

Dokumen Bukti Korespondensi untuk karya penelitian dengan judul artikel : **Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)**

Penulis : **Riswandi\***), Basuni Hamzah, Agus Wijaya, Arfan Abrar, Nama Jurnal : Advances in Animal and Veterinary Sciences, Penerbit : Nexus academic, Volume Jurnal : 8, Nomor Jurnal : 8, Tahun Terbit Jurnal : 2020, Halaman : 813-818, Print-ISSN : 2309-3331, Online-ISSN : 2307-8316, Yang terdiri dari :

- 1) Surat Permohonan Publikasi ke JAAVS dan Bukti Submit (22 Febuari 2020)
- 2) Surat JAAVS Reviewer 1 (13 April 2020)
- 3) Surat JAAVS Reviewer 2 (16 April 2020)
- 4) Surat Tanggapan Penulis dan Perbaikan Manuscript (29 April 2020)
- 5) Revised Manuscript based on Two Reviewers (29 April 2020)
- 6) Surat Accepted JAAVS (22 Juni 2020)
- 7) Surat Payment JAAVS (24 Juni 2020)
- 8) Surat Bukti Bayar ke JAAVS (25 Juni 2020)
- 9) Surat Bukti Bayar dari JAAVS (26 Juni 2020)
- 10) Surat Galley Proof dari JAAVS (4 Juli 2020)
- 11) Surat Galley Proof ke JAAVS (6 Juli 2020)
- 12) Surat Fully Publisher JAAVS (21 Juli 2020)

# 1. Surat Permohonan Publikasi ke JAAVS (22 Februari 2020)

Submission article for Publication in AAVS Journal



Riswandi Wandu <riswandi\_dya@yahoo.com>

To: Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)

Sat, 22 Feb 2020

Dear Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)

submission of article for publication in jaavs journal

We wish to submit an original research article entitled "Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees) " for consideration by Journal of Advances in Animal and Veterinary Sciences.

We confirm that this manuscript has not been published elsewhere nor is it currently under consideration for publication elsewhere. We believe that these findings will be of interest to the readers of your journal.

We look forward to hearing from you at your earliest convenience.

best regards

Riswandi

## 2. Surat JAAVS Reviewer 1 (13 April 2020)



Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)  
To: Riswandi Wandi <riswandi\_dya@yahoo.com>

Mon, 13 Apr 2020

Dear Mr. Riswandi Riswandi,

We have received the reports from our reviewers on your manuscript, "Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)", which you submitted to *Advances in Animal and Veterinary Sciences* with MH20200224060204.

Based on the received comments, your manuscript could be reconsidered for publication, should you be prepared to incorporate Minor Revisions.

The comments and requests of the Editor and the Peer Reviewers are included below. Please share this information with all coauthors of the manuscript.

Editor's Comments:

- Review the peer review comments and requests carefully, and edit the manuscript accordingly.
- Include a separate point-by-point response file addressing the reviewers comments along with an explanation of any request of the editor or the reviewers that you do not address in your revised manuscript. Your list of responses should be uploaded as a Cover Letter in addition to your revised manuscript.
- Please colour (e.g. red in contrast to black text) all changes in the revised manuscript, without such coloured changes the manuscript may be returned or rejected.
- Verify the placement and accuracy of each reference in your manuscript as well as the accuracy of all of the values in your tables and figures.
- Please ensure that all author's names and their affiliations are placed correctly.
- Make every effort to address the remaining concerns and to resubmit your manuscript. If you anticipate an additional delay, or if you do not wish to resubmit your manuscript, then please notify us as soon as possible.
- Please keep your coauthors apprised of the status of the article throughout the revision process.

Please feel free to contact the Manuscript Handler coordinators if you have any questions regarding the submission process: [info@manuscripthandler.com](mailto:info@manuscripthandler.com) or +441252516907 (UK)

You can login to your Authors Panel within 15 days to revise the manuscript.

<http://manuscripthandler.com/nexus/Advances-in-Animal-and-Veterinary-Sciences/login>

We look forward to receiving your revised manuscript.

The first reviewer

Reviewer(s) Comments to Author:

1. English is very poor and need extensive english editing.
2. Results and discussion better to combined together.

Sincerely,  
Editorial Office  
Nexus Academic Publishers (NAP)

Lahore, Pakistan

Phone: 0092 300 7786573

email: [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com)  
Email: [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com)  
Web: <http://nexusacademicpublishers.com/>

### 3. Surat JAAVS Reviewer 2 (16 April 2020)



Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)  
To: Riswandi Wandu <riswandi\_dya@yahoo.com>

Thu, 16 Apr 2020

Dear Mr. Riswandi Riswandi,

We have received the reports from our reviewers on your manuscript, "Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)", which you submitted to *Advances in Animal and Veterinary Sciences* with MH20200224060204.

Based on the received comments, your manuscript could be reconsidered for publication, should you be prepared to incorporate Minor Revisions.

The comments and requests of the Editor and the Peer Reviewers are included below. Please share this information with all coauthors of the manuscript.

Based on the received comments, your manuscript could be reconsidered for publication, should you be prepared to incorporate Minor Revisions.

The comments and requests of the Peer Reviewers are included below. Please share this information with all coauthors of the manuscript.

The second reviewer

Reviewer(s) Comments to Author:

- 1 The results and discussions need to be supported by the latest references
2. Discussion section should not contain subheadings.
3. All tables, better to be in graphs with more statical analysis.

Please feel free to contact the Manuscript Handler coordinators if you have any questions regarding the submission process: [info@manuscripthandler.com](mailto:info@manuscripthandler.com) or +441252516907 (UK)

You can login to your Authors Panel within 15 days to revise the manuscript.

<http://manuscripthandler.com/nexus/Advances-in-Animal-and-Veterinary-Sciences/login>

We look forward to receiving your revised manuscript.

