

VI. REFERENCES

- Abdel-Malak, N.Y. (1981).
"Studies of Napier grass as a green fodder for calf fattening".
M.Sc. Thesis, Fac. Agric., Moshtohor, Zagazig Univ. Benha Branch.
- Abou-Raya, A.K., El-Moursi, A.A. and Ibrahim, S.A. (1965).
The effect of interseeding of Italian rye grass (*Lolium multiflorum* Lam.) with Egyptian clover (*Trifolium alexandrinum* L.) on the chemical and botanical analysis of the herbage.
Agric. Res. Rev., Cairo, 43 (3): 99-112.
- Abou-Raya, A.K., Habib, R.M., Abdel-Malik, W.H., Makky, A.M. and Hathout, M.K. (1973).
Effect of chopping and molasses addition on the nutritional qualities of trench silage prepared from first cut of clover-rye grass mixture. I. Influences on nutritive analysis and chemical quality.
Agric. Res. Rev., Cairo, 51 (4): 41-59.
- Abou-Raya, A.K., Soliman, I.M., Hathout, M.K. and El-Samman, S. (1980).
The effect of feeding level and type of rations on the performance of growing & fattening steers using hay and cereal grains. 1. Studies on feed metabolizability, gain production efficiency and dressing percentage.
Egyptian Journal of Production (En-Ar). Anim. Prod. Dep. Fac. of Agric, Ain-Shams Univ. Shoubra-El-Kheima Cairo, Egypt.

- Abou-Selim, I.A. (1980).
Ad-libitum versus controled feeding in fattening buffalo calves.
Ph.D. Thesis, Fac. Agric. Ain-Shams Univ.
- Afifi, Y.A., Shahin, M.A., Omara, S.F. and Youssef, F.A. (1974).
Meat production from buffalo male calves at different ages.
Agric. Res. Rev., Cairo, 52: 1-20.
- Afifi, Y.A., El-Koussy, H.A., El-Khishin, S.S. and El-Ashry M.A. (1977).
Production of meat from Egyptian buffaloes. 1. The effect of using different sources of roughages on rate of gain, gross and net efficiency during the growth and finishing periods.
Egypt. J. Anim. Prod. 17 (2): 147-164.
- Akram, M.G. and Schneider, B.H. (1962).
A fattening trial with male buffaloes.
Agriculture Pakistan, 1962, 13: 30-35.
(Nutr. Abst. and Rev., 33: 856.1963).
- Albert, W.W., Neumann, A.L., Breidenstein, B.C., Norton, H.W. and Madamba, J.C. (1964).
Rate and efficiency of cattle gains as affected by weight and energy levels.
J. Anim. Sci. 23: 1205 (33) Abst.
- Alleoni, G.F., Boin, C., Trovo, J.B., Bonilha Neto, L.M., Beisman, D.A. (1980).
Effect of breed of cattle on intake, digestibility, liveweight gain and dressing percentage.
Buletinde Industria Animal (1980) 37 (2) 185-193.
(Nutr. Abst. and Rev., 53: 947, 1983).

- Almquist, C.N., Brungardt, V.H., Tyler, W.J. and Waldman, R.C. (1971).
Growth and efficiency of Holstein steers as influenced by live weight and energy intake.
J. Dairy Sci., 54: 681-687.
- Almeyer, R.H. (1962).
Personal communication, USDA, ARS.
(Cited from Proc., Meat Tenderness, Symposium by Samden, U.S.A.).
- A.O.A.C. "Association of Official Agricultural Chemists" (1980).
Official Methods of Analysis. 10th Ed.
Washington, D.C.
- Athar, S.M., Khan, N.A., Gazi, A.G. and Schneider, B.H. (1966).
A. Fattening trials with male buffalo calves to determine the level of the protein and proportion of wheat straw & molasses. B. Fattening trials with yearling male buffaloes to determine satisfactory levels of wheat straw and molasses.
Agric. Pakistan, 1966, 17, 41-50, 201-207.
(Nutr. Abst. and Rev., 38: 987, 1967).
- Barabieri, L., Santoro, P., Cirilli, G. and Zaghini, G. (1970).
Chemical composition and organoleptic characters of veal.
J. Anim. Br. Abst. and Rev., 39 (1): 122.

- Barsaul, C.S. and Talapatra, S.K. (1970).
Comparative study on the determination of digestibility of feeding stuffs by different species of farm animals.
Indian Vet. J., 47: 348.
- Beardsley, D.W., McCormic, W.C. and Southwell, B.L. (1959).
Steer performance and rumen effects of different concentrate roughage ratios in pelleted mixed fattening rations.
J. Anim. Sci., 18: 1507.
- Bendary, M.M. (1978).
The use of Napier grass in the nutrition of calves.
M.Sc. Thesis, Fac. Agric. Monoufia Univ.
- Berg, R.T. and Butterfield, R.M. (1966).
Muscle: bone ratio and fat percentage as measures of beef carcass composition.
Anim. Prod., 8: 1-11.
- Bins, J.A. and Davy, A.W.F. (1970).
Voluntary intake, digestion, rate of passage, amount of material in the alimentary tract and behaviour of cows receiving complete diets containing straw and concentrates in different proportions.
J. Anim. Nutr., 24, 1013.
- Blaser, R.E., Ritchey, G.E., Kirk, W.G. and Arnold, P.T.D. (1955).
Experiments with Napier grass.
Florida Agric. Exp. Sta. Bull, 32: 568.
(Nutr. Abst. and Rev., 28: 286, 1958).

- Blaxter, K.L. and Wainman, F.W. (1964).
The utilization of the energy of different rations
by sheep and cattle.
J. Agric. Sci., 63: 113-128.
- Bose, P.K., Paul, A.K. and Sengupta, S. (1970).
Studies on hybrid Napier grass as cattle fodder.
Indian Vet. J., 47: 580-587.
(Nutr. Abst. and Rev., 42: 1171, 1972).
- Branaman, G.A., Pearson, A.M., Magee, W.T., Griswold,
R.M. and Brown, G.A. (1962).
Comparison of the cut-ability and eat-ability of
beef and dairy type cattle.
J. Anim. Sci., 21: 321.
- Brown, V.L., Harris, R.R., Anthony, W.B. and Starling,
J.G. (1964).
High roughage vs. high energy mixture for fattening
steers.
J. Anim. Sci., 23: 304.
- Buchy, L.V. and Bennion, L. L. (1962).
Concentrate: roughage levels in diets of fattening
steers.
J. Anim. Sci., 21: 666.
- Cahill, V.R., Klosterman, E.W. and Ockerman, H.W. (1962).
Composition of Charolais Beef.
J. Anim. Sci., 21: 979.
- Carnevali, A. and Rodriguez, C.S. (1966).
Effect of green elephant grass, Pangola grass hay
and maize silage on maintenance and fattening of
young cattle.
Agron. Trop. Maracay, 16: 263-272.
(Nutr. Abst. and Rev., 39: 244, 1969).

- Caro-Costas, R., Vicente Chandler, J. and Figarella, J. (1965).
Productivity of intensively managed pastures of five grasses on sheep slopes in the humid mountains of Puerto Rico.
J. Agric. Univ. Puerto Rico, 49: 99-111.
(Nutr. Abst. and Rev., 36: 231, 1972).
- Casteels, M., Eckhout, W. and Byusse, F. (1969).
Effect of feeding on meat quality of young fattening bulls.
Rev. Agric. Brussels, 22: 205-214.
(Nutr. Abst. and Rev., 40: 1679, 1970).
- Charles, D.D. and Johnson, E.R. (1972).
Carcass composition of the water buffalo.
Aust. J. Agric. Res., 23: 905-911.
- Charles, J.E., Pope, L.S., Stephens, D.F. and Waller, G. (1962).
Effect of pelleting steer fattening rations of different concentrates to roughage ratios.
J. Anim. Sci., 20: 42.
- Chaturvedi, M.L., Singh, U.B. and Banjhan, S.K. (1973).
Effect of feeding water soaked and dry wheat straw on feed intake, digestibility of nutrients and VFA production in growing Zebu and buffalo calves.
J. Agric. Sci., 80: 393-397.
- Conniffe, D. and Harte, F.J. (1967).
The relation of rate of live weight gain to measures of feed conversion efficiency in cattle.
Ir. J. Agric. Res., 6: 171-176.
(Anim. Br. Abst., 36: 195, 1968).

