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An Analysis of the Wool Characteristics That Determine the Wool Price for White Wool in South Africa

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ABSTRACT

This study evaluates the effects of white wool's characteristics (fibre diameter/fineness, staple strength, vegetable matter, and staple length) that contribute to determining the wool price in South Africa. The analysis was based on wool price data for the 2009 to 2019 production seasons. A multiple regression analysis of the price (R/kg) of White wool was applied to four independent variables: fibre diameter/fineness, staple strength, vegetable matter and staple length. Fibre diameter, staple length and clean yield, except vegetable matter, made a significant contribution ($p < 0.05$) to the determination of wool price after all other independent variables were controlled. A one-unit increase in staple length was associated with a 0.018-unit increase in wool price (R/kg). One unit (micron) increase in fibre diameter/fineness resulted in a 0.331 unit decrease in wool price (R/kg). One unit (percentage) increase in clean yield resulted in a 0.115 unit increase in wool price (R/kg). The analysis found that a 1% increase in clean yield, a measure of the amount of clean, usable wool produced by a sheep, was associated with an average increase of 0.115 R/kg in the price of wool. This means that as clean yield increases, wool price tends to increase. Clean yield varies within sheep flocks due to varying amounts of wax and contaminants such as vegetable matter dirt, breed of sheep, and the environmental conditions during wool growth. There was no statistically significant association between vegetable matter and wool price. Wool farmers need to produce wool with low fibre diameter, good length of wool and high clean yield percentage for White wool. Additionally, farmers should focus on improving their production

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and marketing practices, and policymakers should consider implementing policies that support the wool industry and increase its competitiveness.

Keywords: Clean Yield, Fibre Diameter, Vegetable Matter, Staple Length

1. INTRODUCTION

According to the Centre for Development Support (2005), in South Africa, wool is marketed through three marketing mechanisms: (i) emerging wool farmers through traders, (ii) emerging farmers who are involved in wool production and market their wool through formal auctions, and (iii) commercial wool producers who usually trade their wool through agents at auctions. Commercial farmers are the major suppliers of wool (D'haese et al., 2003; 2007). At commercial farms, the wool is shorn by contracted shearing teams that include a qualified wool classer to class the wool. Commercial farmers sell their wool through private contracts or auctions. However, transaction and transport costs determine the length of the distribution channel (Cheteni & Mokhele, 2019).

Wool is sold at auctions based on wool characteristics such as fibre diameter, staple length, wool colour, clean yield, and staple strength. The people taking part in auctions should be registered buyers. South African auctions are held in Port Elizabeth, the ancient city for wool export. A free market system determines the wool prices at wool auctions and are closely linked to global prices, determined mainly by the Australian market (D'haese et al., 2007).

The wool market is driven by growing demand from China and Europe (Agricultural Research Council (ARC, 2018). The Australian indicator remains the most important global benchmark. Australian wool prices have recently gained momentum due to a surge in demand, lower supplies and favourable exchange rates (ARC, 2018). The rising and high wool prices have encouraged wool farmers to shear their sheep and bring the wool to the market as quickly as possible.

In South Africa, more than 80% of wool is sold at wool auctions (Geyer, 2013; DAFF, 2017; DAFF, 2020). The wool industry differentiates between the following wool categories:

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<u>Merino-type wool:</u>

"Merino wool" means white wool which is free by nature from kemp fibres and hair and which has a fibre thickness of not more than 27 micrometres (Micron) and shows the typical characteristics of the wool of the Merino sheep (Cape Wools SA, 2010). Merino wool is superior to all other white wools. The good quality Merino wool is described as a well-defined and even crimp, a kind of handle of wool without deviating fibres.