Sincerely,

Editorial Office  
Nexus Academic Publishers (NAP)  
Lahore, Pakistan  
Phone: 0092 300 7786573  
email: [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com)  
Email: [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com)  
Web: <http://nexusacademicpublishers.com/>

## 4. Surat Tanggapan Penulis dan Perbaikan Manuscript (29 April 2020)

Our Response Manuscript based on 2 JAAVS reviewers



Riswandi Wandi <riswandi\_dya@yahoo.com>

To: Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)

Wed, 29 Apr 2020

Dear Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)

We all the research team would like to thank the editors and reviewers for their help in improving and giving suggestions and criticisms in the journals we propose. In connection with the comments given by reviewers, here are our responses:

1. We have fixed the structure and grammar issues suggested by the reviewer
2. For issues, In the results and discussion section, we assume that the separation of results and discussion is following the guidance given by AAVS so that we will maintain that. Furthermore, we will continue to make use of subheadings because the use of subheadings can simplify and speed up the reader to find the desired information in a journal. Moreover, in this writing, we have also referred to several journals which have been published in AAVS
3. For issues use of graphics, thank you for the advice given. However, in our opinion, the use of graphics does not seem suitable for use because the table has given a more detailed explanation of the information provided.

best regards

Riswandi

## 5. Our Revised Manuscript based on 2 JAAVS Reviewers (29 April 2020)



Riswandi Wandu <riswandi\_dya@yahoo.com>

To: Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)

Wed, 29 Apr 2020

Dear Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)

Following we send you our revised manuscript entitled "Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)" to be published in Journal of Advances in Animal and Veterinary Sciences. The revision was done based on recommendation of the two reviewers.

best regards

Riswandi



# Revised Manuscript based on Two Reviewers



Riswandi Wandi <riswandi\_dya@yahoo.com>

To: Manuscript Handler [info@manuscripthandler.com](mailto:info@manuscripthandler.com)

## Research Article

### **Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)**

Riswandi<sup>1\*</sup>, Basuni Hamzah<sup>2</sup>, Agus Wijaya<sup>2</sup>, Arfan Abrar<sup>1</sup>

<sup>1</sup>Department of Animal Science, <sup>2</sup>Department of Agricultural Product Technology, Faculty of Agriculture, University of Sriwijaya South Sumatera, Indonesia.

\* riswandi\_dya@yahoo.com

**Abstract.** Utilization of potential swamp forages, by-product of the palm oil industry, and cassava is a strategy in the improvement of cattle feed. The purpose of this study was to evaluate the effect of cassava leaves, palm oil sludge, and yeast supplementation on a ration based on Kumpai grass (*Hymenachne amplexicaulis* (Rudge) Nees) on the performance of Bali heifers. Twelve Bali heifers were allocated into two groups. First group was fed with control diet consisting of 70% Kumpai grass + 30% concentrate (R0) while second group (R1) was fed a diet consisting of 55% Kumpai grass + 15% concentrate + 15% palm oil sludge (POS) + 15% cassava leaves + 5 g yeast (*Saccharomyces cerevisiae*)/head/d. The variables measured in this study were intake, digestibility of dry matter, organic matter, crude protein, neutral detergent fiber, acid detergent fiber, average daily gain, feed conversion ratio, and farmer income. Data were analyzed by independent t-test. The results showed that the supplemented diet had a significant performance by improving the intake of dry matter, organic matter, and crude protein. Moreover, it also followed by increasing the digestibility

of dry matter, organic matter, crude protein, neutral detergent fiber, and acid detergent fiber, average daily gain, feed conversion ratio, and farmer income. Supplementation of palm oil sludge, cassava leaves, and yeast in the Kumpai grass-based ration significantly increased the performance of Bali heifers. Heifers fed the supplements gave a higher income than those without supplements.

**Keywords:** Bali heifers, digestibility, daily gain, non-tidal swamp, performance

## INTRODUCTION

In the non-tidal swamp of South Sumatra, the forage supply mainly depends on aquatic vegetations, one of them is Kumpai grass (*Hymenachne amplexicaulis* (Rudge) Nees). However, the utilization of Kumpai grass is limited by the high fiber fraction that may reduce intake and digestibility when fed alone in the diet (Ali et al., 2013; Rostini et al., 2014).

The high price of concentrate was the main reason for the low frequency of cattle supplementation by smallholder farmers (Hernaman et al., 2018; Mumba et al., 2018). Concerning the price of commercial concentrate, the locally-available concentrate may increase cattle performances and farmer income. Palm oil sludge (POS) is one of the agro-industrial by-products from palm oil processing at a low price and available for small scale farming. The supplementation of POS has a potency for increasing intake and cattle performance due to a higher content of water-soluble carbohydrates and a source of unsaturated fatty acids (Hayyan et al., 2010) that might reduce methane gas production (Machmüller et al., 2000; Vlaeminck et al., 2006). An often-used approach for boosting cattle production in humid tropical areas was cassava leaves since a higher crude protein (CP) content, especially branched amino acids. Furthermore, The addition of branched amino acids in the ration was able to increase the growth of cellulolytic bacteria. It could be reflected by increasing the digestibility of dry matter (DM), organic matter (OM) and neutral detergent fiber (NDF) (Puastuti et al., 2017; Tedeschi et al., 2015).

Supplementation of yeast (*Saccharomyces cerevisiae*) increased the population of cellulolytic bacteria and reduced the accumulation of lactic acid and oxygen concentration in the rumen and thus increased the use of starch in the ration (Kumar et al., 2013; Pinloche et al., 2013). Other studies proved that yeast supplementation increased the digestibility of DM, OM, CP, and fiber fraction and microbial efficiency (Ali et al., 2015; Tang et al., 2008). The

purpose of this study was to evaluate the effect of the locally-available supplementations on Bali heifer's performances.