- Creta, V., Curca, D. and Commica, G. (1980).
Meat production and quality in young buffalo bulls.
Lucrari Stintifice, Inst. Agro. "Nicolae Balcescu".
22: 47-52.
(Cited from FSTA, 14, 1011, 1982).
- Deluca, F. and Pieroni, O. (1960).
Experiments of young March bulls with different
systems of feeding.
Riv. Zootec., 33: 261-275.
(Nutr. Abst. and Rev., 31: 655, 1966)
- Dudine, S.Y., Ligai, V.S. and Beklembetov, S.B. (1975).
Growth and development of crossbreed bull calves.
Zhivotnovodstvo, 10: 38-39.
(Cited from FSTA, 8, 672, 1976).
- Duncan, D.B. (1955).
Multiple range and multiple F test.
Biometrics, 11:1.
- Edwards, R.L., Tover, S.B., Blumer, T.N. and Barrick, E.R.
(1966).
Effects of added dietary fat on fatty acid composition
and carcass characteristics of fattening steers.
J. Anim. Sci., 20: 712.
- El-Ashry, M.A. (1968).
Urea and poor quality roughage in fattening rations
for buffalo males.
Egypt. J. Anim. Prod., 8: 57-65.

El-Ashry, M.A., Mogawer, H.H. and Khishin, S.S. (1972).

Comparative study of meat production from cattle and buffalo male calves. 1. Effect of roughage concentrate ratio in ration on rate gain and feed efficiency of native cattle, Friesian and buffalo calves.

Egyptian J. Anim. Prod., 12 (2), 99-107.

El-Hakim, A.M. (1971).

Meat production from male buffalo calves.

M.Sc. Thesis, Fac. Agric., Ain-Shams Univ., Cairo

El-Kholy, M.E. (1972).

Efficiency of feed utilization in fattening Friesian calves on rations containing different sources of roughages.

M.Sc. Thesis, Fac. Agric., Ain-Shams Univ., Cairo.

El-Kholy, M.E. (1975).

Ad-libitum versus control feeding in fattening Friesian calves.

Ph.D. Thesis, Fac. Agric., Ain-Shams Univ., Cairo.

El-Kholy, N.M.M. (1984).

Some studies on fattening calves.

Ph.D. Thesis, Fac. Agric. Cairo Univ.

El-Koussy, H.A. (1976).

Production of meat from Egyptian buffaloes.

M.Sci. Thesis, Fac. Agric. Ain-Shams Univ.,
Cairo.

El-Koussy, H.A. (1981).

Fattening buffalo calves fed on different sources and ratios of roughage and concentrates.

Ph.D. Thesis, Fac. Agric. Ain-Shams Univ., Cairo.

Elliott, R.C. (1956).

Steer feeding trial.

Rhodesia Agric. J., 53: 59.

(Nutr. Abst. and Rev., 27: 567, 1957).

El-Sharkawy, A.M.A. (1984).

Chemical and technological studies on meats.

M.Sc. Thesis, Fac. Agric. Kafr-El-Sheikh, Tanta Univ.

Etman, K.E.I. (1980).

A study of the effect of feeding Napier grass on milk production and composition using different levels of concentrate.

M.Sc. Thesis, Fac. Agric. Moshtohor, Zagazig Univ., Benha Branch.

Fahmy, A.A. (1978).

Effect of feeding Elephant grass on the growth of sheep.

M.Sc. Thesis, Fac. Agric. El-Minia Univ.

Fontenot, J.P. and Kelly, R.F. (1963).

Effects of protein level of steer fattening rations.

1. Feedlot performance, nitrogen metabolism and certain blood constituents.

J. Anim. Sci., 22: 248.

- Forbes, T.J., Irwin, J.H.D. and Raven, A.M. (1969).
The use of coarsely chopped barley straw in high
concentrate diets for beef cattle.
J. Agric. Sci., 73: 347-354.
- Forrest, R.J. (1981).
Differences in meat tenderness between sires and
breeds.
Res. Rev., Res. Station, Agassiz, B.C., May, 9-10.
(Cited from FSTA., 14: 598, 1982).
- Ghanem, H.M. (1980).
Studies on milk properties of dairy cattle fed
different levels of different protein sources.
M.Sc. Thesis, Fac. Agric. Zagazig Univ.
- Ghoneim, A. (1964).
Animal Nutrition 6th Ed.
Anglo-Bookshop, Cairo (in Arabic).
- Goll, D.E., Stromer, M.H., Olson, D.G., Dayton, W.R.,
Suzuki, A. and Rabison, R.M. (1974).
The role of myofibrillar proteins in meat
tenderness.
Proc. of Meat Industry Res. Conf., 75-98.
(Cited from FSTA, 8: 259, 1976).
- Guenther, J.J., Pope, L.S., Odell, G.V. and Morrison, R.D.
(1962).
The growth and development of beef calves from
weaning to slaughter weight with reference to the
effect of plane of nutrition.
Okla. Agric. Exp. Sta. Misc. Publ. MP 67.
J. Anim. Sci., 24: 1184 - 1191, 1965 .

Gupta, E.S. and Talapatra, S.K. (1970).

The effect of feeding hybrid Napier grass to growing Haryana calves with and without protein supplement.
Indian J. Dairy Sci., 23 (1): 41-49.

Hathout, M.K. (1966).

Preservation and feeding value of berseem ensiled with ground corn cobs, molasses and both additives.
Agric. Res. Rev., Cairo, 44 (4): 85-91.

Henrickson, R.L., Pope, L.S. and Hendrickson, R.F. (1965).

Effect of rate of gain of fattening beef calves on carcass composition.
J. Anim. Sci., 24: 507-513.

Hiner, R.L. and Bond, J. (1971).

Growth of muscle and fat in beef steers from 6 to 36 months of age.
J. Anim. Sci., 32: 225-232.

Johri, P.N., Sinha, S.K. and Srivastova, J.P. (1967).

Studies on the digestibility and nutritive value of Napier grass.
Indian Vet. J. 44: 249-252.
(Nutr. Abst. and Rev., 39: 335, 1969).

- Joksimovic, J. and Ognjanovic, A. (1977).
Comparison of carcass yield, carcass composition
and quality characteristics of buffalo meat and
beef.
Meat Sci., 1: 105-110.
(Cited from Anim. Br. Abst., 46: 366, 1978).
- Kaduski, E. and Zahariev, Z. (1953).
Comperative study on fattening calves and buffalo
calves.
Nauch-Trudove, Selskostop-Akad. "Georgi Dimitrov"
Sofia, 54: 291-311,
(Nutr. Abst. and Rev., 26: 516, 1954).
- Kandilov, N.K., Aliev, A.S., Kasimova, S.A. and Demirova,
B.A. (1977).
Morphological composition, quality and nutritional
value of young buffalo meat.
Myasnaya Indust. SSSR., 12: 40-42.
(Cited from FSTA, 11: 182, 1979).
- Kassir, S.M., McFetridge, D.G. and Hansen, N.G. (1971).
Studies on the growth, feed costs and carcass com-
position of young male cattle and buffalo fed under
comparable conditions.
(Anim. Br. Abst., 38: 389, 1972).
- Keith, T.B., Dahmen, J.J. and Bell, T.D. (1965).
Diethylstilbestrol in steer-finishing rations as
affected by level of protein intake.
Idaho Agric. Exp. Sta. Res. Bull. 68.
(Cited from intensive Beef Production, 2nd Edition).

- Kelly, R.F., Graham, P.P. and Fontenot, J.P. (1963).
Effects of protein level on steer fattening
rations, II. Composition, cooking characteristics
and taste panel evaluation of the meat.
J. Anim. Sci., 22: 247.
- Koch, R.M., Swiger, L.A., Chambers, D. and Gregory, K.K.
(1963).
Efficiency of feed use in beef cattle.
J. Anim. Sci., 22: 486-496.
- Lamming, G.T., Swan, H. and Clarke, R.T. (1966).
Studies on the nutrition of ruminants. 1. Substi-
tution of maize by mild barley straw in a beef
fattening diet and its effect on performance and
carcass quality.
Aust. J. Anim. Prod., 8: 303-311.
- Latoush, H. and Woods, W. (1968).
Effect of various levels of roughage and oyster
shell in beef cattle finishing rations.
J. Anim. Sci., 27: 1168 (Abst.).
- Ledger, H.P. and Hutchinson, H.G. (1962).
The value of the tenth rib as a sample joint for
the estimation of lean, fat and bone in carcasses
of East African Zebu cattle.
J. Agric. Sci., 58: 81.
- Levy, D., Holzer, Z. and Ilan, D. (1976).
Effect of dietary energy content at different
stages of growth on performance of male cattle.
Aust. J. Anim. Prod., 22: 199-206.

