

Website
opsri.mpob.gov.my

Technical support
abbc.opgp@mpob.gov.my



OPSRI

Oil Palm SSR Resource Interface

Pocket Manual

Malaysian Palm Oil Board
No. 6, Persiaran Institusi,
Bandar Baru Bangi,
43000 Kajang Selangor
Malaysia



Oil Palm SSR Resource Interface (OPSRI)

1. Go to <http://opsri.mpob.gov.my>



Oil Palm SSR Resource Interface (OPSRI)

Welcome to OPSRI

Our objective is to provide specialized web-based resources to the scientific community studying SSR.

Services

- Find ORF
- Marker search and primer design
- Blast
- Analysis pipeline

Please login

Email address
Enter email

Password
Password

Submit

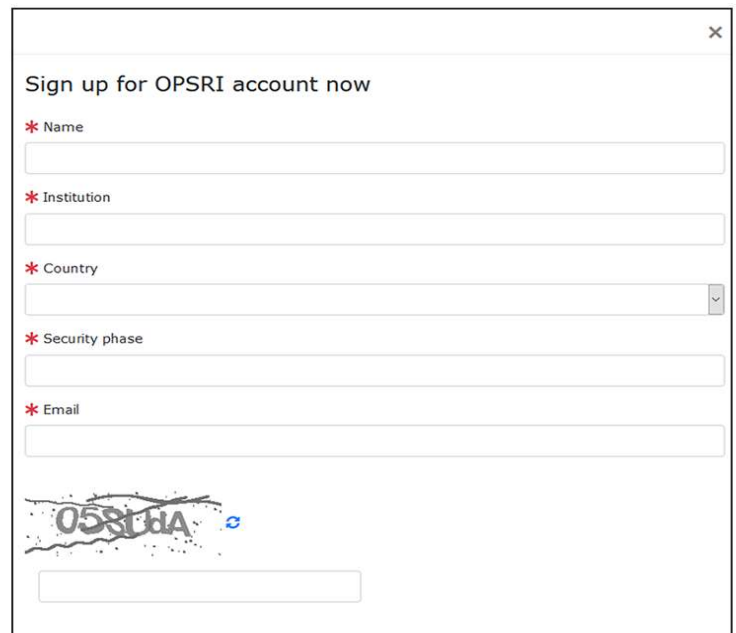
Not a Member? Register here!
Forgot your OPSRI ID or password!

Malaysian Palm Oil Board (MPOB)
No. 6, Persiaran Institusi, Bandar Baru Bangi,
43000 Kajang, Selangor, Malaysia.
Tel: +603 8769 4400

© 2019 MPOB

Figure 1: OPSRI Login page

- Please key in email address and password and click “Submit” button for login.
- For a new user, click on the “Not a Member? Register here!” link. The user registration form will be displayed. Please fill in all the information needed (Figure 2).



Sign up for OPSRI account now

* Name

* Institution

* Country

* Security phase

* Email

1850

Figure 2: OPSRI registration form

OPSRI Home page

B. Quick Links

Home Sitemap Change password Logout

Search

Oil Palm SSR Resource Interface (OPSRI)

A SSR data management and automated web-based pipeline, Oil Palm SSR Resource Interface (OPSRI) can mine SSR from a large collection of oil palm sequences. The graphical user interface is also integrated with the primer design function, facilitating the development of SSR markers in a simple process flow. The SSR markers are effective tools in assisting breeding efforts towards developing new and improved palms with desired traits.

**** Note:** Please note that the performance of the pipeline and results depend on the data-sets and parameters used, hardware and system resources available and the number of concurrent users. Kindly wait patiently for your results. Thank you.

- File Manager
- Analysis tools
- Analysis pipeline
- SSR database
- Publication
- Contact us

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

Figure 3: OPSRI Homepage

A. Navigation Menu

1. File Manager

a) Upload your sequence

Home Sitemap Change password Logout Search

Oil Palm SSR Resource Interface (OPSRI)

File manager

Please hover and click on the filename to view the output results

No.	File Name	Analysis status
1	opsri_example.fasta	Raw sequence

Paste sequence

Paste your sequence in fasta format OR upload your sequence

Only 1 sequence is allowed per file

File name (File name should not contain spaces)

Upload your sequence here

Select sequence type:

☒ DNA

☐ RNA

File input

No file selected.