<u>White wool:</u>

"White wool" is defined as wool that excludes Merino-type wool and cross-bred wool (Cape Wools SA, 2002; Cape Wools SA, 2010). White wool has a kind handle and is naturally free from kemp fibres and hair. The same classing principles as for Merino wool apply to White wool. In South Africa, there is the Dormer sheep breed known as the "White wool wonder". The Dormer is a white wool mutton breed developed by cross-breeding Dorset Horn rams with German Merino ewes. The name "Dormer" comes from Dorset and Merino.

It is relevant to separate these two types of wool because they are different. Merino wool is used for marking apparel products such as clothes, while White wool is used for making non-apparel products such as laboratory equipment. It is important to note that wool farmers market their wool through the British Knitting and Crochet (BKB) wool brokers. The wool brokers grade wool bales into different categories, such as White wool and Merino wool (Robert Scott, personal interview, 28 September 2022). In addition, the wool brokers prepare a catalogue for each auction and then facilitate the auction (DAFF, 2010; DAFF, 2016).

The country's arid regions are the leading wool producing areas (Zenda, Malan & Geyer, 2024). The Eastern Cape is the top wool-producing province in South Africa, followed by the Free State, the Western Cape, the Northern Cape, and Mpumalanga (DAFF, 2021). The other four provinces contribute 1.7 million kg of wool to the country's total production. Wool production significantly contributes to South Africa's agricultural economy (Zenda, Malan & Geyer, 2023). The wool industry is an important source of income for farmers who practise sustainable and environmentally friendly farming methods.

This study is significant because it provides insight into the current state of the South African wool industry. The study's results can help inform policies and programs that support the industry's sustainability and help farmers adapt to changing market conditions.

There are limited studies on wool characteristics that contribute to the determination of the wool price for White wool. This lack of research makes it challenging to develop effective strategies to support the industry and ensure its long-term sustainability. Most studies on wool characteristics that determine wool price in South Africa have focused on the Merino breed of sheep, which produces fine wool. The studies by Erasmus and Delport (1987), Gibbon and Nolan (2011), Nolan (2014) and Nolan et al. (2013) have contributed a lot to the body of existing literature on wool characteristics that determine the price of Merino wool. However, the major limitation of their studies is that they did not focus on White wool when evaluating wool characteristics that determine the wool price. Given the importance of the White wool industry in South Africa, understanding the wool characteristics that have the most significant influence on the determination of wool price for White wool might help the wool farmers develop strategies to support the wool industry and ensure long-term sustainability.

The specific research objectives for this study were formulated as follows:

a) To determine which wool characteristics significantly influence the determination of wool price for White wool.
b) To determine the significant price differences between different wool characteristics for White wool.

The following research questions are linked to the problem statement and give context to the study's objectives.

a) Which wool characteristics have the most significant influence on the determination of wool price for White wool?
b) Are there significant price differences between the different wool characteristics for White wool?

2. METHODOLOGY

Cape Wools SA in Port Elizabeth, South Africa, hosts all the South African wool price data. Secondary data were used because collecting data from 59,000 wool-producing farmers was logistically impossible. The data were used to determine:

- which wool characteristics had the most significant influence on White wool price classes and
- price differences between different wool characteristics.

The data were collected from wool auction results from 2009 to 2019 and included the following:

- Prices of all different wool classes for White wool.
- Market indicators (auction price per kilogram for greasy wool of a certain type).
- Quantity of wool traded.
- Selling season.

2.1. Phase 1: Data

Cape Wools SA provided the data, including data on all wool sold through the formal auction system for the period 2009 to 2019. As such, the effect of the independent variables on the dependent variable was tested. This study's independent variables comprised fibre diameter, staple strength, vegetable matter and clean yield in the White wool classes. The dependent variables were the price of clean wool per kg for White wool.

The data collection for this study involved wool samples from White wool farmers across South Africa for ten years. This data consisted of 550 wool samples collected and analysed. The data collected included information on the production and marketing practices of the farmers, as well as the prices they received for their wool.