- Lima, F.P., Martinelli, D. and Werner, J.C. (1968).
Beef production from grass pastures in the region
of red soils.
Bol. Indust. Anim., Sao Paulo, 25: 129-137.
(Nutr. Abst. and Rev., 40: 666, 1970).
- Lima, F.P., Sartini, H.J., Martinelli, D., Biondi, P. and
Pares, M.F. (1969).
Use of 4 tropical grass for meat production on a
typical red latosol.
Bul. Indust. Anim., 26: 199-214.
(Nutr. Abst. and Rev., 42: 714, 1972).
- Lister, E.E., Heaney, D.P. and Pigden, W.J. (1968).
Performance of Holstein-Friesian steers fed on all
concentrate ration diluted with ground hay.
J. Dairy Sci., 51: 1946-1949.
- Manchak, I.V. (1982).
Efficiency of fattening of young bull under commer-
cial condition.
Zhivotnovodstvo, 9: 30-31 (Ru).
(Nutr. Abst. and Rev., 53: 3621, 1983).
- Martin, T.G., Howard, R.D., Lane, G.T., Judge, M.D. and
Albright, J.T. (1966).
Effect of dietary regime on Holstein steer carcasses.
J. Anim. Sci., 25: 885 (Abst.).
- Matassino, D., Romita, A., Calatruglio, P. and Bordi, A.
(1976).
Comparative study on the meat quality of cattle and
buffaloes. 1. Myortheological characteristics at 20
weeks of age.
Asso. Sci. di Prod. Anim., 373-386.
(Anim. Br. Abst., 46: 307, 1978).

McCullough, T.A. (1969).

A study of factors affecting in the voluntary intake of food by cattle.

J. Anim. Prod., 11: 145-153.

McCullough, T.A. (1970).

A study of the effect of supplementing a concentrate diet with roughage of different quality on the performance of Friesian steers. 2. Growth rate, efficiency of food conversion and carcass yield.

J. Agric. Sci., 75: 337-345.

Meyer, J.H. and Garrett, W.N. (1967).

Efficiency of feed utilization.

J. Anim. Sci., 26: 638.

Minish, G.L., Newland, H.W., Merkel, R.A. and Henderson, H.E. (1966).

Relationship of concentrate level and feeder grade to performance and carcass characteristics of fattening calves.

J. Anim. Sci., 25: 1246 (Abst.).

Mogawer, H.H.A. (1971).

Meat output from native cattle, Friesian and buffaloes in Egypt.

M.Sc. Thesis, Fac. Agric., Ain-Shams Univ.

Morris, J.G. (1966).

Finishing steers on sorghum grain and sorghum silage: Effect of grain to roughage ratio, urea supplementation and hexoestrol implantation on rate of body weight gain, feed efficiency and carcass composition .

J. Agric. Sci., 67: 191.

Musienko, R.R. (1976).

Age at slaughter in intensively reared Simmental males.
Sib. vest. Sel. Nauki, 6: 57-60.
Anim. Br. Abst., 46: 150, 1978.

Nelson, D.K. (1968).

Effect of dietary energy concentration and level
on digestion in the bovine gastrointestinal tract.
Dissertation Abst., 29: 3478.
(Nutr. Abst. and Rev., 39: 624, 3762).

Nichols, J.R., Ziegler, J.H., White, J.M., Kesler, E.M.
and Watkins, J.L. (1964).

Production and carcass characteristics of Holstein
Friesian bulls and steers slaughtered at 800 or
1000 pounds.
Indian J. Dairy Sci., 47: 199.

Nosal, V. and Kica, J. (1982).

Fattening bull calves on roughage and pelleted feeds
in conditions of large-scale production.
Nitra Czechoslovakia Research Inst. Anim. Prod.,
20: 5-12.
(Nutr. Abst. and Rev., 53: 3638, 1983).

Onisenko, V.I. (1968).

Morphological and physico-chemical characteristics
of the meat of young cattle.
Zhivotnovodstvo, Moscow, 30 (IV - 71-72. Russ.)
(Anim. Br. Abst., 37: 215, 1969).

Panda, P.B., Singh, G.S. and Singh, S.N. (1967).

Nutritive value of Pusa Giant Napier (*Pennisetum
purpureum*) grass when fed to young Haryana bull calves.
Indian J. Dairy Sci., 20: 153-159.

- Patil, S.H., Harapanahalli, M.D., Atmaram, K. and Ahmed, S.I. (1971).
Chemical composition, digestibility and nutritive value of Dharawar hybrid Napier.
Indian Vet. J., 48: 176-182.
(Nutr. Abst. and Rev., 42: 289, 1972).
- Pickard, D.W., Swan, H. and Lamming, G.E. (1969).
Studies on the nutrition of ruminants. 4. The use of ground straw of different particle sizes for cattle from twelve weeks of age.
J. Anim. Prod., 11: 543-550.
- Polikhronov, D., Dragev, P. and Machev, M. (1974).
The optimum slaughter weight of Bulgarian x Murrah crossbred buffaloes.
Zhi. dni Nauki, 11: 33-38.
(Anim. Br. Abst., 43: 583, 1975).
- Preston, R.L. (1966).
Protein requirements of growing finishing cattle and lambs.
J. Anim. Nutr. 90: 157.
- Preston, R.L. (1972).
Nutritional implications in economy of gain of feed-lot cattle.
J. Anim. Sci., 35: 153.
- Preston, T. R., Macdearmid, A. and MacLead, N.A. (1963a).
Intensive beef production: A study of feed processing and the value of supplementary roughage.
J. Anim. Prod., 5: 216.

- Preston, T.R., Whitelaw, F.G., Aitek, J.N., Macdearmid, A. and Charleson, E.B. (1963b).
Intensive beef production. 1: Performance of cattle given complete ground diets.
J. Anim. Prod., 5: 47.
- Preston, T.R. and Willis, M.B. (1970).
Intensive beef production.
Pergamon Press, 2nd Ed.
- Preston, T.R., Willis, M.B. and Elias, A. (1967).
Intensive beef production from sugar cane, 1. Different levels of urea in molasses given ad-libitum to fattening bulls as a supplement to a grain diet.
Rev. Cubana Cibnc-Agric. (Eng. Ed.), 1:33.
(Cited from Intensive Beef Prod. 2nd Ed.).
- Rabie, Z.B.H. (Mrs.) (1984).
Growth studies and feed efficiency with Friesian calves with references to effect of sex and sire.
M.Sc. Thesis, Fac. Agric. Cairo Univ.
- Ragab, M.T., Darwish, M.Y.H. and Malek, A.G.A. (1966).
Meat production from Egyptian buffaloes. 1. Developmental changes and dressing percentage in a group of buffalo males. 2. Physical and chemical characteristics of buffalo meat.
J. Anim. Prod., 6: 9-30, 31-50.
- Ragheb, E.E. (1985).
Effect of nutritional treatments on the performance of Brown Swiss male-calves.
Ph.D. Thesis, Fac. Agric., Ain-Shams Univ.

- Raicu, E., Alexious, V., Dzic, G., Blanu, E. and Singer, M (1978).
Effect of finishing at different ages on young Friesian cattle fattened by a semi-intensive system. Revista de Cresterea Animal, 28 (10): 3-8.
(Nutr. Abst. and Rev., 49: 352, 1979).
- Ranjhan, S.K. and Talapatra, S.K. (1967).
Yield, chemical composition and nutritive value of Giant Napier grass.
Indian J. Dairy Sci., 20 (3): 134-138.
- Raven, A.M., Forbes, T.J. and Irwin, J.H. (1969).
The utilization by beef cattle of concentrate diets containing different levels of milled barley straw. J. Agric. Sci., 73: 355-363.
- Razig, F; Ahmed, I. and Shah, S.B.A. (1979).
Comparative nutritive value of beef, mutton and chicken meats and their extracts.
Pakistan J. Sci. Res., 31: 22-25.
(Cited from FSTA, 12 (7): 1134, 1980).
- Reid, J.T., Bensadoun, A., Paladines, O.L. and Ven Niekerk, B.D.H. (1963).
Body water estimation in relation to body composition and indirect colorimetry in ruminants.
Ann. NY Acad. Sci., 110-327.
(Cited from Intensive Beef Prod. 2nd Ed.).
- Rovero, E.A., Velloso, L., Tundisi, A.G., Becker, M., Caielli, E.L. and Silveria, J. (1967).
Sugar cane, rice straw and maize cobs for fattening Nellore cattle.
Indust. Anim. Sao Paulo, 24: 7-15.
(Nutr. Abst. and Rev., 39: 628, 1969).

