



# Qualitative Traits of Ongole Grade Cow in Rembang Regency Based on Different Class of Indonesian National Standard

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**Abstract** | One of the genetic resources in Indonesia is Ongole grade cows in Rembang regency. The publication about qualitative traits of Ongole grade cows is important for breed conservation and reproduction performance observation. Measuring the conformity of qualitative traits of Ongole grade cows in Rembang regency to the Indonesian National Standards across different grades is the purposes of this research. The research was held May to July 2022 in Rembang regency. Two hundred and thirty-nine cows of Ongole grade cow used in this research to observe for qualitative traits. Descriptive statistics analysis was used in this research. The results showed that the majority of observed qualitative traits conformed to national standards with minor deviations in certain grades. In conclusion, qualitative traits of Ongole grade cows in Rembang Regency resemble with Indonesian National Standard.

**Keywords** | Ongole grade cow in rembang regency, Qualitative traits, Class differentiation

**Received** | July 13, 2024; **Accepted** | December 31, 2024; **Published** | February 14, 2025

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**Citation** | Indahwati A, Kurnianto E, Setiatin ET, Samsudewa D (2025). Qualitative traits of ongole grade cow in rembang regency based on different class of Indonesian national standard. *Adv. Anim. Vet. Sci.* 13(3): 596-600.

**DOI** | <https://dx.doi.org/10.17582/journal.aavs/2025/13.3.596.600>

**ISSN (Online)** | 2307-8316; **ISSN (Print)** | 2309-3331



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## INTRODUCTION

Cross breed between Ongole and Java cattle widespread in central Java. This crossbreed commonly called Ongole grade cow. Characterization of the Ongole grade cow is small head and horns and completed with extensive ears and tail. The cow has white-gray skin and black fur especially round the eyes (Astuti, 2010; Suyadi *et al.*, 2014). Ongole grade cow has superiority capable grow under limited environmental conditions and popular as working at a time as beef cattle (Sutarno *et al.*, 2016).

Reproduction and production performance of Ongole grade cow is varied on role of environmental changes especially feed changes (Rohyan *et al.*, 2016; Ngadiyono *et al.*, 2017). Ongole grade cow has high pregnancy rate and did not encounter many difficulties in their reproductive performance compare to cattle of sub-tropical descent is the reason why favored by breeders (Sudrajat and Subiharta, 2014; Ngadiyono *et al.*, 2014).

Most of the Ongole grade cow are placed in Java Island. Ongole grade cow are farmed on every regency in Central

Java (Subiharta *et al.*, 2012). Kebumen Ongole is the only cow strain established in Central Java up to 2024. Whereas the Ongole grade in Rembang regency was not yet established as cow strain, just declare as the breeding area. High genetic diversity based on genotype among the local beef cattle in Indonesia was shown by Ongole grade cows (Hartati, 2010; Sutiyono *et al.*, 2018). Recently, qualitative traits of Ongole grade cow in different class compared to Indonesia National Standart still lack of publication.

The qualitative traits were used for selection to get good grade based on phenotype and genotype the requirement phenotype of qualitative traits for Ongole grade cow based on (BSN, 2020) wattle, bun, head shape, presence of horn, black skin color around the eyes, small size and upright to the side shape of ears, the dominant black color of muzzle, the body, shoulder and neck skin color, black tail color. Therefore, this needs the efforts to get accurate information through research on qualitative aspects of Ongole grade cow in the Rembang Regency. Measuring the percentage of qualitative traits Ongole grade cow in Rembang regency compared to Indonesian National Standards in different grades is the purposes of this study.

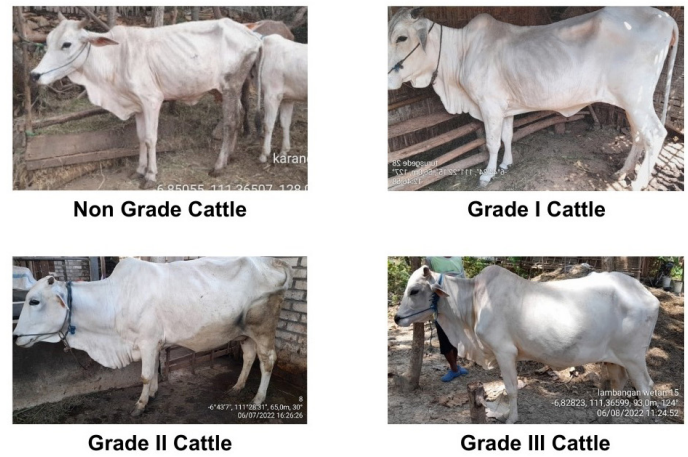
## MATERIALS AND METHODS

The qualitative traits of Ongole grade cows observation and determining was gathered on May to July 2022 placed in Rembang regency, Central Java, Indonesia (Figure 1).



