigolds ( <i>Tagetes erecta</i> )	



**Ploughing down cover crops – increasing organic matter content in soil.**

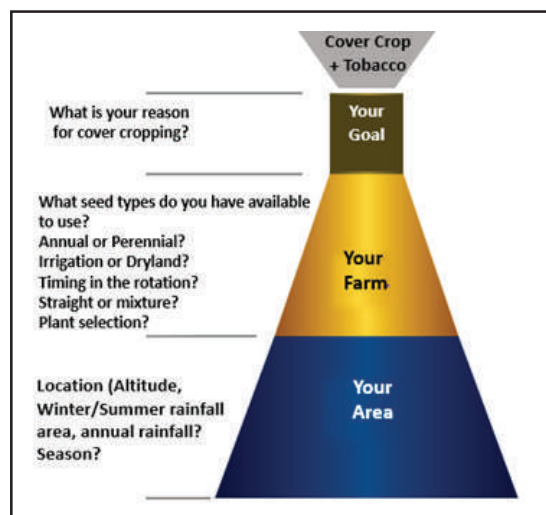


2. In sandy soils with little to no soil life, low water and nutrient holding capacity, species to include to rectify the problems are;

Warm season species	Cool season species
Black seeded sun hemp ( <i>Crotalaria juncea</i> )	Saia Oats or Black seeded oats ( <i>Avena strigosa</i> )
Red seeded sun hemp ( <i>Crotalaria ochroleuca</i> )	Forage oats or white seeded oats ( <i>Avena sativa</i> )
Forage Sorghum ( <i>Sorghum x Sudan grass spp.</i> )	Stooling or Cereal Rye ( <i>Secale cereale</i> )
Pearl Millet or Babala ( <i>Pennisetum glaucum</i> )	Barley ( <i>Hordeum vulgare</i> )
Cow peas ( <i>Vigna unguiculata</i> )	Lupins ( <i>Lupinus spp.</i> ) which is a nitrogen fixing legume.
Velvet beans ( <i>Mucuna spp.</i> )	Common vetch ( <i>Vicia sativa</i> ) also a legume
	Forage or Black rape ( <i>Brassica napus</i> ) which is a brassica.

## PUTTING TOGETHER A PROGRAM

Agriculture is not an exact science, 100 farmers would do the same thing in a different way, therefore nothing is ever 100% right or 100% wrong - one size does not fit all.



