DJCP 8: 202X

ICS 65.020.20

DRAFT

Jamaican Standard

Code of Practice

for

Bamboo plantation

BUREAU OF STANDARDS JAMAICA

COMMENT PERIOD: 13 DECEMBER 2020 – 12 FEBRUARY 2021

IMPORTANT NOTICE

Jamaican standards are subjected to periodic review. The next amendment will be sent without charge if you cut along the dotted line and return the self-addressed label. If we do not receive this label we have no record that you wish to be kept up-to-date. Our address:

Bureau of Standards Jamaica
6 Winchester Road

P.O. Box 113
Kingston 10
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JCP XXX: 202X

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JBS CERTIFICATION MARK PROGRAMME

The general policies of the JBS Certification Mark Programme are as follows:

- The JBS provides certification services for manufacturers participating in the programme and licensed to use the gazetted JBS Certification Marks to indicate conformity with Jamaican Standards.

- Where feasible, programmes will be developed to meet special requirements of the submitter. Where applicable, certification may form the basis for acceptance by inspection authorities responsible for enforcement of regulations.

- In performing its functions in accordance with its policies, JBS will not assume or undertake any responsibility of the manufacturer or any other party.

Participants in the programme should note that in the event of failure to resolve an issue arising from interpretation of requirements, there is a formal appeal procedure.

Further information concerning the details of the JBS Certification Mark Programme may be obtained from the Bureau of Standards, 6 Winchester Road, Kingston 10.

CERTIFICATION MARKS

Product Certification Marks

Plant Certification Mark

Certification of Agricultural Produce (CAP) Mark

Jamaica-Made Mark

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May 2020

ISBN XXX-XXX-XXX-XXX-X

Declared by the Bureau of Standards to be a standard specification pursuant to section 7 of the Standards Act 1969.

First published May 2019

This standard was circulated in draft form for comments under the reference DJS IEC 60335-2-4: 2019 + AMD 1: 2019 + AMD 2: 2019.

Jamaican Standards establish requirements in relation to commodities, processes and practices, but do not purport to include all the necessary provisions of a contract.

The attention of those using this specification is called to the necessity of complying with any relevant legislation.

Amendments

No.	Date of Issue	Remarks	Entered by and date

Contents

Page

Foreword

This standard is primarily geared towards the nursery and plantation practices for Bambusa vulgaris, the most common bamboo growing in Jamaica.

This standard is voluntary.

Committee Representation

The development of this standard for the Standards Council, established under the Standards Act, 1969 was carried out under the supervision of the Bamboo and Indigenous Materials Product Standards Technical Committee, which at the time comprised the following members:

Related Documents

This standard makes reference to the following:

Bureau of Standards Jamaica,

Jamaica Farmer Quality Management Systems Manual

Kerala Forest Research Institute

Manual for Establishment and Management of Bamboo Plantations

Draft Jamaican Standard Code of Practice – Bamboo Plantation

1 Scope

This standard is primarily applicable to the nursery and plantation practices for *Bambusa vulgaris*, the most common bamboo growing in Jamaica. With a few adjustments, however, it can be applied to all sympodial bamboo species.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

JCP CRP 9, *Jamaican Standard Code of Practice for Organic Production and Processing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
bamboo
tropical, semitropical or temperate fast-growing grass with lignocellulose matrix and usually having hollow culms

3.2
bamboo culm
single shoot of bamboo comprised of the entire unaltered bamboo stem, which is usually a hollow cylinder, except at bamboo nodes

3.3
bamboo node
the critical area from which leaves, branches, and aerial roots grow out from the stem

3.4
clump
cluster of bamboo shoots (culm) emanating from the same root stock at the same location

3.5
hardened plant
tissue culture plantlet that has been slowly exposed to external conditions and now can live outside a glass vessel

3.6
nursery
a location where young plants are raised before being transferred to the field

3.7
plantation
land area in which bamboo is planted and managed

3.8
plantlet
small plant produced in tissue culture growing on a sterile medium under glass in a laboratory

3.9
seed
unit of reproduction of a flowering plant, produced rarely in Bambusa vulgaris

3.10
seedling
plant grown from a seed

3.11
tissue culture
a group of methods whereby plant material grows under axenic and controlled conditions in glass vessels in the laboratory

4 Plant Selection

Plantations can be established from true seed (very rarely produced), 3 year or older culms (one node culm pieces preferred, laid horizontally and pre-germinated, large culms preferred) or tissue cultured plantlets.