## **MATERIALS AND METHODS**

### **Location and duration**

This research was conducted in the village of Tanjung Seteko, Ogan Ilir district, South Sumatra province of Indonesia, Rubber and oil palm plantations are dominantly cultivated in this area and serves a potential source of feed for beef cattle originating from the plantations by-products. The study was conducted for four months.

### **Experimental design and animals**

Twelve Bali heifers aged one year with an initial body weight of  $151 \pm 12.3$  kg (mean  $\pm$  standard deviation) were randomly allocated into two experimental treatments. The animals were placed in individual pens (1.6 m x 2.5 m).

The trial was conducted for seven weeks and consisted of two weeks of preliminary period, four weeks of the adaptation period, and one week of digestibility measurement when feed intake and fecal excretion were quantified. Live weight was measured weekly before morning feeding.

### **Feeding**

The experimental treatments comprised of two diets. The first group was the control diet (R0) consisting of Kumpai grass and concentrate (70:30, DM basis), the second group (R1) consisted of Kumpai grass, cassava leaves, POS (Palm oil sludge), and concentrate (55:15:15:15) and 5 g yeast/head/day (Table 2). The ration was prepared according to NRC (2001) for small breed cattle with estimated DM intake of 3% body weight.

Kumpai grass and cassava leaves were collected in the evening and then chaffed to  $\pm 10$  cm. Palm oil sludge was obtained from a palm oil processing while Yeast (Yea-sac) was obtained from Livestock Research Center at Ciawi, Bogor. Feeding was started at 8.00 AM. First, the concentrate (yeast) and POS were offered while grass and cassava leaves were offered at 10:00 AM and 4:00 PM. Animals had free access to drinking water and Salt-mineral lick.

### **Quantification of feed intake and feces excretion**

Samples of 100 g of fresh material (FM) consisting of Kumpai grass, cassava leaves, POS, and concentrates were daily collected during the week of digestibility measurement. After that, to determine the diet-digestibility, the feed offered and refusal were weighed and recorded per animal per day. No concentrate refusal was found. The samples were dried at 65 °C for 72 hours and then pooled at the end of each trial week in order to obtain 100 g of dried sample.

Determination of daily fecal excretion was carried by removing the feces each time the animals defecated from the clean floor throughout the digestion week. For each heifer and every 24 hours (8:00 AM), all fesses were collected into a 10-l bucket and weighed. After that, the fesses were mixed by hand, and a sample of 300 g FM was dried in an aluminum foil tray at 65 ° C for 72 hours and re-weighed. At the end of the trial, all dry samples were grounded to pass a 1-mm mesh. Subsamples of 100 g of dried feces were stored for analysis.

### **Chemical analysis of samples**

Samples from Kumpai grass, cassava leaves, POS and concentrates as well as fecal samples were analyzed for DM and ash (AOAC, 2005), neutral detergent fiber (NDF), and acid detergent fiber (ADF) (Van Soest et al., 1991). The concentration of N was determined

by the Kjeldahl procedure (AOAC, 2005) using the distillation unit Tecator 1028 (Tecator GmbH; Hagen, Germany). All analyzes were carried out in duplicate, and the analyzes were repeated when the results differed by more than 5%.

## Data analysis

Digestibility value was obtained by reducing the intake of the dietary nutrient with nutrients in the feces and then divided by the intake of dietary nutrition. The feed conversion ratio was calculated by dividing the DM intake by live weight gain. Income over feed cost was calculated based on the differences between the selling price of the Bali heifers gain and feed costs in the unit of Indonesian rupiah (IDR). Differences in observed parameters between groups of treatments were analyzed by the t-test (SPSS 13.0 program).

## RESULTS

The results showed that the supplemented R1 ration increased intake ( $P < 0.05$ ) of DM, OM, and CP, whereas NDF and ADF were not significantly. increased intake for DM 13.07%, OM 21.34%, and CP 102.1% (Table 3). Furthermore, it also followed by increasing the digestibility of DM (16.21%), OM (18.66%), CP (24.12%), NDF (8.81%), and ADF (13.30%) compared without supplement ( $P < 0.05$ ) (table 4). The results showed that the mean of ADG of the heifers on the supplemented diet (R1) was higher ( $P < 0.05$ ) than that on the control diet (R0). As a result, the supplemented diet had a better FCR compared to the control diet (Table 5). Bali heifers fed POS, cassava leaves, and yeast supplementation gave 489% higher IOFC values than those fed Kumpai grass and concentrated (Table 6).

## DISCUSSION

### Nutrients intake

The difference value of DM intake was caused by the nutrients, especially protein and energy feed (McDonald et al., 2010). The higher intake might relate to the lower content of NDF and higher CP in the supplemented diet, which is consistent with Cunningham et al. (2005) that the lower NDF content, the higher the feed intakes. Coleman and Moore (2003) stated that regulation of intake was an interaction between the characteristics of feed and the animal where mainly depend on rumen capacity and passage rate (McDonald et al., 2010). Increased DM, OM, and CP in the R1 were due by cassava leaves to have high CP content and also by POS as a source of fatty acids so that it will contribute to the preference level (palatability) cattle on feed intake. The same result was reported by Sanh et al. (2002) stated that the palatability and digestibility of nutrients feed were related to the CP content. According to NRC (2001), generally, the additional calcium salts of fatty acids in dairy cows can reduce the consumption of DM. It is assumed that yeast supplementation modified the condition of the rumen, so the effects of unsaturated fatty acids on the DM intake could be suppressed.