The first step in preparing the data for analysis was checking for missing values or errors. Any missing values were imputed using multiple imputation methods. The data was then standardised and transformed to ensure that it was suitable for the statistical analyses that were to be conducted. A seasonal decomposition was performed to account for any seasonality in the data. Additionally, the data were partitioned into training and test sets to ensure that the analysis results were reliable and robust.

Multiple regression analysis requires that the data be normally distributed, with no multicollinearity or outliers. To meet these requirements, the following steps were taken to clean and prepare the data:

- Outliers were identified and removed from the dataset.
- The correlation matrix was analysed to identify any multicollinearity issues, and if they were present, the variables were appropriately transformed.

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2.2. Phase 2: Research Design

This study applied an experimental research design. The principle of experimental research design is that it generates a situation in which variables are tightly controlled and subjected to an ideal environment for testing (Kothari, 2004; Nayak & Singh, 2015; Jain, 2019). This study applied independent and dependent variables, some of which were controlled, to observe the effect on other variables.

A dependent variable, the outcome variable, was defined as that being tested in a study (Jackson, 2012; Wilson as cited in Liamputtong, 2019; Stockemer, 2019) and was represented by "y" (Stockemer, 2019).

The influence of the independent variables on the dependent variables was measured. The independent variables were hypothesised to influence the dependent variable (Jackson, 2012; Wilson as cited in Liamputtong, 2019; Stockemer, 2019) and were represented by "x" (Stockemer, 2019).

As such, the effect of the independent variables on the dependent variable was tested. In this study, the independent variables comprised:

- Fibre diameter, staple length, vegetable matter and the clean yield on White wool classes.

The dependent variables were:

- Price of clean wool per kg for White wool classes.

2.3. Phase 3: Statistical Analysis

Statistical analyses of experimental data were carried out with the Statistical Package for Social Sciences (SPSS) version 24.0 software to determine wool characteristics that significantly influenced wool price and whether there were significant price differences between the wool characteristics.

The ANOVA analysis was performed to assess the contribution of each wool characteristic to the variation in wool price (Nolan, 2012; Nolan, 2014). The F statistic and a p-value or confidence interval (CI) were used to determine significant differences among groups. A p-value of 0.05 or less for the probability of the F statistic was accepted to indicate that the model

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had statistical explanatory power and reached statistical significance if the p-value was less than 0.05.

2.4. Phase 4: Multiple Regression Analysis

Multiple regression analyses were applied to the price (R/kg) of White wool on four variables (fibre diameter, staple length, vegetable matter and clean yield). Multiple regression analyses are a suitable method for analysing the price of White wool with regard to four variables, as it allows for the investigation of the effect of each variable on the price while controlling for the effects of the other variables. However, it's important to note that this analysis only accounts for the linear effects of the variables, so any non-linear effects may not be captured. As for the vegetable matter, it is typically measured in terms of a percentage of the overall amount of vegetable matter in a given sample of greasy wool.

Multiple regression is a method used to explore relationships between independent variables and one continuous dependent variable (Pallant, 2016). Multiple regression provides information about the model and the contribution of each variable that makes up the model. Additionally, it allows testing whether the added variables can contribute to the model's predictive ability in addition to the variables already included (Pallant, 2016). It can be applied to statistically control additional variables when exploring the model's predictive ability.

The multiple regression approach was chosen as the best technique for analysing wool characteristics that significantly influence price determination in South Africa because of its ability to investigate complex interrelationships among given variables (Pallant, 2016). According to Kothari (2004), multiple regression equations take the form (Equation 1):

$$\ddot{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 \quad (1)$$

Where X_1 and X_2 are the four independent variables, Y represents the dependent variable, and the constants are a, b_1, b_2, b_3, b_4.

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3. RESULTS AND DISCUSSION

The results of the multiple regression analysis of White wool price (R/kg) on four wool variables (fibre diameter, staple length, vegetable matter and clean yield) for 2009 to 2019 data are presented in Tables 1, 2 and 3.