If rooted plantlets are obtained, then an area needs to be set aside for their hardening. Refer to typical tissue culture micropropagation procedures for hardening the rooted plantlets.

If large areas are going to be planted out, pre-sprouting of one nodal culm piece is recommended. Use the basal and middle culm, the upper culm does not sprout well. Placing cut culms in plastic bags for 1-2 weeks in a covered nursery area is sufficient for pre-sprouting but not absolutely necessary, they can also be directly planted. Branch cuttings will also sprout if large numbers are required but these need to be pre-sprouted. Once germinated, they can be stacked and transferred to the field for planting. Culm pieces can be germinated in soil beds but they are more difficult to remove and the germination rate is lower in this case.

When planting, place the bamboo culm piece horizontally so the germinated bud is to one side and young shoots pointing upwards. Plant at least 6 cm deep in the soil. Cover with 3 cm of soil; water in well. The young plants require consistent watering. There is a relationship between the circumference of the culm planted and the width of the shoots produced such that a thicker culm results in wider shoots and establishes quicker. Removal of the first year growth as the plant sprouts the following year will also speed up establishment.

If an area of natural bamboo is being developed, space out the bamboo clumps so there are no overlaps of canopy by removing intermediate clumps. Remove all dead culms and harvest all culms older that 2 years old.

5 Site Selection

Jamaica has a wide range of soil conditions due to the variability in parent materials, topography of the land and rainfall. With this wide variation in soils, topography and climate, site selection for bamboo plantation must be guided by the:

- Type of soil
- Fertility of the soil
- Topography of the land
- Prevailing climatic conditions and the absence or presence of water sources
- History of land use
- Nature of neighbouring parcels of land
- Present vegetation on the land

5.1 Soil type

Bamboo can be grown in a variety of soils, however productivity will be the best if the soils are of alluvial type of soil which is well drained. Care should be taken to see that a minimum soil depth of 45 cm is available. This is mainly because bamboo is a surface feeder with a shallow but sturdy root system.

5.2 Soil fertility

It is not necessary for bamboo to be grown on arable lands. Marginal and reclaimed bauxitic lands is suggested with appropriate fertilization.

5.3 Land topography

Bamboo should be grown on undulating lands at a slope percentage of 5-11%, as determined using the method in Annex A.

5.4 Climatic Conditions

Bamboo should ideally be grown in the climatic zones with temperature of 20-38°C and rainfall of 900-4000mm.

5.5 History of Land Use

This becomes necessary when organic farming is being considered, in accordance with the requirements of JCP CRCP 09.

5.6 Nature of neighbouring parcels of land

This becomes necessary when organic farming is being considered, in accordance with the requirements of JCP CRCP 09.

5.7 Present Vegetation

Intercropping can be done, especially in the first 3 years, with increasing shade-needing plants, with time.

6 Land Preparation

Bamboo does not require special land preparation. Pre-sprouting of one or two node culm pieces by wrapping them in plastic is recommended. On planting, the wider the culm, the deeper it is planted for better establishment.

7 Pest Management

Standard pest management methods to be applied. Any pests seen should be reported to the relevant authority eg RADA.

8 Soil Water Management

Adequate water supply should be available to the bamboo plantation to prevent the leaves from drying out and becoming a fire hazard.