Rust, S.R., Owens, F.N. (1982).

Effect of intake and roughage level on digestion.
Anim. Sci. Res. Report, Oklahoma Agric. Exp. St.,
112: 196-200.

(Nutr. Abst. and Rev., 53 (4), 2002, 1983).

Shehata, M. (1974).

Studies on some physical and chemical changes in
meat during storage.

Ph.D. Thesis, Fac. Agric. Ain-Shams Univ., Cairo.

Shehata, O., El-Ashry, M.A., Youssef, M.S. and El-Kholy,
M.E. (1973).

Fattening Friesian calves on rations containing
different sources of roughages.

Agric. Res. and Rev., Cairo, 51 (4): 31.

Shehata, O., El-Serafy, A.M., El-Zeiny, M. and Osman, M.F.
(1981).

Comparison among different nutritional allowances
for fattening local beef cattle.

Res. Bulletin, No. 1627, Anim. Prod. Dept., Fac. of
Agric., Ain-Shams Univ., Cairo.

Snedecor, G.W. and Cochran, W.G. (1982).

Statistical Methods.

7th Ed., Iowa Univ. Press; Ames, U.S.A.

Soliman, A.S. (1976).

Some studies on the use of Elephant grass for feeding
dairy cattle.

M.Sc. Thesis, Fac. Agric. Zagazig Univ.

Soliman, A.S. (1981).

Nutritional studies upon the use of Elephant grass in fattening buffalo calves.

Ph.D. Thesis, Fac. Agric. Ain-Shams Univ.

Soloviev, V.E. (1966).

The meat aging.

Fd. Industry Publ., Moscow.

(Cited from El-Sharkawy, 1984).

Stobo, I.J.F. (1964).

Studies in the nutrition of young cattle with special reference to rumen development and protein requirements of the early weaned calf.

Ph.D. Thesis, Iowa Univ.

(Cited from Intensive Beef Prod. 2nd Ed.).

Stone, P. A. and Fontenot, J.P. (1965).

Effect of available energy level of fattening rations on utilization of nitrogen and digestibility by steers
J. Anim. Sci., 24: 757-760.

Sully, R.J. and Morgan, J.L. (1982).

The influence of feeding level and type of feed on carcass of steers.

Aust. J. Agric. Res., 33 (4): 721-729.

(Nutr. Abst. and Rev., 53 (3), 1490, 1983).

Swan, H. and Lanning, G.E. (1967).

Studies on the nutrition of ruminants. 2. The effect of level of crude fibre in maize-based rations-on the carcass composition of Friesian steers.

J. Anim. Prod., 9: 203-208.

Swan, H. and Lamming, G.E. (1970).

Studies on the nutrition of ruminants. 5. The effect of diet containing up to 70% ground barley straw on the live weight gain and carcass composition of yearling Friesian cattle.

J. Anim. Prod., 12: 63-70.

Teeluck, J.P., Hulman, B. and Preston, T.R. (1982).

Leucaena forage and elephant grass as roughage and protein source in a molasses/urea based diet for fattening Zebu cattle.

Tropical Anim. Prod., 7 (3): 241-245, Ministry of Agric. (Nutr. Abst. and Rev., 53 (5), 2542, 1983).

Theurer, B., Hale, H.W., Burt, J.G., Kartchner, R.J.,

Cryden, F.D. and Marchello, J.A. (1973).

Ad-libitum vs. restricted feed intake for beef cattle.

J. Anim. Sci., 36: 1207.

Tulloh, N.M. (1964).

The carcass composition of sheep, cattle and pigs as functions of body weight.

Tech. Conf. on carcass composition and meat, Appraisal of meat animals, CSIRO, Melbourne.

(Cited from Intensive Beef Prod. 2nd Ed.).

Udin, V.M. (1967).

Histological studies on the longissimus dorsi and semi-membranosus muscles.

Proc. Raizanski Res. Vet. Inst., 17: 37-40 Moscow.

(J. Agric. Res. and Rev., 56 (7), 59-68, 1978).

- Veitia, J.L., Esauivel, C. and Simon, L. (1971).
Elephant grass and rice straw as forage sources
for cattle fattened on molasses based diet. 1.
Growth and feed conversion.
Revista cubana de ciencia Agricola, 5 (2): 171.
(Nutr. Abst. and Rev., 42 (2), 714, 1972).
- Viana, J.A.C., Moreina, H.A., Fontes, L.R., Vilela, H.
and Cavalcanti, S.S. (1972).
Comparison between fresh and ensiled Elephant grass
in fattening confined steers.
A rquivos da Escola de Vet. Univ. Fed. de Minas
Gerais, 24 (3): 219. (Cited from Soliman, 1981).
- Weiss, R.L., Baumgardt, B.R., Barr, G.R. and Brungardt,
V.H. (1967).
Some influences of rumen VFA's upon carcass compo-
sition and performance in growing fattening steers.
J. Anim. Sci., 26: 389.
- White, T.W. and Reynolds, W.L. (1968).
Sources and levels of roughage in steer rations.
J. Anim. Sci., 27: 298.
- White, T.W., Reynolds, W.L. and Klett, R.H. (1969).
Roughage sources and levels in steer rations.
J. Anim. Sci., 29: 1001.
- White, T.W., Reynolds, W.L. and Hembry, F.G. (1971).
Digestibility of finishing rations containing various
sources and levels of roughage by steers.
J. Anim. Sci., 32: 545.

Willis, M.B., Preston, T.R., Martin, J.L. and Velazquez, M. (1968).

Carcass composition of Brahman bulls fed high energy diets and slaughtered at different live weights.

Rev. cubana Cienc. Agric., 2: 83.

(Cited from Intensive Beef Prod. 2nd Ed.).

Yamazaki, T. (1981).

The effect of age and fatness on meat quality and quantity of beef cattle. IV. The changes of colour and tenderness of meat with the advance of age.

Bulletin of the National Grassland Res. Inst., 20: 119-131.

(Cited from FSTA, 14, 2352, 1982).

Appendix - 1: First digestibility trial with calves fed Napier grass plus 1 kg conc./100 kg of L.B.W. (73: 27% on DM basis).

1) Daily feed intake and daily faeces excreted:

11) Daily feed intake and daily faeces excreted:						
Calf No.	Av. daily feed intake (kg)	Total DM	Av. daily faeces excreted (kg)			
	Napier grass	Conc. mix.	Intake (kg)		Fresh	DM
	As fed	DM	As fed	DM		
(29)	19.17	4.79	2.00	1.81	6.60	7.17
(100)	19.17	4.79	2.00	1.81	6.60	7.17
						1.64

2) Chemical analysis of Napier grass, concentrate and faeces excreted.

Items	DM %	CP %	EE %	CP %	EE %	CP %	EE %	NFE	Ash %	OM %	Kcal/kg DM
Napier grass fresh	24.97	4.46	0.66	5.53	11.11	3.21	21.76	0.959			
Napier grass DM	100	17.88	2.63	22.16	44.46	12.87	87.13	3.841			
Concentrate mixture	100	22.41	5.34	14.70	50.02	7.53	92.47	4.627			
Faeces of Calf No. (29)	100	12.90	2.32	20.12	46.80	17.86	82.14	3.621			
Faeces of Calf No. (100)	100	15.54	2.22	22.09	44.14	16.01	83.99	3.942			

3) Calculated Nutrients digestibility

Calf No.	Items	DM	CP	EE	CP	EE	Ash	OM	GE (Mcal)
(29)	Nutrients consumed (kg)	6.600	1.262	0.223	1.327	3.036	0.752	5.848	26.77
"	excreted (kg)	1.810	0.233	0.042	0.364	0.847	0.323	1.487	6.55
"	digested (kg)	4.790	1.029	0.181	0.963	2.189	0.429	4.361	20.22
	Digestion coefficients (%)	72.58	81.54	81.17	72.57	72.10	57.05	74.57	75.53
	Digested nutrients	15.59	2.74	14.59	33.16				
(100)	Nutrients consumed (kg)	6.600	1.262	0.223	1.327	3.036	0.752	5.848	26.77
"	excreted (kg)	1.640	0.255	0.036	0.362	0.724	0.263	1.377	6.46
"	digested (kg)	4.960	1.007	0.187	0.965	2.312	0.489	4.471	20.31
	Digestion coefficients (%)	75.15	79.79	83.86	72.72	76.15	65.03	76.45	75.87
	Digested nutrients	15.26	2.83	14.62	35.02				
	Av. digestion coeffic. %	73.87	80.67	82.52	72.65	74.13	61.04	75.51	75.70
	Av. digested nutrients	15.42	2.78	14.61	34.09				

4) Average feeding value:

On DM basis				Nutritive ratio	
DM	EE	CP	DE		
70.39	61.99	15.42	3.07	1 : 3.57	

Appendix - 2 : First digestibility trial with calves fed Napier grass plus 2 kg conco./100 kg of L.B.W. (57: 43% on DM basis).

