

Registered/ speed post



ICAR-National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi – 110 012

Phone: 011-25841022, 25849545; FAX: 011-25842495, 25849459;



No.4(321)/Purchase/2020

Dated: June, 2020

NOTICE FOR INVITING TENDER THROUGH E-PROCUREMENT

Online Bids are invited from interested firms under two bid system for Whole Genome Sequencing (WGS) Services at ICAR-NBPGR, New Delhi. Manual bids shall not be entertained.

Tender documents may be downloaded from e-procurement website of CPPP <https://eprocure.gov.in/eprocure/appor> www.nbpgr.ernet.in as per the schedule given in CRITICAL DATE SHEET as under:

CRITICAL DATE SHEET

Tender No.	F. No.4(321)/Purchase2020
Name of Organization	ICAR-National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi -110012
Date and Time for Issue/Publishing	02.06.2020 at 05.30 PM
Document Download/Sale Start Date and Time	03.06.2020 at 10.30 AM
Bid Submission start Date and Time	03.06.2020 at 2.30PM
Pre bid meeting	10.06.2020 at 10:30 AM
Bid Submission End Date and Time	25.06.2020 at 02.30PM
Date and Time for Opening of Bids	26.06.2020 at 02.30PM
Address for Communication	Asstt. Admn. Officer (Purchase), ICAR-NBPGR, New Delhi


(Avdhesh Kumar)
Asstt. Admn. Officer (P)

ICAR-NATIONAL BUREAU OF PLANT GENETIC RESOURCES
PUSA CAMPUS, NEW DELHI -110012

Check list for the tender

The bidders are requested to fill the check list for evaluation of technical bid.

Sr. No.	Particulars	Remarks (YES/NO)
01	Whether the required Tender Fee and EMD attached/scan copy uploaded or the bidder is MSME. In case of MSEM please provide the relevant documents in support of the same.	
02	Whether the scan copy of registration number uploaded	
03	Whether the scan copy of PAN number uploaded	
04	Whether the firm has GST Number or not	
05	Whether the scanned copies of Income Tax return uploaded as per requirement of the tender.	
06	Whether the all Annexures signed and accepted	
07	Whether the scanned copies of user list uploaded	
08	Whether the firm is Black listed by any of the Government Department/Agency	
09	Whether the rates quoted in BoQ as per tender	

Annexure-I

INSTRUCTIONS FOR ONLINE BID SUBMISSION

1. The Tender form/bidder documents may be downloaded from the <https://eprocure.gov.in/eprocure/app> or www.nbpgr.ernet.in. **Online submission of Bids through Central Public Procurement Portal**(<https://eprocure.gov.in/eprocure/app>) is mandatory. Manual/Offline bids shall not be accepted under any circumstances.
2. Tenderers/bidders are requested to visit the website <https://eprocure.gov.in/eprocure/app> and www.nbpgr.ernet.in regularly for any changes/modifications in tender document.
3. In case, any holiday is declared by the Government on the day of opening, the tenders will be opened on the next working day at the same time. The Council reserves the right to accept or reject any or all the tenders.
4. The interested Firms are required to deposit (in original) an Earnest Money Deposit (EMD) of the amount mentioned against items in the form of Demand Draft/FDR-TDR/BG from any of the Commercial Bank in favour of **Director, NBPGR payable at New Delhi** may be address to **Asstt. Admn. Officer (Purchase), NBPGR, New Delhi** on or before **bid closing date and time as mentioned in the Critical Date Sheet**.
5. The interested Firms are required to deposit (in original) **Tender Fee, if any**(Non-refundable) in the shape of Demand Draft in favour of **Director, NBPGR payable at New Delhi** may be address to **Asstt. Admn. Officer (Purchase), NBPGR, New Delhi** on or before **bid closing date and time as mentioned in the Critical Date Sheet**.
6. The firm should send the original brochures of the product and may be addressed to Asstt. Admn. Officer (Purchase), NBPGR, New Delhi on or before bid opening date and time as mentioned in the Critical Date Sheet along with Tender Fee & EMD.
7. Bidders need not to come at the time of Technical as well as Financial bid opening at NBPGR. They can view live bid opening after login on CPPP e-procurement portal at their remote end. If bidder wants to join bid opening at NBPGR then they have to come with bid acknowledge slip that is generated after successfully submission of online bid.
8. The firms are also required to upload copies of the following documents:-
 - **Technical Bid**
 - a) Scanned copy of Tender fee and Earnest Money Deposit (EMD)/its exemption, if any.
 - b) Scanned copy of Firm's registration, PAN Card, GST No., Tender acceptance letter (Annexure-V).