### **Nutrients digestibility**

The higher digestibility values might vary due to the lower fiber fraction of NDF and ADF and the higher CP contents of supplemented ration (Table 4). This result is due to the potential work of the carbon framework from sources of POS and N cassava leaves. It increases microbial growth in the rumen so that the microbial population will increase and continue to increase ration degradation in the rumen. Branched chain amino acids of cassava leaves (Table 1) might contribute to the higher NDF, and ADF digestibility since these amino acids are sources of carbon framework for rumen microbial growth (Puastuti et al., 2017; Tedeschi et al., 2015; Zhang et al., 2011). Increased protein supplementation has a positive correlation effect on CP digestibility with increased digestibility of DM and OM (Figueiras

et al., 2016). The supplementation of cassava leaves (for branch chain amino acid (BCAA) source) and organic minerals in palm oil-based waste ration can increase the digestibility value of DM, OM, and Average daily gain (ADG) ( Adhianto et al., 2018).

Souze et al. (2010) and Larazzarini et al. (2016) reported that nutrient supplementation both energy and protein together could be optimized for microbial growth in order to use fibrous feed and will increase the value of intake and digestibility. Moreover, it will increase nutrients for the formation of body tissues. Badarina et al. (2017) showed that the feeding of POS and some local fermented feed ingredients up to 10 kg/d increased the DM intake by 5.78 kg and digestibility of the ration by 73.14%. These results might also relate to the improvement of digestibility by yeast supplementation in the R1 ration (Ali et al., 2015; Tang et al., 2008). Supplementation of yeast increased the population of cellulolytic bacteria and reduced the accumulation of lactic acid and oxygen concentration in the rumen and thus increased the use of starch in the ration (Kumar et al., 2013; Pinloche et al., 2013).

### **Average daily gain (ADG), feed conversion ratio (FCR), and Income over feed costs (IOFC)**

A bodyweight gain of cattle is strongly associated with nutrition in the feed and the feed digestibility level. Rations have a high nutrient content, and good palatability level can quickly increase body weight gain of cattle for fattening (Purwanti et al., 2014). According to NRC (2001), body weight gain is influenced by several factors such as total protein obtained each day, type of animal, age, state of genetic, environmental conditions, the condition of each individual, and the treatment of management.

The increase of ADG is caused by an increase in the consumption and nutrient digestibility of the treatment ration. The result of the present study is in line with Riswandi et al. (2015) that the supplementation of Lamtoro leaves (*Leucaena leucocephala* (Lam.) de



Wit) in the fermented Kumpai grass-based diet, **which the results showed** a higher ADG of Bali bulls than those on fermented Kumpai grass alone. The addition of **yeast as** a feed supplement in the diet has the potential to improve **the** rumen ecosystem, thus contributing to improved rumen microbial population. The increase **in** the digestibility and feed intake will increase nutrients to the body's tissue (Tripathi and Karim, 2010).

**The conversion** rate is the ratio between the amount of DM intake and animal body weight gain (Katongole et al., 2009). The value of feed conversion is highly dependent on the digestibility and nutrient metabolism in the body. Feed consumed will be used for basic living and production. Feed conversion value **depends** on the quality of feed, the higher nutrient contained, the better the resulting feed conversion (Nusi et al., 2011).

The IOFC of this study was IDR 12,264. - /animal/d with **palm oil by-products on beef ration** (Zakiatulyaqin et al., 2017), while Jefri et al. (2013) stated that livestock business using palm oil by-products was profitable with an R-C ratio more than 1.00.

## **CONCLUSIONS**

Supplementation of palm oil sludge, cassava leaves, and yeast in the Kumpai **grass-based** ration significantly increased production of Bali heifers as shown by higher nutrients intake and digestibility and average daily gain. Heifers fed the supplements gave a higher income than those without supplements.

## **CONFLICT OF INTEREST**

We declare that in this **research**, there is no conflict of **interest**.

## **ACKNOWLEDGMENT**

The researcher would like to thank Sriwijaya University for providing research funding through a competitive flagship scheme.

## REFERENCES

- Adhianto K, Muhtarudin, Liman, Haryanto A (2018). Improvement nutrient digestibility and production performance of cattle through restricted amino acid and organic minerals addition on fermented palm oil waste-based feed. *Bulletin of Animal Science*. 42 (1): 45-49, <https://doi.org/10.21059/buletinpeternak.v42i1.24158>.
- Ali AIM, Sandi S, Muhakka, Riswandi, Budianta, D (2013). The Grazing of Pampangan Buffaloes at Non Tidal Swamp in South Sumatra of Indonesia. *APCBEE Procedia ICAAA 2013: July 27-28, Moscow, Russia*. <https://www.researchgate.net/publication/280>.
- Ali AIM, Sandi S, Riswandi, Imsya A, Prabowo A, Rofiq N (2015). Evaluation of yeast supplementation with urea-molasses in rice straw-based diets on in vitro ruminant fermentation. *Pakistan Journal Of Nutrition*. 14(2):988-993. <https://scialert.net/abstract/?doi=pjn.2015.988.993>
- AOAC (2005). *Official Methods of Analysis*. 18<sup>th</sup> ed. Association of Official Analytical Chemists, USA.
- Badarina I, Jarmuji, Gultom DP (2017). Kecernaan ransum sapi Bali dengan konsentrat fermentasi berbasis lumpur sawit dan bahan pakan local. *Jurnal Agrotek*, 11(2):63-67. <https://journal.trunojoyo.ac.id>
- Coleman SW, Moore JE (2003). Feed quality and animal performance. *Field Crops Research*. 84(1):17-29. <https://www.researchgate.net/publication/223>.
- Cunningham M, Latour MA, Acker D (2005). *Animal Science and Industry*. 7<sup>th</sup> Ed. Pearson Prentice Hall, Upper Saddle River, New Jersey.