9 Harvest and Postharvest Practices

A systematic harvesting of culms every year will encourage the emergence of straight and healthy new shoots. This is particularly true of species which have large clumps like *Bambusa* and *Dendrocalamus* spp. Generally in plantations, depending on the species, harvesting starts between the fourth and eighth year. However, removal of older culms in year 2-3 will encourage further growth.

In natural forest areas, where regular or shorter cycles are impractical, harvesting need to be based on the knowledge of culm age distribution, so that the harvest can be restricted to culms of the appropriate age. If the clumps are scientifically managed by pruning and fertilizer applications, harvesting can be done annually on a culm selection system.

Some important general rules to be followed while managing (while working in) bamboo stands are given below.

Harvesting of mature bamboo culm (usually culms above three years of age) should be carried out on a 70 % felling intensity i.e., 30% of the older culms are to be retained in order to ensure the proper growth of new growth. The mature culms are usually found in the middle of the clump and they are to be harvested during the initial years.

Harvesting should not be carried out during the season when the delicate new shoot emerge since it will reduce the productivity of the plantation.

Culms should be cut at a height as low as possible leaving only one internode above the ground. If they are cut leaving more than one internode, this will result in production of bushy branches from the nodes, ultimately affecting the growth of culms during the subsequent years.

Clear felling of clumps can lead to their degeneration into a bushy form, resulting in a gap of 5 –6 years before new extractable culms are produced. Hence it should be avoided as far as possible.

Harvesting of culms is often a labour intensive work and requires trained fellers. A chainsaw is preferred to a cutlass as it gives a clearer cut. It is to be noted that cutting of the heavy culms is fraught with risk since the flexible culms are under tension and safe removal requires careful planning to avoid splitting or jolting out of control or getting entangled within the congested mass of side branches and other culms. This is especially so in plantations that are managed under longer harvest cycles like in forest plantation.

9.1 Maturity Marking

In order to facilitate the identification of mature culms for harvest when unskilled labour is employed or when the age is not easily evident from the colour or appearance, marking of culms with colour codes at the time of emergence is adopted. A set of three colours (e.g. bright yellow, red and blue) are chosen and as soon as the new culms have emerged and the culm internode is exposed, enamel paint of one of the colours is used to make a distinct mark at a particular level. All new culms of that year therefore carry the mark in that colour. The next year the procedure is repeated with a different color and so on for the third year. Since by the third year the first years culms will be harvested the colours can be repeated in the fourth year culms.

10 Identification, Traceability and Audit

10.1 The organization should have a documented traceability system that takes into consideration the species, planting material, farm, age and portion of the culm.

10.2 The organization should be able to identify products by batch number in the production records.

11 Processes for Unexpected Events

In the event of drought, pests or abandonment, the plantation should be inspected by the relevant authority and recommendations made for remediation.

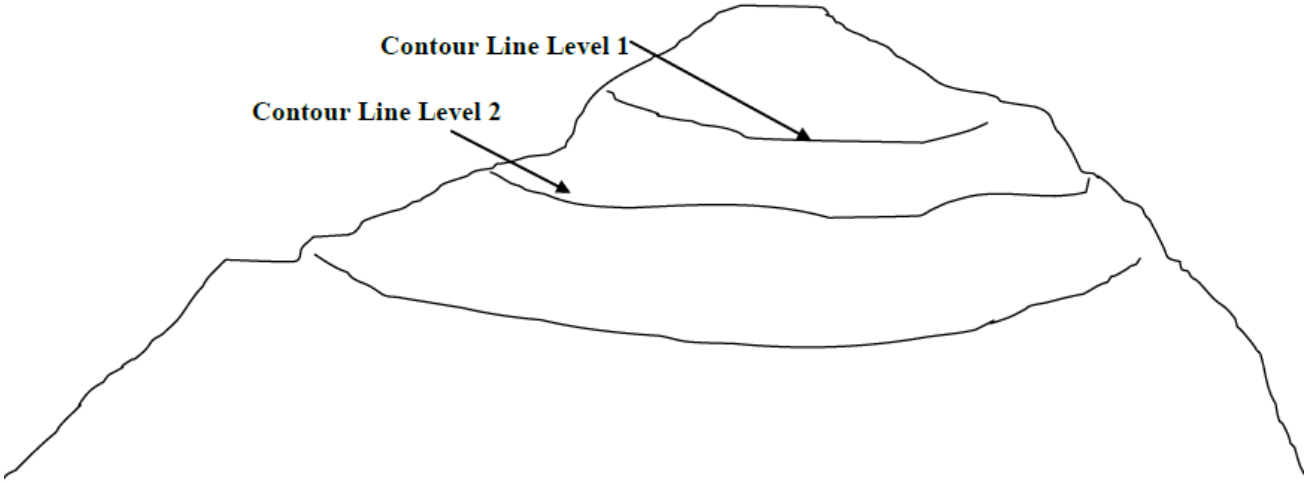
12 Purchasing and Handling of Farm Supplies