**“Cover cropping is a universal concept with an individual application” -**

**Simon Hodgson.**

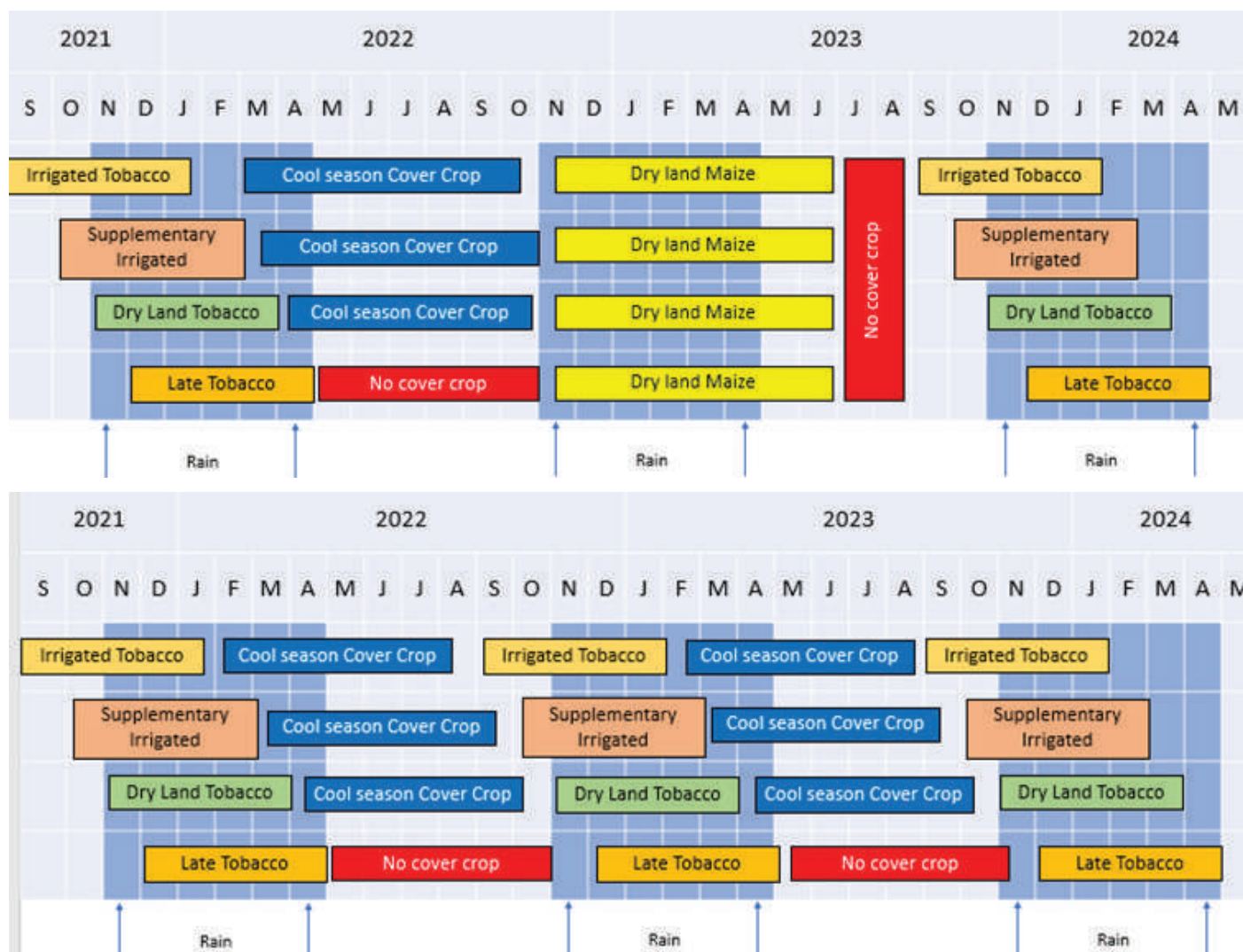
As stated above, the first step in

creating a crop rotation plan that is inclusive of a tobacco crop and cover crop is to define your goals - describe what you are trying to achieve. Using the inverted funnel thinking approach, ask yourself the more specific questions first before the general questions. The approach is useful where farmers do not have strong knowledge on cover crops.

## TIMING

Before cover crops are recommended to tobacco farmers, proper management strategies for the use must be determined. Improper management of cover crops may prove detrimental to tobacco crop yields due to competition for resources between a cover crop and the tobacco. An important management strategy for use of cover crops in tobacco production is the timing of cover crop desiccation. Delaying cover crop desiccation until immediately prior to planting may deplete soil moisture and immobilise nitrogen, which would negatively impact on the subsequent crop. Intentional delayed desiccation of a cover crop will increase mulch levels that may provide additional weed suppression during the growing season.

The following are two examples of fitting a cover cropping program into a tobacco producing unit.



**NB:** Timings will be specific to the area, district and farms – each grower must work out their own timings – a 90-day cool season cover crop will produce enough material to be effective.

### FINDING THE RIGHT MIX

*Farmer objectives and time of the year dictate species selection.*

Mixing a number of complementary species generally does best because of their synergies. The aim is to plant complex mixtures that are smart mixtures designed for the tobacco crop. Considerations for selection include;

- Same season, annual or perennial.
- Plant architecture.
- Seed size / depth for planting.
- Seed weightings.
- Planting method (premixed or elemental.)

Legume cover crops used in tobacco production should be monitored due to concerns related to unpredictability of nitrogen supply and extended mineralisation affecting quality of cured tobacco leaf.

Cool season cover crops could include the following cereal crops - Saia Oats or Black seeded oats (*Avena strigosa*) Forage oats or white seeded oats (*Avena sativa*) Stooling or Cereal Rye (*Secale cereale*) Barley (*Hordeum vulgare*) Lupins (*Lupinus spp*) which is a nitrogen fixing legume. Common vetch (*Vicia sativa*)

also a legume and Forage or Black rape (*Brassica napus*) which is a brassica. All of these species can be **grazed by livestock** and by utilising the cover crop in this manner it benefits the soil health by “kick starting” the soil microbes associated with the digestion of the dung urine and saliva of the livestock. The kgs of beef or mutton or wool gained by the animals can make the cover cropping operation cost negative to the farmer and add income and reduce risk.