- Figueiras JF, Detmann E, Franco, MO, Batista ED (2016). Effects of supplements with different protein contents on nutritional performance of grazing cattle during the rainy season. *Asian-Australas Journal Animal Sciences*. 29(12): 1710-1718. <https://www.ncbi.nlm.nih.gov/pubmed>
- Hayyan A, Alam MZ, Mirghani MES, Kabbashi NA, Hakimi MNIN, Siran YM, Tahiruddin S (2010). Production of biodiesel from sludge palm oil by esterification process. *Journal of Energy and Power Engineering*. 4(1):12-17. <https://pdfs.semanticscholar.org>
- Hernaman I, Budiman A, Tarmidi AR (2018). Perbaikan mutu ransum sapi potong melalui pemberian konsentrat berbasis pakan lokal di Purwakarta. *Jurnal Aplikasi Ipteks untuk Masyarakat*. 7(1): 1 – 5. [jurnal.unpad.ac.id/dharmakarya/article](http://jurnal.unpad.ac.id/dharmakarya/article)
- Jefri D, Daulay AH, Wahyuni TH (2013). Analisis usaha pemanfaatan daun kelapa sawit fermentasi dengan *Aspergillus niger* dan limbah pabrik kelapa sawit terhadap performans sapi Bali jantan. *Jurnal. Peternakan Integratif*, 2(1):22-30. <https://jurnal.usu.ac.id/index.php/jpi/article>
- Katongole CB, EN, Sabiiti FB, Bareeba I, Ledin (2009). The performance of growing indigenous goats fed a diet based on urban market crop wastes. *Trop. Anim. Health Prod.* 41:329-336.
- Kumar DS, Prasad Ch S, Prasad RMV (2013). Effect of yeast culture (*Saccharomyces cerevisiae*) on ruminal microbial population in buffalo bulls. *Buffalo Bulletin*. 32, 116-119. [ibic.lib.ku.ac.th/e-bulletin/IBBU201302007](http://ibic.lib.ku.ac.th/e-bulletin/IBBU201302007)
- Lazzarini I, Detmann E, Sebastião de Campos VF, Paulino MF, Erick DB, Luana M, de Almeida R, William LS dos R, Marcia de OF (2016). Nutritional performance of cattle grazing during the rainy season with nitrogen and starch supplementation. *Asian Australas. J. Anim. Sci.* 29 (8) : 1120-1128.

- Machmüller ADA, Ossowski, Kreuzer M (2000). Comparative evaluation of the effects of coconut oil, oilseeds, and crystalline fat on methane release, digestion, and energy balance in lambs. *Animal Feed Science Technology*,85(1–2):41–60. <https://www.researchgate.net/publication/248>.
- McDonald P, Edwards RA, Greenhalgh JFD, Morgan CA, Sinclair LA, Wilkinson R G (2010). *Animal Nutrition*. Seventh, Ed., New York. C.A., Morgan, J.F.D., Greenhalgh, L.A., Sinclair and R.G., Wilkinson, Inc.
- Mumba C, Hasler B, Muma JB, Munyeme M, Sitali DC, Skjerve E, Rich KM (2018). Practices of traditional beef farmers in their production and marketing of cattle in Zambia. *Tropical Animal Health and Production*. 50, 49-62. <https://www.researchgate.net/publication/320>.
- NRC (2001). *Nutrient Requirements of Beef Cattle*. Washington, DC (US): seven<sup>th</sup> updated ed. Natl. Acad. Press.
- Nusi M, Utomo R, Soeparno (2011). Pengaruh penggunaan tongkol jagung dalam *complete feed* dan suplementasi *undegraded protein* terhadap pertambahan bobot badan dan kualitas daging pada sapi peranakan ongole. *Buletin Peternakan*. 35(3):1-9.
- Pinloche E, McEwan, Marden JP, Bayourthe C, Auclair E, Newbold CJ (2013). The effects of a probiotic yeast on the bacterial diversity and population structure in the rumen of cattle. *PLoS ONE*. 8 (6):78:24. <https://journals.plos.org/plosone>
- Puastuti W, Yulistiani D, Handiwirawan E (2017). Supplementation of molasses and branched chain amino Acids to increase in vitro digestibility of ammoniated corn cob in ruminants feed. *JIVT*. 22 (4):179-187. <http://dx.doi.org/10.14334/jitv.v22i4.1664>.
- Purwanti D, Suryahadi D, Evvyernie \*2014). Performa sapi potong sebagai respon dari suplementasi probiotik padat dan cair. *Buletin Makanan Ternak*. 2014, 101 (1) : 13 -

- Riswandi, Ali AIM, Muhakka, Syaifuddin Y, Akbar I (2015). Nutrient digestibility and productivity of Bali cattle fed fermented *Hymenachne amplexiacalis* based rations supplemented *Leucaena leucocephala*. Journal Media Peternakan. 38(3) : 156-182. <https://pdfs.semanticscholar.org>
- Rostini T, Abdullah L, Wiryawan KG, Kartic, PDMH (2014). Utilization of swamp forages from South Kalimantan on local Goat performances. Journal Media Peternakan, 37(1):50-56. [citeseerx.ist.psu.edu](http://citeseerx.ist.psu.edu)
- Sanh MV, H Wiktorson, LVLy (2002). Effects of natural grass forage to concentrate ratio and feeding principles on milk production and performance of cross bred lactating cows. J. Anim. Sci. 15: 650-657. DOI: <https://doi.org/10.5713/ajas.2002.650>
- Souza MA, Detmann E, Paulino MF (2010). Intake, digestibility and rumen dynamics of neutral detergent fibre in cattle fed low-quality tropical forage and supplemented with nitrogen and/or starch. Trop Anim Health Prod. 42: 1299-1310.
- Tang SX, Tayo GO, Tan ZL, Sun H, Shen LX, Zhou CS, Xiao WJ, Ren GP, Han XF, Shen SB (2008). Effects of yeast culture and fibrolytic enzyme supplementation on in vitro fermentation characteristics of low - quality cereal straws. Journal Animal Sciences, 86:1164 –1172. [https://www.researchgate.net > publication > 564](https://www.researchgate.net/publication/564)
- Tedeschi LO, Fox DG, Fonseca MA, Francis L, Cavalcanti L (2015). Models of protein and amino acid requirements for cattle: Invited Riview. R Bras Zootec. 44:109-132. <https://doi.org/10.1590/S1806-92902015000300005>
- Tripathi MK, Karim SA (2010). Effect of individual and mixed live yeast culture feeding on growth performance, nutrient utilization and microbial crude protein synthesis in

lambs. *Animal Feed Science and Technology*. 155(2-4):163-171.