The R square value in Table 1 indicates the variance in the model's dependent variable, and thus how well the estimated prices (R/kg) match the actual prices and how well the model explains variation in price for White wool. The adjusted R square was used to provide a better estimate of the true representative of the sample. In this case, all the independent variables explained 38% of the variance in the wool price (Adjusted R Square = 0.382), as shown in Table 1. In comparison, 62% was explained by macroeconomic wool market factors not analysed in this model.

TABLE 1: Model Summary for White Wool

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.621	0.386	0.382	1.361

Wool types: White wool
Independent variables: Staple length, Clean yield, Vegetable matter and Fibre diameter
Dependent Variable: Price (R/kg)

Where: R = (Correlation between the predicted and observed values of Y).
R square = Percentage of variation in response, explained by the model.

To evaluate the statistical significance of the results, the F statistic is presented in Table 2. As illustrated here, the value of F was 85.668, with a significance of 0.000. Fibre diameter, staple length, vegetable matter and the clean yield on White wool significantly influenced the wool price.

Therefore, the model with all independent variables (fibre diameter, staple length, vegetable matter, and clean yield) of White wool has a significant influence on the determination of the wool price ($F (4.545) = 85.668$, $p < 0.05$).

TABLE 2: ANOVA Table for White Wool

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	**Regression**	**635.242**	**4**	**158.810**	**85.668**	**0.000**
	Residual	1010.320	545	1.854		
	Total	1645.562	549			

Wool type: White wool

Dependent Variable: Price (R/kg)

Independent variables: Staple length, clean yield, vegetable matter and fibre diameter.

F (the ratio of two mean squares that forms the basis of a hypothesis test).

Sig= Significance.

The results of Table 2 demonstrated the overall predictive power of the model. Still, they did not indicate which of the independent variables made a statistically significant unique contribution to determining the wool price. Therefore, the coefficient was interpreted in Table 3.

TABLE 3: Coefficient Table of White Wool

Model	**Unstandardised Coefficients**		**Standardised Coefficients**	**T**	**Sig.**	**95.0% Confidence Interval for B**		**Correlations**			**Collinearity Statistics**	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	6.420	0.631		10.169	0.000	5.180	7.660					
Staple length	0.018	0.003	0.255	6.685	0.000	0.013	0.024	0.379	0,275	0.224	0.775	1.290

Fibre diameter – fineness	-0.331	0.033	-0,407	-10.172	0.000	-0.395	-0,267	-0.055	-0.399	-0.341	0.705	1.418
Vegetable matter	-0.040	0.061	-0.026	-0.661	0.509	-0.160	0.079	-0.314	-0.028	-0.022	0.752	1.330
Clean yield	0.115	0.010	0.546	11.808	0.000	0.096	0.134	0.474	0.451	0.396	0.526	1.900

Where:

Wool type: White wool

Dependent variable: Price (R/kg)

β =(Beta is the degree of change in the outcome variable for every 1 unit of change in the predictor variable)

t= Coefficient divided by the standard error

Sig = Significance level. (sig = $p<0.05$)

VIF = Variance inflation factors (determines the level of multicollinearity)