1) Daily feed intake and daily faeces excreted:									
Calf No.	Napier grass As fed		Conc. mix. DM		Total DM intake (kg)		Av. daily faeces excreted (kg)		
	19.17	4.79	4.00	3.61	8.40	7.60	Fresh	DM	DM
(73)	19.17	4.79	4.00	3.61	8.40	7.60			2.07
									2.09
2) Chemical analysis of Napier grass, concentrate and faeces excreted:									
Items	DM%	CP%	NE%	CP%	NE%	CP%	NFE%	Ash%	OM%
Napier grass fresh	24.97	4.46	0.66	5.53	11.11	3.21	21.76	0.959	
Napier grass DM	100	17.88	2.63	22.16	44.46	12.87	87.13	3.841	
Concentrate mixture	100	22.41	5.34	14.70	50.02	7.53	92.47	4.627	
Faeces of Calf No. (32)	100	12.62	1.60	23.06	48.46	14.26	85.74	3.919	
Faeces of Calf No. (73)	100	16.98	1.69	21.16	45.59	14.58	85.42	3.944	
3) Calculated Nutrients digestibility									
Calf No.	Items	DM	CP	NE	CP	NFE	Ash	OM	GE (Mcal)
(32)	Nutrients consumed (kg)	8.400	1.665	0.319	1.592	3.936	0.888	7.512	35.10
"	excreted (kg)	2.070	0.261	0.033	0.477	1.003	0.295	1.775	8.11
"	digested (kg)	6.330	1.404	0.286	1.115	2.933	0.593	5.737	26.99
	Digestion coefficients (%)	75.36	84.32	89.66	70.04	74.52	66.78	76.37	76.89
	Digested nutrients	16.72	3.41	13.28	34.91				
(73)	Nutrients consumed (kg)	8.400	1.665	0.319	1.592	3.936	0.886	7.512	35.10
"	excreted (kg)	2.090	0.355	0.035	0.442	0.953	0.305	1.785	8.24
"	digested (kg)	6.310	1.310	0.284	1.150	2.983	0.583	5.727	26.86
	Digestion coefficients (%)	75.12	78.68	89.03	72.24	75.79	65.65	76.24	76.52
	Digested nutrients	15.60	3.38	13.70	35.51				
	Av. digestion coeffic. %	75.24	81.50	89.35	71.14	75.16	66.22	76.31	76.71
	Av. digested nutrients	16.16	3.40	13.49	35.21				
4) Average feeding value:									
On DM basis									
		TDN	SE	DCP	DE	Nutritive ratio			
		72.64	64.45	16.16	3.21	1: 3.49			

1) Daily feed intake and daily faeces excreted:

1) Daily feed intake and daily faeces excreted:						
Calf No.	Av. daily feed intake (kg)	Total DM intake (kg)	Av. daily faeces excreted (kg)	Fresh	DM	
	Sordan Fries	Gono. mix.				
	As fed	As fed	As fed			
{99}	20.83	5.73	2.00	1.81	7.34	7.38
{95}	20.83	5.73	2.00	1.81	7.54	8.80
						2.13

concentrate and faeces excreted.

2) Chemical analysis of Jordan grass, concentrate and faeces excreted.									
	DM%	CP%	RF%	RF%	CP%	RF%	RF%	CP%	RF%
Jordan grass fresh	27.53	4.35	0.69	6.52	13.68	2.29	25.24	1.221	
Jordan grass DM	100	15.81	2.49	23.68	49.69	8.33	91.67	4.436	
Concentrate mixture	100	22.41	5.34	14.70	50.02	7.53	92.47	4.627	
Faeces of Calf No. (99)	100	16.95	1.51	21.15	47.87	12.52	87.48	3.927	
Faeces of Calf No. (55)	100	14.85	1.44	20.99	49.15	13.57	86.43	3.582	

3) Calculated Nutrients digestibility

Calc. No.	Items	DM	CP	EE	CF	NFE	Ash	OK	GE (Kcal.)
(199)	Nutrients consumed (kg)	7.540	1.312	0.240	1.623	3.752	0.613	6.927	33.79
	" excreted (kg)	1.610	0.273	0.024	0.341	0.771	0.202	1.408	6.32
	" digested (kg)	5.930	1.039	0.216	1.282	2.981	0.411	5.519	27.47
	Digestion coefficients (%)	78.65	79.19	90.00	78.99	79.45	67.05	79.67	81.30
	Digested nutrients		13.77	2.85	17.00	39.54			
(35)	Nutrients consumed (kg)	7.540	1.312	0.240	1.623	3.752	0.613	6.927	33.79
	" excreted (kg)	2.130	0.316	0.031	0.447	1.047	0.289	1.841	7.63
	" digested (kg)	5.410	0.996	0.209	1.176	2.705	0.324	5.086	26.16
	Digestion coefficients (%)	71.75	75.91	87.08	72.46	72.09	52.85	73.42	77.42
	Digested nutrients		13.20	2.76	15.59	35.88			
	Av. digestion coeffic. %	75.20	77.55	88.54	75.73	75.77	59.95	76.55	79.36
	Av. digested nutrients		13.49	2.81	16.30	37.31			

4) Average feeding value:

TDN	On DM basis		DE	Nutritive ratio
	SE	DCP		
73.80	64.68	13.49	3.56	1 : 4.47

Appendix - 4 : First digestibility trial with calves fed Sorden Grass plus 2 kg conc./100 kg of L.B.W. (61 : 39% on DM basis);

1) Daily feed intake and daily faeces excreted:

No.	Calif	Av. daily feed intake (kg)		Total DM		Av. daily faeces excreted (kg)		
		Jordan stage As fed	Conc. mix. As fed	Intake (kg)	DM	Fresh	DM	
{17}		20.83	5.73	4.00	3.61	9.34	8.67	2.15
{31}		20.83	5.73	4.00	3.61	9.34	8.73	2.13

2) Chemical analysis of Sorden grass, concentrate and faeces excreted.

Items	DM %	CP %	ES %	CP %	NFS %	Ash %	OM %	GE Mcal/kg DM
Sorden grass fresh	27.53	4.35	0.69	6.52	13.68	2.29	25.24	1.221
Sorden grass DM	100	15.81	2.49	23.68	49.69	8.33	91.67	4.436
Concentrate mixture	100	22.41	5.34	14.70	50.02	7.53	92.47	4.627
Faeces of Calif No. (17)	100	16.96	1.74	22.17	45.02	14.11	85.89	3.869
Faeces of Calif No. (31)	100	17.47	1.50	23.18	42.10	15.75	84.25	3.329

3) Calculated Nutrients digestibility

Calif No.	Items	DM	CP	ES	CP	NFS	Ash	OM	GE (Mcal)
(17)	Nutrients consumed (kg)	9.340	1.715	0.336	1.888	4.652	0.749	8.591	42.12
"	excreted (kg)	2.150	0.365	0.037	0.477	0.968	0.303	1.847	8.32
"	digested (kg)	7.190	1.350	0.299	1.411	3.684	0.446	6.744	33.80
	Digestion coefficients (%)	76.98	78.72	88.99	74.74	79.19	59.55	78.50	80.25
	Digested nutrients		14.45	3.19	15.10	39.44			
(31)	Nutrients consumed (kg)	9.340	1.715	0.336	1.888	4.652	0.749	8.591	42.12
"	excreted (kg)	2.130	0.372	0.032	0.494	0.897	0.335	1.795	7.09
"	digested (kg)	7.210	1.343	0.304	1.394	3.755	0.414	6.796	35.03
	Digestion coefficients (%)	77.19	78.31	90.48	73.83	80.72	55.27	79.11	83.17
	Digested nutrients		14.38	3.25	14.92	40.21			
	Av. digestion coeff. %	77.09	78.52	89.74	74.29	79.96	57.41	78.81	81.71
	Av. digested nutrients		14.42	3.22	15.01	39.83			

4) Average feeding value:

On DM basis				Nutritive ratio	
DM	SE	DCP	DE	DE	ratio
76.33	67.57	14.42	3.69	1 : 4.31	

Appendix - 5 : First digestibility trial with calves fed both 1 kg rice straw and 2 kg conc. per 100 kg L.B.W. (39: 61% on DM basis).