Producing high quality crops starts with the purchase of good quality production inputs (e.g. seeds, seedlings, fertilizers, pesticides etc.). The proper use of these inputs are also important for achieving quality crops. Proper storage of production inputs after use is vital for maintaining their quality season after season. As practitioners of GAP, disposal of unused/expired inputs must be carried out with due consideration given to possible health, safety and environmental impacts.

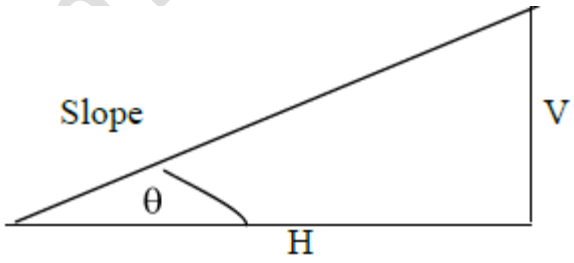
Annex A
(informative)

Contours

Contour lines are drawn by joining points of equal elevations on a hillside. The points of equal elevation can be obtained by sight or more precisely by various levelling instruments. The most popular levelling instrument for determining the contours on hillsides for farming purposes is the A-frame (See below).



Slopes are expressed in three ways: degree, percentage and ratio.



V – The vertical displacement

H - The horizontal displacement

The degree of slope is the angle between the slope and the horizontal plane.

The percentage slope is $\frac{V}{H} \times 100$

The slope ratio is expressed as unit of vertical displacement to horizontal displacement

If V = 1 and H = 10

Then the percentage slope is 10% while the ratio is 1:10. The degree slope would be that angle which has a tan = 0.1.

Annex B
(informative)

Bamboo Species suitable for cultivation in Jamaica

Bambusa vulgaris

NOTE Information and photos taken from local research

Local name: Common bamboo

Two year-old clump from a two nodal piece – culms (left) and uprooted (right) of *B. vulgaris*

New shoot of *B. vulgaris* ***Presprouted culm of B. vulgaris***

Uses

This species is used as a construction material and can be processed and used to manufacture bamboo plywood, paper, pulp, veneer, board, panels, flooring, roofing, fabrics, ethanol, oil and gas. The waste can be used to make biochar and bamboo charcoal.

Description

The Bambusa vulgaris is the most common species of bamboo in Jamaica, hence its nickname the common bamboo. It is a fast – growing, open clump type bamboo species which has green / yellow culms and green/orange large leaves.

Dimensions of mature culms

Culm length: 8-20 m

Culm diameter: 5-10 cm

Internode length: 45 cm

1. Recommended for cultivation in the following site conditions:

Altitude- Grows well in plains and up to altitudes of 1500 m. it can be easily grown in the plains

Soil type- Prefers moist alluvial soil, also grows well in well drained sandy and clayey soils. Tolerant to salinity and water logging

Climatic conditions- It prefers a tropical climate.

2. **Planting material:**
   Vegetative propagation is very easy in this species and culm or branch cuttings root easily and even without use of rooting hormones throughout the year.