**Figure 1:** Location of research (Rembang Regency, Central Java, Indonesia).

Two hundred and thirty-nine cows used in this research to observ for qualitative traits. The research unit divided to the 4 grading (I, II, III and Non-grade) standardized by Indonesian National Standard of cow (Figure 2) (Indahwati *et al.*, 2022). The cow with the body measurements lower than Indonesian National Standard will categorized as non-grade. Whereas, the cow with the body measurements higher than Indonesian National Standard will divided to the 3 group and categorized as Grade I, Grade II dan Grade III.



**Figure 2:** Classification of Ongole Grade Cow (Grade I, II, III and Non-Grade).

The observation of qualitative traits Ongole grade cow in Rembang regency was done in some part of body (skin color, wattle, hump, head shape, presence of horn, black skin color around the eyes, size and shape of ears, muzzle color and tail hair color). The measurements used categorized. Categorization based on Indonesian national standard. The standardization of Indonesian National Standard for skin of the body is white, the neck and shoulders are white, gray to black, long wattle, big hump, oval head, horned, skin around the eyes in black, ears are small and upright to the side, dominant muzzle color is black and tail hair is black. Descriptive statistics were used in this research. Frequency of qualitative traits calculated and displayed in percentage form for each trait according to formulation of Azis *et al.* (2022). SPSS 26.0 were used for statistical analysis tools.

## RESULTS AND DISCUSSIONS

The percentage of qualitative traits data of Ongole grade cow in Rembang regency in different grades presented in Table 1. The results of the study are 100% of Ongole grade cow in Rembang regency in all grades has long wattle, big hump, oval head, horned, black skin around the eyes ears small and upright to the side and dominant muzzle color in black. More than 90% of Ongole grade cows in Rembang regency has white, grey to black skin in the body, neck and shoulder except non-grade that showed only 82.05%. The black hair tail showed 100% on Grade III and non-grade of Ongole grade cow in Rembang regency. Whereas, grade I and grade II of Ongole grade cow in Rembang regency showed black hair tail in the amount of 98.08% and 99.07%, respectively. Grade I, II and II cow in Rembang regency have a high similarity with the Indonesian National standard. The qualitative traits of Ongole grade cows in Rembang regency and Kebumen regency has the same patterns. The Ongole grade cows of Kebumen also showed 100% black colour of muzzle and white skin body, but the big hump only showed on 60% (Sudrajat *et al.*, 2013).

**Table 1:** Percentage of qualitative data of ongole grade cow in rembang regency in different grades based on Indonesian national standard.

No	Qualitative Parameter Based on Indonesian National Standar (SNI)	Grade I (101)		Grade II (44)		Grade III (35)		Non Grade (59)	
		in accordance with the SNI (%)	Doesn't in accordance with the SNI (%)	in accordance with the SNI (%)	Doesn't in accordance with the SNI (%)	in accordance with the SNI (%)	Doesn't in accordance with the SNI (%)	in accordance with the SNI (%)	Doesn't in accordance with the SNI (%)
1	Skin of the body is white, the neck and shoulders are white, gray to black	96.04	3.96	90.91	9.09	97.14	2.86	82.05	17.95
2	Long wattle	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
3	Big hump	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
4	Oval head	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
5	Horned	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
6	Skin around the eyes is black	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
7	Ears are small and upright to the side	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
8	Dominant muzzle color is black	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
9	Tail hair is black	98.08	1.92	99.07	0.93	100.00	0.00	100.00	0.00

**Table 2:** Percentage of qualitative traits of ongole grade in rembang regencies in different grades based on non Indonesian national standar.

No	Qualitative Parameter Based on Indonesian National Standar (SNI)	Grade I (101 head) (%)	Grade II (44 head) (%)	Grade III (35 head) (%)	Non Grade 59 head (%)
1	Leg colour				
	- White	98.02	95.45	100.00	100.00
	- White gray	1.98	4.55	0.00	0.00
2	Backside colour				
	- White	88.12	84.09	88.57	76.92
	- White gray	11.88	15.91	11.43	23.08
3	White tail color	100.00	100.00	100.00	100.00
4	Black upper lip color	100.00	100.00	100.00	100.00
5	Black bottom lip color	100.00	100.00	100.00	100.00
6	Horn color black brown	100.00	100.00	100.00	100.00
7	Hump color				
	- White	96.04	90.91	97.14	82.05
	- White gray	3.96	9.09	2.86	17.95
8	Head color				
	- White	88.12	84.09	88.57	76.92
	- White gray	11.88	15.91	11.43	23.08
9	Ears color				
	- White	11.76	15.91	14.29	11.86
	- White gray	73.27	72.73	77.14	76.27
	- White black	13.86	11.36	2.86	10.17
	- Gray black	0.99	0.00	5.71	1.69
10	Hair color				