**In conclusion cover crops must be looked at as one tool to be used in tobacco production. They are not “silver bullets” that will fix years of less than optimum soil management practices. Cover cropping is an ancient technique which has stood the test of time and due to its success as a management method it is being widely used in all forms of commercial and small-scale agriculture world-wide.**



For more information on cover crops contact Simon Hodgson on [SHodgson@agtfoods.com](mailto:SHodgson@agtfoods.com) or visit [www.agtcovercrops.co.za](http://www.agtcovercrops.co.za)

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Reference link - Frontiers | Tobacco Rotated with Rapeseed for Soil-Borne Phytophthora Pathogen Biocontrol: Mediated by Rapeseed Root Exudates | Microbiology ([frontiersin.org](https://frontiersin.org))





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# Preventing Navel-ill and Umbilical Hernias in Calves

By Red Dane Farming



Umbilical swellings in calves can present a problem for cattle owners. When that swelling is due to infection, it may have economic repercussions. **Navel ill** is the common term for inflammation or infection of the umbilicus of calves. It is caused by the infection of a calves' umbilical cord after birth.

The condition must be treated as quickly as possible, otherwise it can lead to **joint-ill**: inflammation and/or arthritis of the calf's joints (this is because the most common site for bacteria to settle are the joints, and thus navel-ill is also called joint). This infection can result in a range of signs depending on where the bacteria spread to. It can lead to scours, pneumonia, abscesses, death (if bacteria settle in the heart or brain), liver abscesses (that may only be noticed later in life) and, most commonly, umbilical hernias.

When a calf is born, the blood vessels that make up the majority of the

umbilical cord stay as hollow tubes which should shrink until only tiny pieces remain inside the abdomen. However, should bacteria be allowed to enter through these tubes, the remnants become infected, which can enlarge the navel cord and prevent the closure of the abdomen. If the opening in the abdomen is large enough, the calf's intestines may poke out through

the defect, which is what causes **an umbilical hernia**. These are the most common birth defects in calves.

If a calf has a simple hernia, it can usually just be pushed back into the abdomen. However, infected hernias may cause calves to become very sick. You might notice frequent, short urination and urination through the umbilicus.

## TREATMENT

Infected hernias can be repaired by a veterinary surgeon. Generally, the umbilicus and all associated structures as well as infected tissue will be removed. If the infection has reached the bladder, a portion of the bladder wall might be removed as well. Any large abscesses will need to be drained before surgery. A long course of antibiotics may be administered for extensive infections.

## PREVENTION

However, rather than having to reach the treatment stage, it is better to prevent navel ill or hernias before they occur. Prevention is down to good calf management and knowledge of how to handle new-born calves:

Ensure that calves are being kept in







**a clean environment** from birth: bedding should always be clean and dry, free of manure and urine.

**Disinfect the navel** (where the umbilical cord was attached) on day one and day 2 after birth using tincture of iodine – a solution of at least 7% iodine and alcohol. The alcohol will assist in drying out the navel and the iodine in killing any bacteria present. If any cords are enlarged you may want to dip them for a few more days in a row.

Make sure your calves receive **correct volumes of colostrum** immediately after birth and in the first few days following the birth. This will help them to develop immunity quickly and help to protect them from infections in the navel.

Make sure you have **good calf-rearers** who know how to prevent hernias and how to pick up on and treat any signs of navel ill. Calf-rearers should be checking the navel of calves every day for the first week or two after birth. The navel can be felt gently for any pain, heat or swelling that indicates an infection. You should not notice any draining or foul smell from the navel and gentle pressing of the navel should not cause the calf any pain. The navel is dry when the full length of the umbilical cord is dry, inflexible and shrivelled.

**Every cattle operation should have a professionally customised early calf management program as navel infections are potentially a key contributing factor to the high morbidity and mortality rates on farms.**



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# Developing a Marketing Strategy in Rabbit Production

**By James Kabinda, Animal Production Specialist**

Rabbit production in Zimbabwe has commonly been taken as an extracurricular activity, where rabbits are raised in household backyards as pets or for family consumption. Over the recent past years, there has been an increasing interest in rabbit production at a commercial level. The increased interest in production has been instigated by the surge in demand for rabbit meat from high end markets. This is mainly due to the change in consumer tastes, preferences, and behaviour towards the meat – owing to its earthy taste and high nutritional quality.

When taking on rabbit farming as a business, the producer must establish a market first. The high prolificacy of rabbits means producers would need to plan their marketing properly. Developing a marketing strategy for the rabbit business is therefore imperative. The following assumptions are key in the development of a rabbit marketing strategy;

- Dressing percentage = 60 - 63%

It is the percentage of the live animal weight that becomes the carcass weight at slaughter. It is determined by dividing the carcass weight by the live weight, then multiplying by 100.