<https://doi.org/10.1016/j.anifeedsci.2009.11.007>

Van Soest PJ, Robertson JB, Lewis BA (1991). Methode for dietary fiber neutral detergent fiber and nonstarch polysaccharides in relation to animal nutrition. *Journal Dairy Science*. 74(10):3583-3597. [https://www.sciencedirect.com > article](https://www.sciencedirect.com/article)

Vlaeminck B, Fievez V, Tamminga S, Dewhurst RJ, Van Vuuren A, De rabander D, Demeyer D (2006). Milk odd-and branched-chain fatty acids in relation to the rumen fermentation pattern. *Journal of Dairy Sciences*. 89:3954–3964. <https://www.ncbi.nlm.nih.gov>

Zakiatulyaqin, Suswanto I, Lestari RB, Setiawan D, Munir AMS (2017). Income over feed cost dan R-C ratio usaha ternak sapi melalui pemanfaatan limbah kelapa sawit. *Jurnal Ilmiah Peternakan Terpadu*. 5(1):18-22. <https://media.neliti.com>

Zhang HL, Chen Y, Xiao Li Xu, HL, Yang YX (2011). Effects of Branched-chain Amino Acids on *In vitro* Ruminant Fermentation of Wheat Straw. *Asian-Australas J. Anim Sci*. 26(4): 523–528. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4093378/>

Table 1. The chemical composition of diets (% dry matter)

Nutrient	Kumpai grass	Cassava leaves	Palm oil sludge	Concentrate
Dry matter	91.86	88.75	90.76	80.59
Organic matter	88.52	78.96	83.23	63.21
Crude protein	8.43	20.34	18.85	15.62
Crude fiber	32.85	23.64	13.54	11.24
Ether extract	4.64	7.92	18.93	6.99
Neutral detergent fiber	58.43	30.58	46.37	37.71

Acid detergent fiber	46.35	22,34	35.32	21.66
Hemicellulose	12.08	8.24	11.14	16.05
Cellulose	26,64	16.72	27.21	15.86
Lignin	13,51	4.62	7.25	3.52
Oleate	0.05	0.13	42.18	1.42
Linoleic	0.22	0.38	11.24	1.58
Valine	0.03	0.63	0.39	0.43
Leucine	0.07	0.75	0.48	0.37
Isoleucine	0.12	0.67	0.43	0.28

Note : Data were analyzed by Laboratory of Nutrition and Feed Science, Faculty of Agriculture, University of Sriwijaya

Table 2. Ingredients and chemical compositions of the experimental diets (% dry matter).

Ingredients	Treatment	
	R0	R1
Kumpai grass (%)	70	55
Cassava leaves (%)	0	15
Palm oil sludge (%)	0	15
Concentrate (%)	30	15
Yeast (g/head/d)	0	5
TOTAL	100	100
Dry matter	88.48	89.54
Organic matter	80.87	82.47
Crude protein (%)	11.29	13.41
Crude fiber (%)	28.37	25.33

Ether extract (%)	5.79	7.93
Neutral detergent fiber (%)	52.21	49.35
Acid detergent fiber (%)	39.94	36.65
Hemicellulose (%)	13.27	12.05
Cellulose (%)	23.41	23.62
Lignin (%)	10.51	9.23
Oleate (%)	0.46	6.59
Linoleic (%)	0.63	2.10
Valine (%)	0.15	0.23
Leucine (%)	0.16	0.28
Isoleucine (%)	0.08	0.27

---

Note : Data were analyzed by Laboratory of Nutrition and Feed Science, Faculty of Agriculture, University of Sriwijaya

Table 3. Intake (kg/d) of dry matter (DM), organic matter (OM), crude protein (CP), neutral detergent fiber (NDF), and acid detergent fiber (ADF) by Bali heifers at control (R0) and supplemented diet (R1).

Parameter	R0	R1	SEM	P
DM	6.12 <sup>a</sup>	6.92 <sup>b</sup>	0.23	0.043
OM	5.06 <sup>a</sup>	6.14 <sup>b</sup>	0.26	0.007
CP	0.47 <sup>a</sup>	0.95 <sup>b</sup>	0.12	0.010
NDF	3.14	2.84	0.15	0.380
ADF	2.26	2.13	0.11	0.600

---

Different superscripts in the same row show significant different (P <0.05).

R0 = 85% Kumpai grass + 15% concentrate (control); R1 = 55% Kumpai grass + 15% concentrate + 15% cassava leaves + 15% palm oil sludge + 5 g yeast/head/d; SEM: standard error of the mean



Table 4. Apparent digestibility (%) of dry matter (DM), organic matter (OM), crude protein (CP), neutral detergent fiber (NDF), and acid detergent fiber (ADF) by Bali heifers at control (R0) and supplemented diet (R1).

Parameter	R0	R1	SEM	P
DM	55.5 <sup>a</sup>	64.5 <sup>b</sup>	0.33	0.004
OM	58.4 <sup>a</sup>	69.3 <sup>b</sup>	0.12	0.001
CP	59.7 <sup>a</sup>	74.1 <sup>b</sup>	0.11	0.004
NDF	61.3 <sup>a</sup>	66.7 <sup>b</sup>	0.15	0.008
ADF	57.9 <sup>a</sup>	65.6 <sup>b</sup>	0.11	0.012

Different superscripts in the same row show significant different (P <0.05).