3.1. Effect of Staple Length on White Wool Price

Staple length made a statistically significant contribution to the determination of wool price after the other independent variables were controlled ($p < 0.05$) (Table 3) for White wool. A one-unit increase in staple length was associated with a 0.018-unit increase in wool price (R/kg). This was expected because buyers at the wool auction paid according to the rise in staple length. Longer lengths are associated with better prices. Similar reports were observed by Scott (1990) and Pepper et al. (2000) under Australian conditions where the wool price increased as staple length increased across the entire micron range in Merino wool. As the staple length of wool increases, the price ratio increases (Pepper et al., 2000). These results suggest that staple length significantly contributes to determining White wool price. Wool length can be controlled through shearing at different intervals. In South Africa, wool length is determined by the period of wool growth; thus, shearing intervals are significant (Botha & Hunter, 2010). Some wool farmers in South Africa stick to six-month shearing intervals, while others have eight-month or 12-month intervals (Human, 2018). Shorter shearing intervals produce shorter wool (Henderson, 2015). In Australia, shearing on a more regular basis has been promoted in response to discounts received for long wool length (Australian Wool Innovation, 2016). As a result, wool farmers who tend to produce longer wool lengths have changed from shearing yearly to shearing either at six or eight months. Under Australian conditions, discounts are applied to long and short staple lengths of approximately less than 60mm and more than 100mm (Doyle et al., 2021). There are discounts and premiums for different wool lengths because wool length plays a significant role in yarn making (Australian Wool Innovation, 2016). These results indicate that the issue of staple length needs to be addressed by extension officers to enhance the profitability and sustainability of their operations. The reason is that longer wool yields higher prices than shorter wool.

3.2. Effect of Fibre Diameter/Fineness on White Wool Price

In the study, fibre diameter/fineness made a statistically significant contribution to the determination of White wool price after all other independent variables were controlled ($p < 0.05$) (Table 3). A one-unit (micron) increase in fibre diameter/fineness resulted in a 0.331 unit decrease in wool price (R/kg. A possible explanation is that wool buyers prefer finer wool at the auction. Fine and strong wools to wool fibre diameter is one of the most important factors in determining how the fibre is used (Pawson & Perkins, 2013).

Nolan et al. (2013) found similar results: a decrease in fibre diameter/fineness by one micron was associated with an increase in wool price under Australian conditions. These findings are similar to the results from the Australian wool industry, where micron premiums increase rapidly as fibre diameter decreases. Similar results were reported by Gibbon and Nolan (2011), Nolan et al. (2013) and Scobie et al. (2015) that fibre diameter/fineness had the greatest influence on wool price. To maximise profitability, the wool farmers need to breed and select programs aimed at reducing fibre diameter to meet the demands of the wool industry for White wool. Breeding and selection are important ways wool producers can improve the fibre diameter of their sheep farming systems. Access to enough breeding ewes is the foundation of successful farming in extensive grazing areas (Conradie, 2019). Extensive grazing areas are large, open areas where sheep can graze freely, but these areas can be challenging to manage due to their size and lack of infrastructure. To be successful, farmers need to have enough breeding ewes to produce enough lambs to maintain or grow the flock while also considering factors such as feed availability and the reproductive cycle of the ewes. In addition, farmers in extensive grazing areas need to consider several factors to determine the optimal number of breeding ewes for their operation. These factors include the carrying capacity of the land, the nutritional requirements of the ewes and lambs, the length of the breeding season and the desired level of flock growth. By carefully balancing all of these factors, farmers can optimise the number of breeding ewes and increase their chances of farming success in extensive grazing areas. This indicates that the issue of breeding is a serious issue that needs to be addressed by farmers to improve the profitability of White wool farmers. The study for wool processors implies that they should pay attention to the fibre diameter of the wool they purchase. This will help them ensure that they are paying a fair price for the quality of the wool. In addition, wool processors may want to consider working with farmers to improve the fibre diameter of the wool they produce to ensure a steady supply of high-quality wool.

3.3. Effect of Vegetable Matter on White Wool Price

After taking into account all other independent variables in the model, there was no statistically significant relationship between vegetable matter and the price of White wool after all other independent variables were controlled for ($p > 0.05$) (Table 3). In this case, the vegetable matter did not play a significant role in determining the price of White wool. The reasons include several possible contamination factors such as burr, shive, seed, noogoora and bogan flea (Cottle & Baxter, 2015). According to research conducted by Flemming and Cottle (2015) in Australia, it was found that the presence of seed, Bathurst burr and noogoora burr has a larger impact on the price of wool than the presence of other types of vegetable matter. Some types of vegetable matter, such as seeds, would reduce the price of wool more than vegetable matter, which is easier to remove (Flemming & Cottle, 2015). Ford and Cottle (1993) also explained that certain types of vegetable matter affect wool prices. The removal of vegetable matter during processing is costly; therefore, the occurrence of vegetable matter is a drawback (Dlodlo & Cele, 2010). First, the study highlights the need for greater investment in research and development to improve the quality of wool produced in the country. Second, the study suggests a need for more collaboration between farmers, processors, and researchers to improve the overall quality of wool in South Africa. Lastly, supporting farmers in improving vegetable matter is an important implication of the study, as it will help to ensure the long-term viability of the South African wool industry.