3. **Soil/water conservation measures:** Moisture/water harvesting trenches (60cm X 45cm X 30cm) are to be dug along the interspaces in the alternate rows of planting when planted in 6 X 6 m spacing.

4. **Management of established clumps:**

   Cultural practices- All dead and dying culms to be cut and removed from the third year of establishment preferably during the dry season before the new growth of culms.

   Fertilisation- To be carried out as per the advice of an expert after testing the soil once the clumps have established. Responds well to NPK and organic fertilizers like compost, vermi- compost and dried farm yard manure. Organic fertilizers recommended if grown for edible shoots.

   Irrigation- Responds well to irrigation however essential only during the first two years to ensure better establishment and quicker culm production. If grown for edible shoots watering ensures enhanced sprout production. Moisture retention through trenches should also be practiced.

   Plant protection measures- If managed properly with routine pruning, thinning and cleaning, (cultural practices) Bamboo usually escapes pest infestations. Proper sanitation measures should also be adopted for the control of fungal infections.

   Thinning- Regular thinning and cleaning should be carried out from the 4th year of clump establishment. All dry, dead and drying culms are to be removed from the clump so as to create sufficient space in the clump for new sprouts to grow up straight. As a regular practice these operations are to be carried out every year probably prior to the wet season.

5. **Harvesting:**
   Culms (for timber) should be harvested only during non rainy months. No current year culms are to be cut. For propagation about 20 % of two year old culms can be selectively cut from all portions of the clumps which can be used for vegetative propagation through rooting of culm cuttings. About 60% of the 3 year old culms and almost all of the 4th year culms can be cut and removed. However it is always better to retain a few older culms in the clump to serve as support for the younger newly emerging culms. If the stand is managed for edible shoots, they are to be cut either in the early morning or late evening when the sprouts attain 35 to 45 cm in height. While harvesting the tender shoots care should be taken to see that only 60% of the sprouts are extracted from all portions of the clump are removed while 40 % are retained in the clump.

6. **Flowering cycle:** Rarely flowers and seeds are not viable. Clumps after flowering may die completely but some may survive.

Bambusa tulda

NOTE Information and photos taken from Manual for Establishment and Management of Bamboo Plantations

Local Name: Indian timber bamboo

Clump of *B. tulda*

Culms of *B. tulda*

Seeds of *B. tulda*

Uses

The culms can be used for construction and for making daily life tools, pulp and paper.

Description

The *Bambusa tulda* grows in tight clumps and also produces numerous culms. Additionally, the culms are green and glabrous when young. Branching begins at the upper nodes; the branches and leaves give the plant a bushy appearance that grows outwards.

Dimensions

Culm length: Up to 20 m

Culm diameter: 5-15 cm

Internode length: 20-45 cm

1. **Recommended for cultivation in the following site conditions:**

   Altitude- Though the species prefers altitudes around 1500 m; it can be easily grown in the plains

   Soil type- Prefers moist alluvial soil to fine textured soils also in well drained sandy and clayey soils.

   Climatic condition-Tropical and sub tropical conditions.

2. **Planting material:**
   Seedlings and vegetatively propagated propagules (the planting stock) and one year old planting stock should be preferred.

3. **Soil/water conservation measures**: Moisture/water harvesting trenches (60cm X 45cm X 30cm) are to be dug along the interspaces in the alternate rows of planting when planted in 6 X 6 m spacing.

4. **Management of established clumps:**

   Cultural practices-All dead and dying culms to be cut and removed from the third year of establishment preferably in the months of November – February.

   Fertilisation- To be carried out as per the advice of an expert after testing the soil once the clumps have established. Responds well to NPK and organic fertilizers like compost, vermi-compost and dried farm yard manure. Organic fertilizers recommended if grown for edible shoots.

   Irrigation- Responds well to irrigation however essential only during the first two years to ensure better establishment and quicker culm production. If grown for edible shoots watering ensures enhanced sprout production. Moisture retention through trenches should also be practiced.