- Live weight at 13 weeks = 2.0 - 2.5kg (breeddependent)
- Production cycle (birth to slaughter) = 13 weeks
- Gestation period of doe = 28 - 31 days
- Litters/year = 5
- Kits/litter = 6 - 8
- Overall Mortality = < 5%
- Reproductive period for doe = 1.5 - 2 years

*This article is a summary on the steps to develop a marketing strategy, using a 400-doe unit rabbit project as an example.*

## WHO IS YOUR TARGET MARKET?

As a standard protocol, any livestock business needs to establish a market beforehand. As a producer you have to identify a target market and its needs by taking into consideration what this market will require in terms of volume and quality. Additionally, you should establish your market size and location such that you are able to scale and plan production according to these market variables. Target markets available to rabbit producers include; hotels, restaurants, supermarkets, NGOs, and horticulture farmers (manure as the product).

## SWOT YOUR COMPETITION?

In developing any marketing strategy, determining who your competition is vital. This can be gained by conducting a Strengths, Weaknesses, Opportunities and Threats (SWOT)



analysis. The analysis will evaluate your business with regard to internal factors (strengths and weaknesses) and external factors (opportunities and threats (including competitors)) - helping you put together a clearer picture of the status and potential of your business as you plan for the future.

According to the Rabbit Producers Association of Zimbabwe (RPAZ), there are over 2000 rabbit producers in the country, hence conducting a secondary competitors SWOT analysis will help you evaluate the available competition in the rabbit production market. You compare the strengths, weaknesses, opportunities and threats of your project versus that of the competition. A SWOT analysis enables one to evaluate the competitive environment your business faces allowing you to find ways to deal with your competitors' strengths and capitalise on their weaknesses (based on what you learn). You can be better prepared for the threats they pose and take advantage of opportunities they create. Examples of questions you can pose are;



- **Competitor strengths** - What are your competitors known for; are they organic rabbit meat producers, is their packaging eco-friendly, do they have good delivery services? What attracts customers to their business? Why do their customers make a purchase?
- **Competitor weaknesses** - Have you heard anyone complain about your competitor's rabbit meat? Have you realised any problems with their meat when you "shopped" from your competitor to learn more about them? Are there products that your competition does not offer that they should have available for example already marinated rabbit meat cuts?
- **Opportunities competitors create** - Is your competition doing anything that represents an opportunity for your business?
- **Threats the competitors represent** - What are your competitors doing that would represent a threat to your business; their prices or an expansion of product range to offer more meat products?

## WHAT ARE YOU OFFERING?

At this stage, as a producer you should specify what you will be offering in terms of quality, volume and form. In rabbit production, product offering can come in the form of; breeding stock, meat, pelts and manure. In order to produce meat stock by practicing economies of scale, you would need to establish an abattoir for meat and skin processing.

allows profit generation or;

**Current market pricing** - you can follow price floors and price ceilings set by the market. For example, if the price ceiling for rabbit meat is \$6.00/kg CDM, you can sell your rabbit meat at \$6.00/kg CDM.

## HOW DO YOU PROMOTE YOUR PRODUCT?

As a way to improve marketing efficiency, you need to devise a system of promoting sales of produce. To achieve this, one can focus on advertising to target markets via social networks, email, newspapers, farming magazines and internet. With advertising platforms like social networks (Facebook and WhatsApp groups), you can be able to reach out to a large clientele base in a short period.

***Rabbit production offers good opportunities, hence the need to develop marketing strategies for enhancing the future growth of the rabbit farming business, especially for the rural producer.***

Backlink - For information on rabbit health and diseases, please refer to ZiMunda Farming Newsletter Issue 2, an article by Commercial Rabbit Farming Solution and Issue 12 on Rabbit Production by Takudzwa Gondo.

**Production calculations for a 400-doe unit rabbit project are as follows;**

- Kits/year** = (Number of does \* Average kits/litter \* Litters/year) - (5% mortality)  
 = (400 \* 6 \* 5) - (5% mortality)  
 = 12 000 - 600  
 = 11 400
- CDM yield** = Kits/year \* Average Live Weight at 13 weeks \* Dressing %  
 = 11 400 \* 2.0 \* 0.60  
 = 13 680kg or 13.68MT per annum

**CDM – Cold dressed mass**

Basing on the above calculation, as a rabbit producer you can now plan production for your market. In this scenario, one can aim to supply 1.14MT of rabbit meat per month to the target market. Consistency in supplying produce will ensure long term relations with the market.