- c) Scanned copy of Manufacturers authorization certificate issued by Principal Manufacturer duly verified by the Indian Agent or Manufacturing certificate.
 - d) Scanned copy of Income Tax Statement for the last two/three years.
 - e) Scanned copy of Annexure-II and IV.
 - f) Scanned copy of User List (if any)/Purchase Orders.
 - g) Scanned Copy of Make and model of all systems, sub systems and additional items should be mentioned in the technical bid and complete technical details should be provided in the form of Brochures and write-ups.
- **Financial Bid:-**
 - a) Price Bid as BoQ.xls



(Avdhesh Kumar)
Asstt. Admn. Officer (P)

Annexure-II

Terms & Conditions

1. The tenderer shall quote rates, which will include the delivery & other incidental charges. Taxes, if any, should be indicated separately.
2. The rates should be quoted as per the BOQ uploaded on the CPP Portal (reference may be obtained from Annexure-III). Taxes, if any, should be indicated separately. It must be noted that the contract shall be awarded to the firm which fulfills all the required terms and conditions and remains L-1 for any particular items.
3. The firm must also possess valid PAN No. & Service Tax registration number and a copy of the same must also be enclosed with the tender document.
4. Copy of previous two/three years of Income Tax Statement may be furnished.
5. The firm should be in existence for over 05 (Five) years in the trade. However startups are relaxed for this condition as per Govt. guidelines.
6. Modification in the tender documents after the closing date is not permissible.
7. The successful firm shall have to supply the Various Scientific Equipments within 4-6 weeks from the date of confirmed supply order and if the materials are not supplied in time then EMD shall be forfeited. The rates quoted shall be valid for one year from the date of opening of tender.
8. The contractor/bidder or his representative may contact the undersigned at **Tel. No. 011-25841022** for any further clarification. No variation in terms of quality of the items shall be entertained or else EMD/Security deposit shall be forfeited.
9. The Director, NBPGR shall have the right to reject all or any of the offers, accept more than one offer, and assign part of the job.
10. The interested Firms are required to deposit (in original) an Earnest Money Deposit (EMD) of the amount mentioned against item in the form of Demand Draft/FDR-TDR/BG from any of the Commercial Bank in favour of **Director, NBPGR payable at New Delhi** may be address to **Asstt. Admn. Officer (Purchase), NBPGR, New Delhi** on or before **bid submission closing date and time 2.30 p.m. on 25.06.2019**. No quotation shall be considered without the earnest money deposit. Demand draft drawn in favour of any officer other than 'Director, NBPGR payable at New Delhi' will not be accepted and the tender will be rejected. The earnest money will be refunded only after the finalization of the procurement and no interest will be paid on earnest money.
11. Rates once finalized will not be enhanced/reduced during the currency of the contract.
12. In case of foreign currency, conversion rates in INR will be taken on that day when financial bid will open.
13. In case, the successful bidder shows inability at any stage, after the contract is finalized and awarded, for whatsoever reason(s), to honor the contract, the earnest money /performance security deposited would be forfeited.
14. The Director, ICAR-NBPGR reserves the right to cancel the contract at any time during the currency period of the contract without giving any reason.
15. The firm to whom the tender will be awarded, will have to deposit the performance security equal to 10% of the total amount at the time of installation of the equipment. If the services are not found to be satisfactory, the performance security is liable to be forfeited. No interest will be paid on performance security.
16. If any dispute(s) arises between NBPGR and the firm with reference to the contract, NBPGR will decide it and its decision will be binding on the firms.
17. Bid Validity: 90 days
18. The contract will be given to L1 only as per comparative statement.