3.4. Effect of Clean Yield on White Wool Price

Clean yield made a statistically significant contribution to the determination of the White wool price after all other independent variables were controlled ($p < 0.05$) (Table 3). One unit (percentage) increase in clean yield resulted in a 0.115 unit increase in wool price (R/kg). It can be expected that an increase in clean yield increased wool prices. This is presumably because buyers preferred clean wool. Clean yield refers to the percentage of clean-scoured wool obtained from greasy wool after the removal of other contaminants and vegetable matter (Simmons, 1980; Botha & Hunter, 2010; Dlodlo & Cele, 2010; Memon et al., 2018; Doyle et al., 2021; Sawyer et al., 2021). Clean yield also varies within a sheep flock due to varying amounts of wax and contaminants such as vegetable matter and dirt (Cottle & Baxter, 2015). Clean yield is a challenge for many wool farmers in South Africa. According to Venter (2017), the use of bailing twine (used to tie up bales of wool) and polypropylene bags (used to store the wool) are major sources of contamination that negatively impact the clean yield of the wool. These materials can break down and leave behind tiny plastic particles entangled in the wool fibres, making the wool unusable for many purposes. As a result, many South African wool farmers are looking for alternative ways to reduce contamination and improve their clean yield. These results of the current study demonstrated that clean yield contributed significantly to the determination of the White wool price. It would be important for extension officers to encourage wool farmers to produce wool with a high clean yield percentage for White wool. The Australian and New Zealand wool sheep farmers use covers or coats to improve the clean yield, something that more South African wool sheep farmers in an intensive system should consider to improve their profitability. The reason is that a high clean yield percentage is associated with better prices at the wool auction.

The implications of the study on clean yield for wool processors are significant. Clean yield is a measure of the amount of clean, usable wool obtained from a given quantity of raw wool. The study found significant room for improvement in the clean yield of South African wool. This has implications for the efficiency and profitability of wool processing in South Africa. By improving clean yield, processors can reduce costs and increase profits, ultimately benefiting the entire industry.

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3.5. Descriptive Statistics for White Wool

Table 4 presents data means over the past ten years for the combination of the wool characteristics and the mean price for White wool. In this case, White wool with an average length of 47mm, a fibre diameter of 21.30 microns, a vegetable matter of 2%, and a clean yield of 50.80% was associated with R38.69/kg.

To calculate the percentages of vegetable matter at the South African wool auctions, the wool was first graded according to the South African wool grading system. This system assigns a grade based on the fibre diameter, staple length, percentage of vegetable matter and clean yield. The percentage of vegetable matter was used to determine the final clean yield for each grade of wool. The grading results were used to calculate the average clean yield across all wool sold at the auction. Strict classing standards are adhered to, to ensure the good name of the South African clip internationally (Cape Wools, South Africa, 2002). These standards have been drawn up for the South African National Wool Growers Association by the South African Wool Board in cooperation with processors, buyers and brokers (Cape Wools, South Africa, 2002). This was done to satisfy the needs of all the key players involved.