Plant protection measures- If managed properly with routine pruning, thinning and cleaning, (cultural practices) Bamboo usually escapes pest infestations. Proper sanitation measures should also be adopted for the control of fungal infections.

Thinning-Regular thinning and cleaning should be carried out from the 4th year of clump establishment. All dry, dead and drying culms are to be removed from the clump so as to create sufficient space in the clump for new sprouts to grow up straight. As a regular practice these operations are to be carried out every year probably prior to the winter months.

5. Harvesting:

Culms (timber) should be harvested only during non-rainy months. No current year culms are to be cut. For propagation about 20 % of two year old culms can be selectively cut from all portions of the clumps which can be made use of for vegetative propagation through rooting of culm cuttings. About 60% of the 3 year old culms and almost all of the 4th year culms can be cut and removed. However it is always better to retain a few older culms in the clump to serve as support for the younger newly emerging culms.

If the stand is managed for edible shoots, they are to be cut either in the early morning or late evening when the sprouts attain 35 to 45 cm in height. While harvesting the tender shoots care should be taken to see that only 60% of the sprouts are extracted from all portions of the clump are removed while 40% are retained in the clump.

6. Flowering cycle: 30-60 years

Dendrocalamus asper

Local name: Rough Bamboo, Giant Bamboo

Clump of *D. asper*

Culms of *D. asper*

Emerging shoot of *D. asper*

Uses

Superior specie for edible bamboo shoots. Can be processed to make bamboo plywood and bamboo boards.

Dimensions

Culm length: upto 30 m

Culm diameter: 20 cm

Internode length: 30 cm

Wall thickness: Hollow culms with thick wall especially towards base

1. **Recommended for cultivation in the following site conditions:**
   Altitude- Grows well in plains and in hilly tracts and up to altitudes of 1000m.

Soil type- Prefers well drained black soils, Sandy clay loam or shallow lateritic soil mixed with fine sandy clay. Good drainage is essential.

Climatic condition- It prefers a sub tropical climate to tropical climate. Suitable for drier tracts

2. Planting material:

Vegetatively propagated and micropropagated planting stock and one year old planting stock should be preferred

3. Soil/water conservation measures: Moisture/water harvesting trenches (60cm X 45cm X 30cm) are to be dug along the interspaces in the alternate rows of planting when planted in 6 X 6 m spacing.

4. Management of established clumps:

Cultural practices- All dead and dying culms to be cut and removed from the third year of establishment preferably in the months of November – February.

Fertilisation- To be carried out as per the advice of an expert after testing the soil once the clumps have established. Responds well to NPK and organic fertilizers like compost, vermi- compost and dried farm yard manure. Organic fertilizers recommended if grown for edible shoots.

Irrigation- Responds well to irrigation however essential only during the first two years to ensure better establishment and quicker culm production. If grown for edible shoots watering ensures enhanced sprout production. Moisture retention through trenches should also be practiced.

Plant protection measures- If managed properly with routine pruning, thinning and cleaning, (cultural practices) Bamboo usually escapes pest infestations. Proper sanitation measures should also be adopted for the control of fungal infections.

Thinning- Regular thinning and cleaning should be carried out from the 4th year of clump establishment. All dry, dead and drying culms are to be removed from the clump so as to create sufficient space in the clump for new sprouts to grow up straight. As a regular practice these operations are to be carried out every year probably prior to the winter months.

5. Harvesting:

Culms (for timber) should be harvested only during non rainy months. No current year culms are to be cut. For propagation about 20 % of two year old culms can be selectively cut from all portions of the clumps which can be made use of for vegetative propagation through rooting of culm cuttings. About 60% of the 3 year old culms and almost all of the 4th year culms can be cut and removed. However it is always better to retain a few older culms in the clump to serve as support for the younger newly emerging culms.