1) Daily feed intake and daily faeces excreted:

No. Rice straw	Av. daily feed intake (kg)		Total DM		Av. daily faeces excreted (kg)	
	As fed	DM	Conc. mix.	Intake (kg)	Fresh	DM
(54)	2.50	2.27	4.00	3.61	5.88	7.03
(24)	2.50	2.27	4.00	3.61	5.88	7.11
						1.96
						2.02

2) Chemical analysis of rice straw, concentrate and faeces excreted.

Items	DM%		CP%		EE%		NPS%		Ash %		OM %		GE kcal/kg DM	
	DM	CP	EE	NPS	Ash	OM	GE	DM	CP	EE	NPS	Ash	OM	GE
Rice straw	100	3.22	1.46	30.44	49.59	15.29	84.71	3.958						
Concentrate mixture	100	22.41	5.34	14.70	50.02	7.53	92.47	4.627						
Faeces of Calf No. (54)	100	16.54	2.49	23.76	41.86	13.35	84.65	3.274						
Faeces of Calf No. (24)	100	17.03	1.93	25.25	40.42	15.37	84.63	3.054						

3) Calculated Nutrients digestibility

Calf No.	Items	DM		CP		EE		NPS		Ash		OM		GE (kcal)	
		DM	CP	EE	NPS	Ash	OM	GE	DM	CP	EE	NPS	Ash	OM	GE
(54)	Nutrients consumed (kg)	5.880	0.882	0.226	1.222	2.932	0.619	5.261	25.68						
	" excreted (kg)	1.960	0.324	0.049	0.466	0.820	0.301	1.659	6.42						
	" digested (kg)	3.920	0.558	0.177	0.756	2.112	0.318	3.602	19.26						
	Digestion coefficients (%)	66.67	63.27	78.32	61.87	72.03	51.37	68.47	75.00						
(24)	Nutrients consumed (kg)	5.880	0.882	0.226	1.222	2.932	0.619	5.261	25.68						
	" excreted (kg)	2.020	0.344	0.039	0.510	0.816	0.310	1.710	6.29						
	" digested (kg)	3.860	0.538	0.187	0.712	2.116	0.309	3.551	19.39						
	Digestion coefficients (%)	65.65	60.99	82.74	58.27	72.17	49.65	67.50	75.51						
	Av. digestion coeffic. %	66.16	62.13	80.53	60.07	72.10	50.65	67.99	75.26						
	Av. digested nutrients	9.32	3.09	12.48	35.95										

4) Average feeding value:

On DM basis				Nutritive ratio	
DM	CP	EE	NPS	DE	Ratio
64.71	53.56	9.32	3.29	1 : 5.95	

Appendix - 6 : Second digestibility trial with calves fed Napier grass plus 1 kg conc./100 kg of L.B.W. (62 : 38% on DM basis).

1) Daily feed intake and daily faeces excreted:

Calf No.	Av. daily feed intake (kg)		Total DM intake (kg)	Av. daily faeces excreted (kg)			
	Napier grass	Conc. mix.		Fresh	DM		
	As fed	DM	As fed	DM			
(24)	20.83	4.15	2.75	2.56	6.71	10.65	2.23
(18)	20.83	4.15	2.75	2.56	6.71	10.62	2.52

2) Chemical analysis of Napier grass, concentrate and faeces excreted.

Items	DM %	CP %	EE %	NFS %	Ash %	OM %	GE Mcal/kg DM
Napier grass fresh	19.94	2.55	0.70	6.39	7.02	3.28	16.66
Napier grass DM	100	12.80	3.49	32.03	35.25	16.43	83.57
Concentrate mixture	100	18.41	5.76	11.14	57.70	6.99	93.01
Faeces of Calv No. (24)	100	12.89	4.73	24.08	40.04	18.26	81.74
Faeces of Calv No. (18)	100	13.65	5.00	22.06	38.61	20.68	79.32
							4.579

3) Calculated Nutrients digestibility

Calv No.	Items	DM	CP	EE	CP	NFS	Ash	OM	GE (Mcal)
(24)	Nutrients consumed (kg)	6.710	1.002	0.292	1.614	2.940	0.861	5.849	27.14
"	excreted (kg)	2.230	0.287	0.105	0.537	0.893	0.407	1.823	8.55
"	digested (kg)	4.480	0.715	0.187	1.077	2.047	0.454	4.028	18.59
	Digestion coefficients (%)	66.77	71.36	64.04	66.73	69.63	52.73	68.83	68.50
	Digested nutrients		10.66	2.79	16.06	30.50			
(18)	Nutrients consumed (kg)	6.710	1.002	0.292	1.614	2.940	0.861	5.849	27.14
"	excreted (kg)	2.520	0.344	0.126	0.556	0.973	0.521	1.999	11.54
"	digested (kg)	4.190	0.658	0.166	1.058	1.967	0.340	3.850	15.60
	Digestion coefficients (%)	62.44	65.67	56.85	65.55	66.90	39.49	65.82	57.48
	Digested nutrients		9.81	2.48	15.77	29.31			
	Av. digestion coeff. %	64.61	68.52	60.45	66.14	68.27	46.11	67.33	62.99
	Av. digested nutrients		10.24	2.64	15.92	29.91			

4) Average feeding values:

On DM basis				Nutritive ratio	
TDM	SE	DCP	DE		
61.99	52.46	10.24	2.55	1: 5.06	

Appendix - 7 : Second digestibility trial with calves fed Napier grass plus 2 kg conc./100 kg of L.B.M. (45 : 55% on DM basis).

1) Daily feed intake and daily faeces excreted:

Calf No.	Av. daily feed intake (kg)		Total DM intake (kg)		Av. daily faeces excreted (kg)		
	Napier grass		Conc. mix.		Fresh		
	As fed	DM	As fed	DM	DM	DM	
(17)	20.63	4.15	5.50	5.12	9.27	13.88	2.71
(97)	20.83	4.15	5.50	5.12	9.27	10.99	2.55

2) Chemical analysis of Napier grass, concentrate and faeces excreted.

Items	DM%	CP%	EE%	CP%	NFE%	Ash %	OM %	GE kcal/kg DM
Napier grass fresh	19.94	2.55	0.70	6.39	7.02	3.28	16.66	0.703
Napier grass DM	100	12.80	3.49	32.03	55.25	16.43	83.57	3.525
Concentrate mixture	100	18.41	5.76	11.14	57.70	6.99	93.01	4.888
Faeces of Calf No. (17)	100	15.11	4.31	23.80	39.42	17.36	82.64	3.278
Faeces of Calf No. (97)	100	13.85	5.67	27.94	33.67	18.87	81.13	3.543

3) Calculated Nutrients digestibility

Calf No.	Items	DM	CP	EE	CP	NFE	Ash	OM	GE (kcal)
(17)	Nutrients consumed (kg)	9.270	1.474	0.440	1.899	4.417	1.040	8.230	39.66
"	excreted (kg)	2.710	0.409	0.117	0.645	1.068	0.470	2.240	8.88
"	digested (kg)	6.560	1.065	0.323	1.254	3.349	0.570	5.990	30.78
	Digestion coefficients (%)	70.77	72.25	73.41	66.03	75.82	54.81	72.78	77.61
	Digested nutrients		11.49	3.48	13.53	36.13			
(97)	Nutrients consumed (kg)	9.270	1.474	0.440	1.899	4.417	1.040	8.230	39.66
"	excreted (kg)	2.550	0.353	0.145	0.712	0.859	0.481	2.069	9.03
"	digested (kg)	6.720	1.121	0.295	1.187	3.558	0.559	6.161	30.63
	Digestion coefficients (%)	72.49	76.05	67.05	62.51	80.55	53.75	74.86	77.23
	Digested nutrients		12.09	3.18	12.81	38.38			
	Av. digestion coeffic. %	71.63	74.15	70.23	64.27	78.19	54.28	73.82	77.42
	Av. digested nutrients		11.79	3.33	13.17	37.26			

4) Average feeding value:

On DM basis				Nutritive	
DM%	SE	DCP	DE	ratio	
69.71	61.14	11.79	3.33	1 : 4.91	

1) Daily feed intake and daily faeces excreted:

Galf no.	Av. daily intake (kg)	Total DM		Av. daily faeces excreted (kg)
		DM	Intake (kg)	
As Fed	DM	As Fed	DM	DM
21.50	3.24	2.75	2.56	10.05
21.50	3.24	2.50	2.33	9.13
21.50	3.24	2.50	2.33	9.13

2) Chemical analysis of Darawa, concentrate and faeces excreted.