	- White	12.87	11.36	14.29	5.08
	- Brown	2.97	11.36	2.86	1.69
	- Black	73.27	59.10	62.86	74.58
	- White brown	0.00	0.00	0.00	0.00
	- Brown black	9.90	15.91	17.14	16.95
	- White black	0.99	2.27	2.85	1.69
11	Tail position				
	- Body Sticking	95.05	97.73	97.14	93.22
	- Not sticking to body	4.95	2.27	2.86	6.78
12	Description of mane				
	- Black thick long	64.36	63.64	77.14	69.49
	- Black thick short	18.81	20.45	17.14	13.56
	- Black thin long	13.86	2.27	5.72	8.47
	- Black thin short	0.99	6.82	0.00	8.47
	- Brown thick long	0.99	0.00	0.00	0.00
	- Brown thick short	0.99	0.00	0.00	0.00
	- Brown thin long	0.00	2.27	0.00	0.00
	- Brown thin short	0.00	2.27	0.00	0.00
	- White thin short	0.00	2.27	0.00	0.00
13	Position of wattle				
	- Foreleg	0.99	0.00	0.00	0.00
	- Back of Foreleg	94.06	93.18	97.14	96.61
	- Umbilical	4.95	6.82	2.86	0.00

The percentage of qualitative data of Ongole grade cow in Rembang regency in different presented in Table 2. The results showed that 100% of Ongole grade cow in Rembang regency in all grades grades has white tail color, black upper and bottom lip color and black brown color horn. More than 75% of Ongole grade cows in Rembang regency in

all grades has white color of leg, backside, hump and head. Whereas more than 70% of Ongole grade cows in Rembang regency in all grades has white gray ears and black hair color. Body sticking of tail and back forelegs wattle positions is dominant on Ongole grade cows in Rembang regency in all grades. Lastly, this research also showed more than 60% of Ongole grade cows in Rembang regency in all grades has black thick long mane. The research of *Dhita et al. (2017)* showed that 100% Ongole grade cow in Central Lampung has a white mane, hump and the skin colour.

Quantitative traits are higher valuable compare with qualitative traits compare with quantitative traits, but in high economic value will reach in some condition. Identification of breed purity can be used the qualitative traits (*Utomo et al., 2012*). Skin around the eyes, small ears and upright to the side and black muzzle color is one of the identifications of breed purity. Skin color with the white in the body and white, gray to back shoulder color also one of the breed purity identifications. In this research showed that only non-grade Ongole grade cow showed lower than 85%. The occurrence of traits deviation could be caused by gene mutation. The gene mutation will be affected to the purity of cow and impacted to the economic value. Besides that, uncontrolled mating will be affected to the conservation problem because of gene pollution. *Azis et al. (2022)* stated that qualitative traits deviation found in Bali cow. This condition might be affected by controlling of gene from other cattle breed of the ancestors. Genetic identity can be indicated from phenotypic similarities, even though there are some limitations also showed including effect of different alleles or genes at different loci (*Zulkharnaim et al., 2020; Abdullah et al., 2024*). Every single gene will be affected to the qualitative traits that related with breed purity (*Pacheco et al., 2015*). The presence of genes from the other breed cattle is potential condition in Ongole grade cow in Rembang regency because of uncontrolled mating including artificial insemination. Artificial insemination is one of the potential problems of breed purity. Uncontrolled frozen semen distribution is the reason. Frozen semen from another breed can be affected to the gene pollution. The gene pollution needs to reduce for ensuring the potential genetics reflected to the phenotypic traits (*Mammo et al., 2017; Islami et al., 2023; Suhendro et al., 2024*). Reduction of reproductive capability of Ongole grade cow showed on increasing service per conception (*Widyas et al., 2022*). Increasing of service per conception of Ongole grade cow from 1.8 to 2.2 was showed affected by increasing gene pollution (*Ngadiyono et al., 2017*).

## CONCLUSIONS AND RECOMMENDATIONS

Qualitative traits of Ongole grades cow in Rembang Regency in different grades were resemble with qualitative

traits of Indonesian National Standar 2020. But, Non-grades cow is a bit far from qualitative of Indonesian National Standar 2020. The qualitative of Ongole grades cow was needed to ensure the breed purity. This research can be used as a basic policy of breeding practice.

## ACKNOWLEDGEMENTS

Thanks to the Head of Animal Science Doctoral Program and the Dean of Faculty of Animal and Agricultural Sciences Universitas Diponegoro, Indonesia for chance to accomplished my doctoral studies. This research has been supported by the Universitas Diponegoro Grant Number 4/UN7.F5/HK/III/2023.

## NOVELTY STATEMENTS

To the best of our knowledge, this is the first research about qualitative traits of Ongole grade cow of Rembang regency in different grades based on Indonesian National Standard

## AUTHOR'S CONTRIBUTIONS

All of the author of this article was contributing to collect, data analysis and writing the article.

## CONFLICT OF INTEREST

There is no conflict of interest regarding the publication of this article.

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