D. asper is a preferred species for edible shoot since the shoots are sweet. In stands managed for edible shoots, extraction is done when the sprouts attain 35 to 45 cm in height. Care should be taken to see that only 60% of the sprouts extracted from all portions of the clump are removed while 40% are retained in the clump. Shoots are collected either early in the morning or late in evening.

6. **Flowering cycle:** More than 100 years. Most planting material available in India are tissue culture plantlets derived from seeds of a flowering event about 25 years back and therefore for the next 75 years plantations are not expected to flower.

Dendrocalamus brandisii

Local name: Velvet Leaf Bamboo, Teddy Bear Bamboo or Sweet Dragon Bamboo

Clump of *D. brandisii*

Culms of *D. brandisii*

New shoot of *D. brandisii* **Seeds of *D. brandisii***

Uses

Superior specie for edible bamboo shoots.

Dimensions

Culm length: 19-33 m

Culm diameter: 13-20 cm

Internode length:30-38 cm

1. **Recommended for cultivation in the following site conditions:**
   Altitude: Grows well in plains and in hilly tracts and up to altitudes of 1300 m.

   Soil type: Prefers well drained sandy and clayey soils.

   Climatic condition: It prefers a tropical climate and responds well to water availability.

2. **Planting material:**
   One year old planting stock should be preferred and procured

3. **Soil/water conservation measures:** Moisture/water harvesting trenches (60cm X 45cm X 30cm) are to be dug along the interspaces in the alternate rows of planting when planted in 6 X 6 m
   spacing.

4. **Management of established clumps:**
   Cultural practices- All dead and dying culms to be cut and removed from the third year of establishment preferably in the months of November – February.

   Fertilisation- To be carried out as per the advice of an expert after testing the soil once the clumps have established. Responds well to NPK and organic fertilizers like compost, vermi compost and dried farm yard manure. Organic fertilizers recommended if grown for edible shoots.

   Irrigation- Responds well to irrigation however essential only during the first two years to ensure better establishment and quicker culm production. If grown for edible shoots watering ensures Enhanced sprout production. Moisture retention through trenches should also be practiced.

   Plant protection measures-If managed properly with routine pruning, thinning and cleaning, (cultural practices) Bamboo usually escapes pest infestations. Proper sanitation measures should also be adopted for the control of fungal infections.

   Thinning- Very large clumps consisting of around a hundred culms or more can be expected in very fertile areas with good watering. Regular thinning and cleaning should be carried out from the 4th year of clump establishment. All dry, dead and drying culms are to be removed from the clump so

as to create sufficient space in the clump for new sprouts to grow up straight. As a regular practice these operations are to be carried out every year probably prior to the winter months.

5. Harvesting:

Culms (timber) should be harvested only during non rainy months. No current year culms are to be cut. For propagation about 20 % of two year old culms can be selectively cut from all portions of the clumps which can be made use of for vegetative propagation through rooting of culm cuttings. About 60% of the 3 year old culms and almost all of the 4th year culms can be cut and removed. However it is always better to retain a few older culms in the clump to serve as support for the younger newly emerging culms.

If the stand is managed for edible shoots, they are to be cut either in the early morning or late evening when the sprouts attain 35 to 45 cm in height. While harvesting the tender shoots care should be taken to see that only 60% of the sprouts extracted from all portions of the clump are removed while 40% are retained in the clump.

6. Flowering cycle: 45-50 years.

Dendrocalamus strictus

Local name: Male Bamboo, Solid Bamboo or Calcutta Bamboo

Clump of *D. strictus*

Culms and branches of *D. strictus*

New shoot of *D. strictus*

Seeds of *D. strictus*

Uses

The Dendrocalamus strictus is a medium – sized, tropical and sub tropical clumping species. Can be used in construction and for making daily life tools.

Dimensions

Culm length: 8-16 m

Culm diameter: 2-5 – 8 cm Internode length: 30-45 cm

Wall thickness : Culms are almost solid in the lower internodes especially in drier areas

1. **Recommended for cultivation in the following site conditions:**
   Altitude- Grows well in plains and in the foot hills up to 1000m in altitude.