Items	DM %	CP %	EE %	CF %	NFE %	Ash%	OM %	GE kcal/kg DM
Darawa fresh	15.08	0.79	0.32	4.76	7.30	1.91	13.17	0.610
Darawa DM	100	5.21	2.12	31.57	48.42	12.68	87.32	4.048
Concentrate mixture	100	18.41	5.76	11.14	57.70	6.99	93.01	4.888
Faeces of Calf No. (93)	100	14.13	4.34	22.26	44.72	14.55	85.45	3.667
Faeces of Calf No. (81)	100	14.61	3.18	22.84	45.89	13.48	86.52	3.765

3) Calculated Nutrients digestibility

Calif. No.	Items	DK	CP	EE	CP	NFE	Ash	ON	GE (Mcal.)
(93)	Nutrients consumed (kg)	5.800	0.640	0.216	1.308	3.046	0.590	5.210	25.63
	" excreted (kg)	2.030	0.287	0.088	0.452	0.908	0.295	1.735	7.44
	" digested (kg)	3.770	0.353	0.128	0.856	2.138	0.295	3.475	18.19
	Digestion coefficients (%)	65.00	55.16	59.26	65.44	70.19	50.00	66.70	70.97
	Digested nutrients		6.09	2.20	14.76	36.86			
(81)	Nutrients consumed (kg)	5.570	0.598	0.203	1.283	2.913	0.574	4.996	24.51
	" excreted (kg)	2.040	0.298	0.065	0.466	0.936	0.275	1.765	7.68
	" digested (kg)	3.530	0.300	0.138	0.817	1.977	0.299	3.231	16.83
	Digestion coefficients (%)	63.38	50.17	67.98	63.68	67.87	52.09	64.67	68.67
	Digested nutrients		5.38	2.47	14.66	35.50			
	Av. digestion coeffic. %	64.19	52.67	63.62	64.56	69.03	51.05	65.69	69.82
	Av. digested nutrients		5.74	2.34	14.71	36.18			

(4) Average feeding value:

TUN	On DM basis			Nutritive ratio
	SE	DPF	DE	
61.89	53.55	5.74	3.08	1 : 9.83

Appendix - 9 : Second digestibility trial with calves fed Darawa plus 2 kg conc./100 kg of L.B.W. (99 : 61% on DM basis).

1) Daily feed intake and daily faeces excreted:

Calf No.	Average	DM	Conc. mix.	Total DM	Av. daily faeces excreted (kg)
		As fed	DM	Intake (kg)	Fresh
(201)	21.50	3.24	5.50	8.74	11.49
(200)	21.50	3.24	5.25	8.49	11.12
					2.39
					2.25

2) Chemical analysis of Darawa, concentrate and faeces excreted.

Items	DM %	CP %	EE %	CP	NFE	Ash	OM %	GE Mcal/kg DM
Darawa fresh	15.08	0.79	0.32	4.76	7.30	1.91	13.17	0.610
Darawa DM	100	5.21	2.12	31.57	48.42	12.68	87.32	4.048
Concentrate mixture	100	18.41	5.76	11.14	57.70	6.99	93.01	4.888
Faeces of Calf No. (201)	100	15.01	4.16	27.81	37.91	15.11	84.89	3.965
Faeces of Calf No. (200)	100	14.53	3.65	22.42	45.11	14.29	85.71	3.658

3) Calculated Nutrients digestibility

Calf No.	Items	DM	CP	EE	CP	NFE	Ash	OM	GE (Mcal)
(201)	Nutrients consumed (kg)	8.360	1.112	0.364	1.593	4.523	0.769	7.691	38.15
"	excreted (kg)	2.390	0.359	0.099	0.665	0.906	0.361	2.029	9.48
"	digested (kg)	5.970	0.753	0.265	0.928	3.617	0.408	5.662	28.67
	Digestion coefficients (%)	71.41	67.72	72.80	58.25	79.97	53.06	73.62	75.15
	Digested nutrients		9.00	3.17	11.10	43.27			
(200)	Nutrients consumed (kg)	8.130	1.069	0.351	1.568	4.391	0.753	7.377	37.02
"	excreted (kg)	2.250	0.327	0.082	0.504	1.015	0.322	1.928	8.23
"	digested (kg)	5.880	0.742	0.269	1.064	3.376	0.431	5.449	28.79
	Digestion coefficients (%)	72.32	69.41	76.64	67.86	76.88	57.24	73.86	77.77
	Digested nutrients		9.13	3.30	13.08	41.52			
	Av. digestion coeffic. %	71.87	68.57	74.72	63.06	78.43	55.15	73.74	76.46
	Av. digested nutrients		9.07	3.24	12.09	42.40			

4) Average feeding value:

On DM basis				Nutritive ratio	
TDM	SE	DDP	DE		
70.83	63.18	9.07	3.48	1: 6.81	

Appendix - 10 : Second digestibility trial with calves fed both 1 kg rice straw and 2 kg conc per 100 kg of L.B.W. (32 : 68 % on DM basis).

1) Daily feed intake and daily faeces excreted:

Calf no.	Av. daily feed intake (kg)		Total DM		Av. daily faeces excreted (kg)		
	Rice Straw	Conc. mix.	intake (kg)		Fresh	DM	
	As fed	DM	As fed	DM			
(94)	2.40	2.12	4.80	4.47	6.59	10.15	2.50
(92)	2.40	2.12	4.80	4.47	6.59	9.94	2.30

2) Chemical analysis of rice straw, concentrate and faeces excreted.

Items	DM%	CP%	EE%	CP%	NFE%	Ash %	OM%	GE Mcal/kg DM
Rice straw	100	3.32	3.69	34.39	43.22	15.38	84.62	3.122
Concentrate mixture	100	18.41	5.76	11.14	57.70	6.99	93.01	4.888
Faeces of Calf No. (94)	100	14.96	4.60	25.92	42.95	11.57	88.43	3.921
Faeces of Calf No. (92)	100	13.83	5.09	27.09	42.55	11.44	88.56	4.213

3) Calculated Nutrients digestibility

Calf No.	Items	DM	CP	EE	CP	NFE	Ash	OM	GE (Mcal)
(94)	Nutrients consumed (kg)	6.590	0.893	0.335	1.227	3.495	0.638	5.952	28.47
"	excreted (kg)	2.500	0.374	0.115	0.648	1.074	0.289	2.211	9.80
"	digested (kg)	4.090	0.519	0.220	0.579	2.421	0.349	3.741	18.67
	Digestion coefficients (%)	62.06	58.12	65.67	47.19	69.27	54.70	62.85	65.58
	Digested nutrients		7.86	3.35	8.79	36.74			
(92)	Nutrients consumed (kg)	6.590	0.893	0.335	1.227	3.495	0.638	5.952	28.47
"	excreted (kg)	2.300	0.318	0.117	0.623	0.979	0.263	2.037	9.69
"	digested (kg)	4.290	0.575	0.218	0.604	2.516	0.375	3.915	18.78
	Digestion coefficients (%)	65.10	64.39	65.07	49.23	71.99	58.78	65.78	65.96
	Digested nutrients		8.73	3.32	9.17	36.18			
	Av. digestion coeffico. %	63.58	61.23	65.37	48.21	70.63	56.74	64.32	65.77
	Av. digested nutrients		8.30	3.34	8.98	37.46			

4) Average feeding values:

On DM basis				Nutritive ratio	
DM	SE	DCP	DE		
62.75	52.47	8.30	2.84	1 : 6.50	

Appendix -11 : Average change of body weights throughout the green feeding period (112 days) in the 1st feeding trial.

Treatment groups	Animal No.	Av. initial weight (kg)	Green feeding period (2 weeks each)							Av. final weight (kg)	Total gain (kg)	Daily gain (kg)
			1	2	3	4	5	6	7			
A : NG + 1% conc. of L.B.W.	6	153.3	169.0	177.2	186.0	191.3	201.5	217.0	224.5	237.8	84.5	0.75±0.03
B : NG + 2% conc. of L.B.W.	6	153.2	169.2	180.5	188.5	194.3	204.3	219.7	229.2	242.5	89.3	0.80±0.04
C : Jordan + 1% conc. of L.B.W.	6	153.5	169.5	176.5	186.3	193.0	203.2	214.5	225.8	237.5	84.0	0.75±0.02
D : Jordan + 2% conc. of L.B.W.	6	153.7	169.8	178.0	189.7	193.7	205.8	218.0	228.8	241.8	88.1	0.79±0.05
E : Rice Straw + 2% conc. of L.B.W.	6	153.3	168.3	176.7	180.0	187.3	198.2	207.7	218.0	230.1	76.8	0.69±0.03

Appendix-12 : Average change of body weights throughout both finishing period (98 days) and the whole period (210 days) in the 1st feeding trial.