R0 = 85% Kumpai grass + 15% concentrate (control); R1 = 55% Kumpai grass + 15% concentrate + 15% cassava leaves + 15% palm oil sludge + 5 g yeast/head/d; SEM: standard error of the mean

Table 5. Average daily gain (ADG, kg/d) and feed conversion ratio (FCR) by Bali heifers at control (R0) and supplemented diet (R1)

Variable	R0	R1	SEM	P
ADG	0.32 <sup>a</sup>	0.56 <sup>b</sup>	0.07	0.04
FCR	23.2 <sup>a</sup>	13.3 <sup>b</sup>	1.20	0.035

Different superscripts in the same row show significant different (P <0.05).

R0 = 85% Kumpai grass + 15% concentrate (control); R1 = 55% Kumpai grass + 15% concentrate + 15% cassava leaves + 15% palm oil sludge + 5 g yeast/head/d; SEM: standard error of the mean

Table 6. Income Over Feed Cost (IOFC) (IDR/animal/d) and Revenue Cost (R-C) ratio in

the Bali heifers at control (R0) and supplemented diet (R1).

Variabel	R0	R1	SEM	P
Price of ADG *	14,250.- <sup>a</sup>	25,250.- <sup>b</sup>	2,935.-	0.04
Feed costs **	12,142.- <sup>a</sup>	12,827.- <sup>a</sup>	559.6.-	0.6
IOFC	2,108.- <sup>a</sup>	12,423.- <sup>b</sup>	2,741.-	0.032
R-C ratio	1.16 <sup>a</sup>	1.98 <sup>b</sup>	0.15	0.046

Note: Different superscripts in the same row show a significant difference (P <0.05).

R0 = 70% Kumpai grass + 30% concentrate (control); R1 = 55% Kumpai grass + 15% concentrate + 15% cassava leaves + 15% palm oil sludge + 5 g yeast/head/d; SEM: standard error of the mean.

\*) The price of animal = IDR 45,000.-/kg of live weight)

\*\*\*) The price of Kumpai grass= IDR 1,000. - /kg; cassava leaves IDR 1,500. - /kg; Palm oil sludge IDR 1,500. - /kg; concentrate of IDR 3,500. - /kg, Yeast IDR 300,000. - /kg.

## 6. Surat Accepted JAAVS (22 Juni 2020)



**Manuscript  
Handler** <info@manuscripthandler.com>  
**To:**riswandi\_dya@yahoo.com  
**Cc:**nexusacademicsonline@gmail.com

Mon, 22 Jun 2020

Dear Mr. Riswandi Riswandi,

It is a pleasure to accept your manuscript entitled "Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)" in its current form for publication in the *Advances in Animal and Veterinary Sciences*.

Your article is now being processed for formatting, copy editing and final publication. You will be informed for each step and we will contact you when we need any further information or material.

Thank you for your fine contribution. On behalf of the Editors of the *Advances in Animal and Veterinary Sciences*, we look forward to your continued contributions to the Journal.

Sincerely,  
Editorial Office  
Nexus Academic Publishers (NAP)

Lahore, Pakistan

Phone: 0092 300 7786573

email: info@nexusacademicpublishers.com  
Email: info@nexusacademicpublishers.com  
Web: <http://nexusacademicpublishers.com/>

## 7. Surat Payment JAAVS (24 Juni 2020)



**Nexus  
Academics** <nexusacademicsonline@gmail.com>  
Cc:riswandi\_dya@yahoo.com

Wed, 24 Jun 2020

Dear Author,

Thank you very much for your contribution in AAVS.

You are requested to pay **160 USD** (150 USD publishing charges+ 10 USD transaction charges) using one of the options mentioned below and send the proof at [nexusacademicsonline@gmail.com](mailto:nexusacademicsonline@gmail.com) and write manuscript ID in the subject line of the email. We'll send you galley proof once the charges are received.

### **1. Credit card transfer via PayPal (most preferred)**

Pay using PayPal at the email address mentioned below and write manuscript ID in the description.

[apcfornexus@gmail.com](mailto:apcfornexus@gmail.com)

### **2. Online Payment**

You can pay online using credit card in our secure online portal. Please write manuscript ID in the form:

<http://nexusacademicpublishers.com/checkout>

### **3. Money Gram/Western Union**

Name: Irfan Rasool

Identify Card Number: 38401-5302657-5

Beneficiary's Country: Pakistan

In case any of the above mentioned option is not feasible, please let us know.

Thank you for your fine contribution. On behalf of the Editors of the AAVS, we look forward to your continued contributions to the Journal.

**You earliest possible response will highly be appreciated.**

Regards,

Irfan Rasool

Managing Editor,

Nexus Academic Publishers (NAP)

**Website:** <http://nexusacademicpublishers.com>

**Email:** [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com)

## 8. Surat Bukti Bayar ke JAAVS (25 Juni 2020)



riswandi\_dya@yahoo.com  
To: [nexusacademicsonline@gmail.com](mailto:nexusacademicsonline@gmail.com)

Thu, 25 Jun 2020

Dear Mr. Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)

We hereby send proof of payment for our article (ID MH20200224060204), please process our article further, thank you.