   Soil type- Grows well in well drained coarse grained/stony/degraded/dry soils.

   Climatic conditions- It prefers tropical climate.

2. **Planting material:**
   Seedlings and vegetatively propagated propagules (the planting stock) will be available and one year old planting stock should be preferred and procured

3. **Soil/water conservation measures:** Moisture/water harvesting trenches (60cm X 45cm X 30cm) are to be dug along the interspaces in the alternate rows of planting when planted in 6 X 6 m spacing.

4. **Management of established clumps:**
   Cultural practices- All dead and dying culms to be cut and removed from the third year of establishment preferably in the months of November – February.

   Fertilisation- To be carried out as per the advice of an expert after testing the soil once the clumps have established. Responds well to NPK and organic fertilizers like compost, vermi- compost and dried farm yard manure. Organic fertilizers are recommended if grown for edible shoots.

   Irrigation- Responds well to irrigation however essential only during the first two years to ensure better establishment and quicker culm production. If grown for edible shoots watering ensures enhanced sprout production. Moisture retention through trenches should also be practiced.

   Plant protection measures- If managed properly with routine pruning, thinning and cleaning, bamboo usually escapes pest infestations. Proper sanitation measures should also be adopted for the control of fungal infections.

   Thinning- Regular thinning and cleaning should be carried out from the 4th year of clump establishment. All dry, dead and drying culms are to be removed from the clump so as to create sufficient space in the clump for new sprouts to grow up straight. As a regular practice these operations are to be carried out every year probably prior to the winter months.

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If the stand is managed for edible shoots, they are to be cut either in the early morning or late evening when the sprouts attain 35 to 45 cm in height. While harvesting the tender shoots care should be taken to see that only 60% of the sprouts extracted from all portions of the clump are removed while 40% are retained in the clump.

6. Flowering cycle: 45-55 years.

Standards Council

The Standards Council is the controlling body of the Bureau of Standards Jamaica and is responsible for the policy and general administration of the Bureau.

The Council is appointed by the Minister in the manner provided for in the Standards Act, 1969. Using its powers in the Standards Act, the Council appoints committees for specified purposes.

The Standards Act, 1969 sets out the duties of the Council and the steps to be followed for the formulation of a standard.

Preparation of standards documents

The following is an outline of the procedure which must be followed in the preparation of documents:

1. The preparation of standards documents is undertaken upon the Standard Council's authorisation. This may arise out of representation from national organisations or existing Bureau of Standards' Committees of Bureau staff. If the project is approved it is referred to the appropriate sectional committee or if none exists a new committee is formed, or the project is allotted to the Bureau's staff.

2. If necessary, when the final draft of a standard is ready, the Council authorises an approach to the Minister in order to obtain the formal concurrence of any other Minister who may be responsible for any area which the standard may affect.

3. The draft document is made available to the general public for comments. All interested parties, by means of a notice in the Press, are invited to comment. In addition, copies are forwarded to those known, interested in the subject.

4. The Committee considers all the comments received and recommends a final document to the Standards Council

5. The Standards Council recommends the document to the Minister for publication.

6. The Minister approves the recommendation of the Standards Council.

7. The declaration of the standard is gazetted and copies placed on sale.

8. On the recommendation of the Standards Council the Minister may declare a standard compulsory.

9. Amendments to and revisions of standards normally require the same procedure as is applied to the preparation of the original standard.

Overseas standards documents

The Bureau of Standards Jamaica maintains a reference library which includes the standards of many overseas standards organisations. These standards can be inspected upon request.

The Bureau can supply on demand copies of standards produced by some national standards bodies and is the agency for the sale of standards produced by the International Organization for Standardization (ISO) members.

Application to use the reference library and to purchase Jamaican and other standards documents should be addressed to: Bureau of Standards

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