## HOW IS THE SALES AND BUYING PROCESS STRUCTURED?

At this stage as a producer, you need to establish your sales and buying process to the target market. The sales and buying process can operate on a contractual basis or direct personal sales. For the contractual sales and buying process, the producer and contractor agree on written terms and conditions of payment and supply. For example, part of the agreement could be that the contractor makes payment a week prior to each delivery.

## WHAT IS THE PRICING OF YOUR PRODUCT(S)?

You will need to develop a pricing model for the business. At this level, establishing a pricing model could emanate from;

**Production costs** - you can stipulate market pricing of produce based on production cost by putting a mark-up that







# Rabbit Breeds for Commercial Farming

By Tanaka C. Chaza, Farm Hut

The most critical aspect of commercial rabbit farming is choosing suitable breeds. California White, Flemish Giant, New Zealand, and some other local cross breeds are the most common rabbit breeds used for commercial production in Zimbabwe.

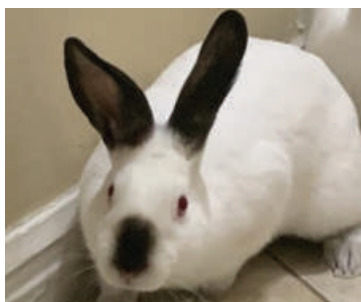


## 1. NEW ZEALAND

The breed was developed in the United States of America. It is one of the most common and active commercial breeds as its meat and fur are in high demand all over the world. A mature buck weighs

about 4.5 kg and a mature doe weighs about 5.4 kg. The rabbits are slaughtered between the ages of 8 and 12 weeks for fryers, and older rabbits are sold as roasters. White rabbits from New Zealand are chosen for fur because it's easy to dye. They are considered one of the best breeds for meat production.

**Colour:** White, red, black, blue, and broken. Crossbreeding can result in many other variations, such as gold tipped steel and chestnut agouti.



## 2. CALIFORNIAN

It is one of the highly profitable and well-known commercial breeds. This breed was also created in USA after years of experimentation and crossbreeding, in 1923. Californian rabbits are mostly bred for their fur,

but they are also raised for meat. When the bucks gain maturity, they weigh 4kg and the does 4.3kg. Their whole body is white. They are distinguished by their colouring a white body with black points (the legs, nose and ears). This colour pattern with black markings is caused by the "Himalayan gene," which makes the rabbits almost completely albino, except for their points.

**Colour:** White with dark points, blue, or lilac points.



## 3. CHAMPAGNE D'ARGENT

Champagnes d'Argent is one of the oldest commercial rabbits in the world. They are also known as French Silver. They have been raised in France for more than 100 years. They are black coloured when they born, but when they

gain maturity the colour of their body turned to silver or skimmed milk colour. Mature bucks weigh 4.5 kg and does 5.4kg.

**Colour:** Blue, brown, creme, black and champagne.



## 4. FLEMISH GIANT RABBIT

Is a very large breed of domestic rabbit (*Oryctolagus cuniculus domesticus*), normally considered to be the largest breed of the species. Flemish Giants are historically a utility breed

bred for fur and meat. The breed is also known for being docile and patient in being handled, resulting in the large animals commonly being kept as pets. It is also known as the king of rabbits due to his big size, personality, and longevity. Their meat and fur are also commercially produced.

**Colour:** Blue, black, light grey, sandy, fawn, steel grey, and white.



## 5. CHINCHILLA GREY

Bred to be a meat and fur rabbit, Standard Chinchillas can weigh anywhere from 2-3kg. Once fully grown they have a plump body type. This breed has erect ears.

**Colour:** Standard grey, white, homozygous beige, charcoal.



## 6. SATIN

The breed originated from America. It has high meat and fur production hence suitable for commercial farming. Adult bucks weigh about 4kg and does 4.3kg.

**Colour:** Black, broken (white base coat with any other colour), blue, californian, chinchilla, chocolate, copper, otter, red, white and siamese.

**These rabbit breeds are recommended to local small-scale farmers in Zimbabwe due to their excellent breeding success.** For more information on Rabbit production or for agricultural inquiries please contact Farmhut at +263773442311 or visit <https://www.farmhutafrica.com/>





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