regards

Riswandi

WESTERN UNION SENDING RECEIPT		051387938
MITN	: 368-770-0440	
Counter	: Kantor Pos PALEMBANG 30000	
Date	: 25-06-2020 Time : 12:19:26	
Trx ID	: 3000000-04/20/000582	
Sender ID	: 300002000007960	Customer No : 1671043110690005
Sender Name	: N. RISWANDI S PT	Phone : 081367670650
	JL PUTRI MEMBANG DAKAR NO 56 RT 051 RW 0	
	BUKIT LAMA ILIR BARAT I	
Receipt ID	: 300002000007960	Customer No :
Receipt Name	: IRFAN RASOOL	Phone :
	36901 5302657 5 PAKISTAN	
	PAKISTAN / PAKISTAN	
Source Fund	: HADIAH	Question :
Purpose Fund	: HADIAH	Answer :
Principal	: Rp. 2.406.000,00	Employee ID
Exchange Rate	: 0.0113290	
Expected Payout	: PKR 27.257,00	
Total Charge	: Rp. 255.000,00	
Discount	: Rp. 0,00	
Total Collect Amount	: Rp. 2.661.000,00	
Syarat dan ketentuan berlaku		
		DMI SARTIKA SARI
		<b>KANTOR POS</b>
		Nippos : 30000436
		POS INDONESIA
		Lacak status : <a href="http://www.posindonesia.co.id">http://www.posindonesia.co.id</a>

## 9. Surat Bukti Bayar dari JAAVS ( 26 Juni 2020)



**Nexus**

**Academics** <nexusacademicsonline@gmail.com>

Fri, 26 Jun 2020

To: riswandi\_dya@yahoo.com

Dear Author,

Thank you for paying the publication charges. We are now composing your article and will send you galley proof soon.

Regards,

Irfan Rasool

Managing Editor,

Nexus Academic Publishers (NAP)

**Website:** <http://nexusacademicpublishers.com>

**Email:** [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com);

[nexusacademicsonline@gmail.com](mailto:nexusacademicsonline@gmail.com)

## 10. Surat Galley Proof dari JAAVS (4 Juli 2020)

Galley Proof of your Article (AAVS\_MH20200224060204-R2\_Riswandi et al) in  
Advances in Animal and Veterinary Sciences  
Yahoo/ inbox



**Nexus**  
**Publishers** [publishersnap@gmail.com](mailto:publishersnap@gmail.com)  
**To:** riswandi\_dya@yahoo.com

Sat, 4 Jul 2020

Dear Author,

Thank you very much for your contribution in AAVS.

We have now formatted your article according to the journal's format. Please take a good look before its final publication in full. There is a query form attached for the queries that arose during type setting. You can send changes in reply to this email. Once you have approved your page proof and the final version is published on the journal website, no additional changes will be allowed.

Thank you for your fine contribution. On behalf of the Editors of the AAVS, we look forward to your continued contributions to the Journal.

Regards,

Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)  
**Website:** <http://nexusacademicpublishers.com>  
**Email:** [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com);  
[nexusacademicsonline@gmail.com](mailto:nexusacademicsonline@gmail.com)  
0092 300 7786573

---

# 11. Surat Galley Proof ke JAAVS (6 Juli 2020)



riswandi\_dya@yahoo.com

To: Nexus ublishers [publishersnap@gmail.com](mailto:publishersnap@gmail.com)

Mon, 6 Jul 2020

Dear Irfan Rasool

Managing Editor,  
Nexus Academic Publishers (NAP)

We hereby present the results of the revised manuscript entitled " Bali Heifers Performance on Cassava Leaves, Palm Oil Sludge and Yeast Supplementation in a Ration Based on Kumpai Grass (*Hymenachne amplexicaulis* (Rudge) Nees)". (AAVS\_MH20200224060204-R2).

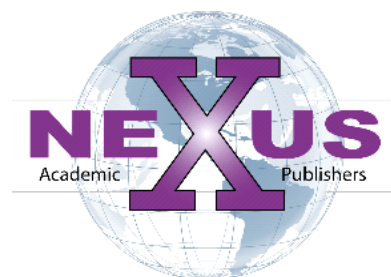
First of all, we really appreciate your helpful comments. Our reply to the editor's question and the revised point of the galley proof is in the author's response column of the word file attachment

All authors have read and agree with the final version of the manuscript. That's our revision, please for further processing, thank you.

best regards

Riswandi





## AUTHOR QUERY FORM

QUERY REF	PAGE No	DETAILS REQUIRED	AUTHOR'S RESPONSE
AQ1	6	Please check and complete the references section.	Reference has been updated
AQ2	All Pages	Please check for the biological / scientific names and confirm that they all are <b>given in correct order and italic</b> font style	We have checked the biological names and ordered them according to the writing guidelines

All authors have read and agree with the final version of the manuscript. That's our revision, please for further processing, thank you.

## 12. Surat Fully Publisher JAAVS (21 Juli 2020)

Your article is now fully published in Advances in Animal and Veterinary Sciences

Yahoo/ inbox



**Nexus**

**Publishers** [publishersnap@gmail.com](mailto:publishersnap@gmail.com)

Tue, 21 Jul 2020

To: riswandi\_dya@yahoo.com

Dear Author,

It is our pleasure to inform you that your article is now fully published in Advances in Animal and Veterinary Sciences:

[http://nexusacademicpublishers.com/table\\_of\\_contents\\_articles/4/SXNzdWUgOA==/2020](http://nexusacademicpublishers.com/table_of_contents_articles/4/SXNzdWUgOA==/2020)

It is the responsibility of the corresponding author to update all co-authors. We take this opportunity to exploit our social media tools for dissemination of your work and increasing the impact of your research. You can go to the html version of the article and share your article by clicking on either of the social media icons including Twitter, Facebook, LinkedIn etc. Additionally, we request all authors to cite this article where it is appropriate and valuable.

Thank you very much for your contribution in Advances in Animal and Veterinary Sciences and we look forward receive your future contributions soon.

Submit next article at: <http://manuscripthandler.com/nexus/Advances-in-Animal-and-Veterinary-Sciences>

Regards,

Irfan Rasool

Managing Editor,

Nexus Academic Publishers (NAP)

**Website:** <http://nexusacademicpublishers.com>

**Email:** [info@nexusacademicpublishers.com](mailto:info@nexusacademicpublishers.com);

[nexusacademicsonline@gmail.com](mailto:nexusacademicsonline@gmail.com)

0092 300 7786573

---