TABLE 4: Results of Descriptive Statistics for White Wool

	White wool					
Wool characteristics	**N**	**Minimum**	**Maximum**	**Mean**	**Standard deviation**	**Variance**
Staple length (mm)	550	10.00	90.00	47.00	24.00	577
Fibre diameter (µ)	550	7.00	28.90	21.30	2.10	4.50
Vegetable matter (%)	550	0.10	10.90	2.00	1.10	1.20
Clean yield (%)	550	14.22	89.51	50.80	8.25	67.99
Price (R/kg)	550	0.00	125.78	38.69	21.85	477.51

3.6. Summary of the Results

The summary of the results from the statistical analysis for White wool is illustrated in Table 4. As depicted in Table 3, staple length, fibre diameter and clean yield contributed statistically significantly to the determination of White wool price, except for vegetable matter.

The results of descriptive statistics for White wool indicate that the clean yield percentage was 50.80% for White wool. This is a challenge for the wool industry because the clean yield percentage was low. The clean yield percentage has to be about 60% or above for wool to be classed as light wool. Light wool has good staple formation, is white to light cream in colour and has an absence of foreign matter, pointed tip or weathered (Cape Wools, South Africa, 2002). Wool buyers at the wool auction prefer to pay more for wool with a clean yield percentage of about 60% or more. According to De Beer and Terblanche (2015), clean yield is a challenge for wool farmers in South Africa. According to a study conducted by De Beer and Terblanche (2015) in South Africa, it was found that at the shearing sheds, wool was contaminated with foreign objects, twines, burr/weeds and paints. The Australian and New Zealand wool farmers use sheep covers or coats to improve clean yield, something that more wool farmers in an intensive system in South Africa should consider. Using coats for intensive farming systems may improve returns for wool farmers as they reduce wool contamination.

4. CONCLUSIONS AND RECOMMENDATIONS

Fibre diameter had the most significant influence on the determination of wool price. The lower the fibre diameter, the higher the value of the wool per kilogram. Wool with a low fibre diameter accumulates a higher value. Thus, the finer the wool, the greater the price. For wool farmers, to maximise profitability, the agriculture extension officers should encourage farmers to breed and select programs aimed at a reduction in fibre diameter to meet the demands of the wool industry for White wool. This can be done by selecting and breeding rams and ewes with finer (lower fibre diameter) wool.

This study proved that clean yield plays a significant role in determining wool price. It was found that, as clean yield increased, so did the price (R/kg). Wool buyers prefer clean wool and pay higher prices for cleaner wool. Thus, the cleaner the wool, the better the price, which indicates that clean yield plays a significant role in determining wool price. It might be a good idea for extension advisors to promote the use of the covers or coats to improve the clean yield as practised by Australian or New Zealand wool sheep farmers, something that more South African wool sheep farmers in the intensive system should consider.

Staple length plays a significant role in determining the price of White wool. In this study, an increase in wool length was associated with an increase in wool price. As the staple length increases, the price also increases (R/kg). The results for staple length revealed that wool length positively influenced the price of White wool. It could be important for extension officers to encourage farmers to produce wool with good length as longer wool yields higher prices than shorter wool.

There was no statistically significant association between vegetable matter and wool price for White wool. In this case, the vegetable matter did not play an important role in determining the wool price for White wool. An increase in vegetable matter is a form of wool contamination (Memon et al., 2018). Vegetable matter influences wool prices but is less important in South Africa. Vegetable matter is hedged to determine the clean yield of wool. The type of vegetable matter plays a major role when determining the clean yield of wool.

The findings of this study have several implications for wool farmers, wool processors, and the wool industry in South Africa. First, the study highlights the importance of production and marketing practices on the price farmers receive for their wool. Second, it shows significant variations in prices in South Africa. Third, the study demonstrates the importance of effectively understanding the market dynamics to price wool. Based on these findings, farmers should focus on improving their production and marketing practices, and policymakers should consider implementing policies that support the wool industry and increase its competitiveness.

Future studies should consider establishing a wool classification system for South African wool to improve its competitiveness in the global market. This should allow the South African wool industry to benchmark its products against international standards, improving the quality and consistency of South African wool.

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