Treatment groups	Av. initial weight (kg)	Finishing period (2 weeks each)						Av. final weight (kg)	Total gain (kg)	Daily gain (kg)	The whole period (kg)			
											Initial weight	Final weight	Total gain	Daily gain
		1	2	3	4	5	6							
(A)	237.8	248.0	257.3	267.3	281.8	295.0	310.0	322.0	84.2	0.86±0.03	153.3	322.0	168.7	0.80±0.01
(B)	242.5	254.2	263.7	273.3	288.2	302.7	316.5	327.0	84.5	0.86±0.04	153.2	327.0	173.8	0.83±0.01
(C)	237.5	247.8	258.3	269.0	284.7	297.5	311.0	322.8	85.3	0.87±0.03	153.5	322.8	169.3	0.81±0.02
(D)	241.8	252.8	264.3	274.8	289.8	303.8	317.5	331.0	89.2	0.91±0.02	153.7	331.0	177.3	0.84±0.02
(E)	230.2	245.3	250.7	259.8	272.8	284.3	300.7	314.0	83.8	0.86±0.04	153.3	314.0	160.7	0.77±0.02

Appendix-13 : Average change of body weights throughout the green feeding period (112 days) in the 2nd feeding trial

Treatment groups	Animal No.	Av. initial weight (kg)	Green feeding period (2 weeks each)							Av. final weight (kg)	Total gain (kg)	Daily gain (kg)
			1	2	3	4	5	6	7			
I. NG + 1% conc. of L.B.W.	7	183.3	187.9	202.9	216.4	232.1	242.4	256.6	281.0	283.9	100.6	0.89±0.07
II. NG + 2% conc. of L.B.W.	7	181.6	186.7	213.4	226.0	240.7	247.4	269.3	289.4	297.4	115.8	1.03±0.03
III. Darawa + 1% conc. of L.B.W.	7	183.1	186.9	201.1	227.4	240.3	251.4	271.6	280.4	289.3	106.2	0.95±0.05
IV. Darawa + 2% conc. of L.B.W.	7	185.3	189.4	206.4	229.6	242.1	256.6	273.6	281.6	293.0	107.7	0.96±0.02
V. Rice Straw + 2% conc. of L.B.W.	7	185.1	193.6	211.3	224.3	234.7	249.4	263.7	281.1	285.0	99.9	0.89±0.03

Appendix-14 : Average change of body weights throughout both finishing period (98 days) and the whole period (210 days) in the 2nd feeding trial.

Treat- ment groups	Av. initial weight (kg)	Finishing period (2 weeks each)						Av. final weight (kg)	Total gain (kg)	Daily gain (kg)	The whole period (kg)			
											Initial weight	Final wt.	Total gain	
		1	2	3	4	5	6							
(I)	283.9	297.4	311.3	319.1	330.4	340.4	354.3	368.4	84.5	0.86±0.04	183.3	368.4	185.1	0.88±0.03
(II)	297.4	313.6	325.7	340.7	351.6	362.9	375.0	382.9	85.5	0.87±0.04	181.6	382.9	201.3	0.96±0.03
(III)	289.3	303.4	328.9	331.7	340.3	350.4	361.7	377.4	88.1	0.90±0.05	183.1	377.4	194.3	0.93±0.04
(IV)	293.0	303.7	328.7	337.3	343.6	351.9	363.1	375.0	82.0	0.84±0.03	185.3	375.0	189.7	0.90±0.02
(V)	283.0	298.1	314.3	319.0	329.3	336.0	343.3	350.4	65.4	0.67±0.05	185.1	350.4	165.3	0.79±0.03

0.88±0.03

0.96±0.03

0.92±0.04

0.90±0.02

0.79±0.03

Appendix-15 : Analysis of variance of digestion coefficients for the different experimental rations in both 1st and 2nd digestibility trials.

Source of variance	d.f.	Mean squares						
		DM	CP	EE	CF	NFE	OM	GE
<u>1st digestibility trial</u>								
Total	9	19.248	59.076	19.276	37.861	11.577	17.559	7.959
Treatments	4	36.389 [±]	126.546 ^{±±±}	39.591 ^{±±±}	77.525 ^{±±±}	16.729	34.017 [±]	14.897 [±]
Error	5	5.536	5.099	3.024	6.129	7.455	4.393	2.409
<u>2nd digestibility trial</u>								
Total	9	17.529	67.429	38.406	54.586	25.135	19.551	43.581
Treatments	4	35.141 [±]	137.480 ^{±±±}	63.502	108.644 ^{±±±}	50.035 [±]	40.721 ^{±±±}	81.322 [±]
Error	5	3.440	11.389	18.329	11.339	5.216	2.615	13.388

* Significantly different (P < 0.05)

*** Significantly different (P < 0.01)

Appendix-16 : Analysis of variance of digestible nutrients and feeding values for the different experimental rations in both 1st and 2nd digestibility trials.

Source of variance	d.f.	Mean squares					
		Digestible nutrients			Feeding values		
		CP	EE	CF	NFE	TDN	SE DE
<u>1st digestibility trial</u>							
Total	9	6.490	0.065	2.050	5.497	19.261	27.474 0.059
Treatments	4	14.375 ^{***}	0.140 ^{***}	4.268 ^{***}	10.142 ^{***}	38.624 ^{***}	57.194 ^{***} 0.128 ^{***}
Error	5	0.181	0.005	0.276	1.781	3.771	3.698 0.004
<u>2nd digestibility trial</u>							
Total	9	4.674	0.204	6.579	18.469	19.086	25.364 0.136
Treatments	4	10.227 ^{***}	0.424 ^{***}	14.218 ^{***}	39.871 ^{***}	39.548 ^{***}	53.699 ^{***} 0.278 ^{***}
Error	5	0.233	0.028	0.468	1.346	2.717	2.696 0.023

* Significantly different (P < 0.05)

*** Significantly different (P < 0.01)

Appendix-17 : Analysis of variance of the total L.B.W. gain and daily L.B.W. gain throughout green feeding period and the whole period in both 1st and 2nd feeding trials.

Source of variance	d.f	Green feeding period			The whole period		
		Total gain	Daily gain	m.s.	Total gain	Daily gain	m.s.
		m.s.	f	m.s.	f	m.s.	f
		<u>1st feeding trial</u>					
Total	29	96.047	0.008	122.033		0.003	
Groups	4	143.717	1.63	0.012	1.71	2.28	0.005
Error	25	88.420	0.007	103.687		0.002	
		<u>2nd feeding trial</u>					
Total	34	176.735	0.014	405.008		0.009	
Groups	4	292.814	1.82	0.023	1.77	4.52	0.029
Error	30	161.257	0.013	286.486		0.006	

*** Significantly different (P < 0.01)

Appendix-18 : Analysis of variance of feed utilization efficiency for the different experimental rations throughout green feeding period and the whole period in both 1st and 2nd feeding trials.

Source of variance	d.f.	Mean squares							
		Green feeding period				The whole period			
		kg gain per kg SE fed	kg SE intake per kg gain	kg gain per kg DCP fed	kg gain per kg SE fed	kg SE intake per kg gain	kg gain per kg SE fed	kg gain per kg DCP fed	kg gain per kg DCP fed
Total	29	0.0021	2.347	0.106	0.0006	0.500	0.0006	0.035	0.035
Treatments	4	0.0129	13.795	0.706	0.0034	3.042	0.0034	0.231	0.231
Error	25	0.0003	0.515	0.009	0.0001	0.094	0.0001	0.003	0.003
<u>1st feeding trial</u>									
Total	34	0.005	1.103	0.652	0.001	0.860	0.001	0.081	0.081
Treatments	4	0.020	4.527	4.676	0.003	2.078	0.003	0.351	0.351
Error	30	0.002	0.647	0.115	0.001	0.698	0.001	0.045	0.045
<u>2nd feeding trial</u>									

* Significantly different ($P < 0.05$)

** Significantly different ($P < 0.01$)