19. The bidders must certify that **'The firm is not black listed by any of the Government Department/Agency'** while submitting the quotation.
20. **Authorization Certificate: Authorization certificate from the Principal/Manufacturer for this specific tender only will be entertained. Authorization issued in favor of multiple firms will not be accepted and bids of such bidders will be cancelled straight way.**
21. Our Institute is registered with DSIR and we are exempted from Excise Duty & Custom Duty. Hence CDEC/DSIR will be provided to the firm, if demanded. Rate should be quoted accordingly.
22. Payment terms:-
 - a) Payment for goods supplied from abroad: By Letter of Credit (LC)/FDD/Wire Transfer.
 - b) Payment of goods supplied within India-100% of the contract price on receipt of goods by the consignee supported by satisfactory installation/working report & submission of Performance value.
23. Installation:- Within 30 days from the date of receipt of equipment in the Institute failing which Liquidated Damage clause shall apply.
Liquidated Damage clause: It would be realized @ 0.5% (half per cent) of the base price (excluding taxes) of the delayed goods for each week of delay subject to maximum 10%.
24. Prices:
 - i. Equipment imported from the other countries: Rates must be quoted on FOB international port of shipment in foreign currency only by the authorized Indian Agent or directly by the Principal/manufacturer.
 - ii. Rates for accessories/local items may be quoted in INR only.
 - iii. If any bidder wants to quote in INR, price be quoted on F.O.R, NBPGR basis.
25. Tender Evaluation: Tender evaluation will be done as enumerated in Manual on Procurement of Goods (2017) and GFR-2017.

‘Terms & Conditions are acceptable’

Dated

(Authorized signatory of the firm)

Annexure-III

(Reference for BOQ) (To be quoted in format provided on CPP Portal)

Price bid for Various Scientific Equipments (IFB-3) at ICAR, NBPGR, New Delhi

Sr. No.	Name of item	Quantity	Per unit price* (in figures/words) (as per BOQ)
01	Whole genome sequencing services	01	

- Items should be of reputed make and suitable for high end elite users
- Tax extra as applicable should be indicated separately in the column provided.

Note: The above mentioned Financial Proposal/Commercial bid format is provided as BoQ_XXXX.xls along with this tender document at <https://eprocure.gov.in/eprocure/app>. Bidders are advised to download this BoQ_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the Financial bid. **Bidder shall not tamper/modify downloaded price bid template in any manner.** In case if the same is found to be tempered/modified in any manner, tender will be completely rejected and EMD would be forfeited and tenderer is liable to be banned from doing business with NBPGR.



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No.4(321)/Purchase/2020

Dated: May, 2020

Name of the Firm _____

Registered/Postal Address _____

1	Permanent Account Number (PAN)	
2	Service Tax Registration No., if applicable	
	Bank Details	
	Bank Name	
	Branch Address	
	Account Number	
	Type of account (current/saving)	
	MICR No.	
	RTGS/NEFT code	

Date:

Name of the Authorized Signatory

Place:

Stamp & Signature

TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

Date:

To

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No. _____

Name of Tender/Work:

Dear Sir,

1. I/ We have downloaded/obtained the tender document(s) for the above mentioned 'Tender/work' from the web site(s) namely:

As per your advertisement, given in the above mentioned website(s).

2. I/We hereby certify that I/We have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like annexure(s), schedule(s), etc...) which form part of the contract agreement and I/We shall abide hereby the terms/conditions/clauses contained therein.
3. The corrigendum(s) issued from time to time by your department/organization too have also been taken into consideration, while submitting this acceptance letter.
4. I/we hereby unconditionally accept the tender conditions of above mentioned tender documents/corrigendum(s) in its totality/entirely.
5. I/we do hereby declare that our Firm has not been black-listed/debarred by any Govt. Department/Public sector undertaking.
6. I/we certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/organization shall without giving any notice or reason therefore or summarily reject that bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,

(Signature of the Bidder, with Official Seal)

Instructions for Online Bid Submission

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at <https://eprocure.gov.in/eprocure/app>.

REGISTRATION

- Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL <https://eprocure.gov.in/eprocure/app>.) by clicking on the link '**Online bidder Enrollment**' on the CPP Portal which is free of charge.
- As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (class II or Class III certificates with signing key usage) issued by any certifying authority recognized by CCA India (e.g. Sify/nCode/eMudhra etc.) with their profile.
- Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- Bidder then logs in to the site through the secured log-in by entering their users ID/password and the password of the DSC/e-Token.

SEARCHING FOR TENDER DOCUMENTS

- There are various search options built in the CPP Portal. To facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
- Once the bidders have selected the tenders they are interested in, they may download the required documents/tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS/e-mail in case there is any corrigendum issued to the tender document.
- The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification/help from the Helpdesk.

PREPARATION OF BIDS

- Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in

which the bid documents have to be submitted, the number of documents- including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

- Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and generally, they can be in PDF/XLS/RAR/DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use 'My Space' or 'Other important Documents' area available to them to upload such documents. These documents may be directly submitted from the 'My Space' area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

- Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- Bidder has to select the payment option as 'offline' to pay the tender fee/EMD as applicable and enter details of the instrument.
- Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- Bidders are requested to note that they should necessarily submit their financial bids in the Format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cell with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
- The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

- The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- Upon the successful and timely submission of bids (i.e. after clicking 'Freeze Bid Submission' in the portal), the portal will give a successful bid submission message and a bid summary will be displayed with the bid no. and the date and time of submission of the bid with all other relevant details.
- The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

- Any queries relating to the tender documents and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contract person indicated in the tender.
- **Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk Nos. 0120-4200462/0120-4001002 or mob no. 9811557067**

Details of Equipments & EMD

Sr. No.	Purchase of item	Qty	Earnest Money in INR	Tender Fee	File. No. for reference
01	Whole genome sequencing services	01	1,80,000/-	NIL	4(321)/Purchase/2020

Note: EMD defined on to the Portal is MINIMUM. Bidder has to submit the EMD as per item for which quoting for.

Requirement for whole genome sequencing (WGS) services:

- a) Whole genome *de novo* sequencing and assembly with **1-genome sequence information at pseudomolecule level (Fasta with gene coordinates and annotations in csv or any compatible format), 2-reference transcriptome (Fasta), 3-chloroplast and mitochondria genome (Fasta), 4-cds sequence, and 5-protein sequence, for the following two subspecies to be provided as output:** 1) one cultivar of *Sesamum indicum*, and 2) one accession of *Sesamum malabaricum*, of plant samples (high quality DNA and plant tissues) will be provided as per the following requirement. Estimated genome size for these two subspecies is around 500MB, chromosome number $2n=2x=26$, for both. Sequencing to be performed using various standard sequencing technologies like:
- short-read 2x150bp-PE sequencing (90-100Gb each),
 - Single molecule real time (SMRT) long-read 10Kb+ sequencing (20-30Gb each),
 - 10X linked read sequencing (40-50Gb each),
 - Hi-C sequencing (100Gb each),
 - Optical mapping using DLS technique (100Gb or one lane each),
 - Iso-seq sequencing with two libraries, for transcriptome atlas (2 SMRT cell each)
- b) Three cultivars of *Sesamum indicum* needs to be sequenced, for which, high quality DNA and plant tissues will be provided. the following: **1-a reference-based assembly (Fasta with gene coordinates and annotations in csv or any compatible format) and 2-chloroplast and mitochondria genome (Fasta) for each genotype, to be provided as output**, using the currently sequenced *Sesamum indicum* cultivar as reference.
- short-read 150bp-PE sequencing (90-100Gb each),
 - Single molecule real time (SMRT) long-read 10Kb+ sequencing (20-30Gb each),

Terms and conditions:**A. Eligibility conditions for the firms (Indenter; AAO, Purchase)**

To participate in the tender process, the firms (service providers, Public / Private) should meet the following eligibility conditions:

1. The firm should have established all the required facilities **in India**, to take up the said task (a, and b) within the country and there should be no shipment of either

biological material or the sequence information, abroad, as per the NBA / Gol norms. For infringements, if any, the service providers (firm) will be responsible and not the indenter or the organization.

2. Should enclose supportive evidences on their level of services of similar nature of this tender (in the recent past), to various public or private institutions / firms in India (additionally, they can keep abroad ones as well as their profile) to showcase their capabilities in taking this task in time-bound manner. Letters from clients (within one year from date of this advertisement / tender) on satisfactory or appreciation of services of the said firm, can also be enclosed.
3. Each prospective firm with expression of interest to participate in the bid, should send a representative to attend the **pre-bid meeting** to be held on **10th June 2020 at 10:30AM** at Dr. Harbhajan Singh Committee room, ICAR-NBPGR, PUSA Campus, New Delhi-110012. In case of any extended or restricted lockdown, that prevents attending the pre bid in-person, an online meeting will be held during the same time as mentioned above. For enquires related to pre-bid meeting, please send an e-mail to nbpgr.aaopurchase@icar.gov.in; with cc to sao.nbpgr@icar.gov.in the login details to attend the meeting will be sent only to the interested bidders who send an expression of interest to the said email id for further communication.

B. Administrative terms and conditions (AAO, Purchase; Sr.F&A.O / F&A.O)

4. For the requirements (a) and (b) of WGS services, prices to be quoted as single pricing combining the cost of both, since (b) cannot be performed without (a).
5. The successful bidder, need to submit a **Memorandum of Agreement on a non-judicial stamp paper** stating to agree to deliver the services of said quality and in the given time-line (Table 1), as mentioned in this tender document, complying with the terms and conditions stated in **A** (excluding points 2-on pre-bid meeting, and 4-supportive documents), **B** (excluding points 5-price bid, and 6-Memorandum of Agreement) and **C**. The points that are excluded in **A** and **B**, are valid only till the selection of the successful bidder.
6. Payment (100%) will be made in 30-45 days' time, upon **satisfactory receipt of the raw data and bioinformatics results** as mentioned in the point 10 below.

7. Failure of services in quality or in timeline, as per this document, will invite penalties (liquidated damage charges @2% per week for delay after given due date (here, **Eight** months from date of issue of PO and samples) subjected to the maximum of 10% of total work order value) and in addition, the firm will be commuted to further legal action. Also, if the successful bidder fails to comply with the required standards, quality, and significant delay in the scheduled timeline, ICAR-NBPGR has the authority to cancel the order and with the said firm and to proceed in default, with next qualified bidder.

C. Technical terms and conditions (Indentor)

8. The biological material in the form of DNA / plant tissues will be provided at ICAR-NBPGR, New Delhi for the five genotypes, for which whole genome sequencing to be taken up (two *De novo*, and three reference-based) in the timebound manner (please refer to fig. 1 below). It is the responsibility of the firm to collect the material from NBPGR, New Delhi to their place.
9. The firm to provide the final data outputs in any standard external hard drive, as follows: for *de novo* assemblies for Swetha and malabaricum – **1-genome sequence information at pseudomolecule level (Fasta with gene coordinates and annotations in csv or any compatible format), 2-reference transcriptome (Fasta), 3-chloroplast and mitochondria genome (Fasta), 4-cds sequence, and 5-protein sequence;** and for reference based assemblies –**1-a reference-based assembly (Fasta with gene coordinates and annotations in csv or any compatible format) and 2-chloroplast and mitochondria genome (Fasta);** with appropriate figures and other bioinformatics analysis.
10. Minimum 75% of all the data of each type should pass the Q30 quality score, and to comply with on-par or better than the global standards, for short-reads (Illumina) and for long reads (Pac-Bio) sequencing technologies, but not excluding others.
11. Sample QC, library QC, and raw sequence data to be shared as and when it is ready so that it will be used by our researchers for preliminary analyses, and data uploading for publication process.

12. Also, to address the technical queries (if any, arises) on the data received by us from the firm, the firm need to store the data (raw and processed) as safety backup for six months' time.

Please see the activity time-line chart in the table below. The firm can make minor modifications within the activities mentioned subjected to not exceeding the total time duration (eight months), and to be submitted alongwith tender document.

Table 1: Activity time-line chart for all the five genotypes:

S. No	Activity*	Time duration	Output (to be shared)
1	Short-read library for short-reads and QC	First two months	Library QC
2	Long-read SMRT library and QC		Library QC
3	10X library and QC		Library QC
4	HMW DNA extraction from leaf for Hi-C		Sample QC
5	Hi-C library and QC	Third and fourth month	Library QC
6	Short-read sequencing and QC		Sequence QC and raw data
7	Long-read sequencing and QC		Sequence QC and raw data
8	Hi-C pre-run and QC		Sequence QC
9	Hi-C sequencing and QC		Sequence QC and raw data
10	RNA QC & Iso-seq library and QC		Sample and library QC
11	Primary assembly with short- and long-read	Fifth and sixth month	Contig data
12	Long-read sequencing of Iso-seq library		Sequence QC and raw data
13	Secondary assembly with Hi-C data		Scaffold data
14	Genome annotation		
15	HMW DNA extraction for optical mapping	Seventh and Eighth month	Sample QC
16	DLS library, QC and sequencing		Library QC and raw data
17	Pseudomolecule level assembly with Optical mapping data, and genome annotation with Iso-seq data with bioinformatics analysis		Genome assembly data with gene coordinates, reference genome and transcriptome, chloroplast and mitochondria genome, and other bioinformatics analysis.
18	Reference based assembly for the three genotypes		

*: If the firm is interested in having minor shuffle of activities without significant change in the total time duration (eight months), they can submit their revised timeline of activities within the eight-month schedule.