Please note that only **five fasta files** per user are allowed at a time. Each file contains one sequence.

Figure 4: File manager page

b) View uploaded sequence

Home Sitemap Change password Logout

Search

Oil Palm SSR Resource Interface (OPSRI)

File manager

Please hover and click on the filename to view the output results

No.	File Name	Analysis status
1	opsri_example.fasta <small>Created: 24/06/2019</small>	Raw sequence

Paste your sequence in fasta format OR upload your sequence

Only 1 sequence is allowed per file

```
>EoGB_FJ744543 delta-12 fatty acid desaturase (FAD2) mRNA, p
GGAGGGGGAAGCGGGTGCGGGAGACTAAATATATATTATTTTATAAGTTTGGTCTCT
TCCACCTCTCTGTGATTACGCGGCCATTTTTTCTCAGCGATATCAATAAGAGGCG
AAAGGCGATGGGCGCGGGCGGACGAATGACGGCGAAAGAGCGGGAGGACGTCGGCGAC
CCGACGAGGACCCCTCCCTCCGGCGGTCGCCGACGGAGAAACCCCAATTCACATTGAGC
AGGCCATCCCCCGCACTGCTTCCAGCGGTCCGCTCCGCTCTCTCTACGTCGTCC
CATCTCCGCGCCCTCTTCTACGTCGCCCTCGCCGTCATCCGACCCCTCTCCCGCCGCT
GCCGCTGGCCTCTCTACTGGGCCGCCAGGGCTGCATCTTACCGGCGCTGGGTCATC
GCGGCCACCAACGCTTCTCCGACTCCTCCCTCTCGACGACCTGTCGCGCTCGCTCC
CCTGTCCTTCTCTCTGGAAGATCAGTCACCGCCGCCCACTCCAACACCGGCTC
GACGAGGCTCTGTCGCCAAGCGCAAGTCGCCCTCCCTTGGTACTCCAGGTACATCAAC
GCCGCTCTCACCTTGGCGGTGACCTGATCCTCGGGTGGCCCTGTACCTCGCCTTCA
CCGTCGATATCCCGGTTCCGCTGCCACTACGACCCCTACGGCCGATCTACTCGGACCG
CAGATCTTCATCTCCGACGCGGGCTTCTCGCGGCTTCTACGCGCTGTGCCGATCGC
```


Clear

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

Figure 5: File manager page

c) View analysis results

Home Sitemap Change password Logout
Search



Oil Palm SSR Resource Interface (OPSRI)

File manager

Please hover and click on the filename to view the output results

No.	File Name	Analysis status
1	opsri_example.fasta	<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;"> <input checked="" type="checkbox"/> ORF <input checked="" type="checkbox"/> SSR <input checked="" type="checkbox"/> BLAST 2 hits </div> <div style="margin-left: 10px; color: red;"> </div> </div>

Translated ORFs for 213_3_11897395_3_37651_027.ab1
length = 755 bp.
minimum ORF size kept = 102 bases.

>ORF rf +2, from 17 to 139, 123 bases.
MKHLEMKLLMHGRDLDPITTSDDRLISLTSFTNLLRSIYS*

>ORF rf +2, from 239 to 493, 255 bases.
MIFFMNNIQVLYRTVKLGSGYIRSDRLIYIYIYIYIYIYIYPFEVVSARSEVEEADLD

>ORF rf -1, from 282 to 536, 255 bases.
MYLSMTSSTSNIKTRFLYLESYQDDLGSRHGFLNDLGSYQDQLLLPRILPRQPQKDIYI

Result MISA analysis
Filename: opsri_example.fasta

1 records created.
Primer modeling was successful for 1 sequences.
Primer modeling failed for 0 sequences.

Misa result

ID	SSR nr.	SSR type	SSR	size	start	end
213_3_11897395_3_37651_027.ab1	1	p2	(AT)24	48	320	367

RESULTS OF MICROSATELLITE SEARCH

Total number of sequences examined: 1
Total size of examined sequences (bp): 755
Total number of identified SSRs: 1
Number of SSR containing sequences: 1
Number of sequences containing more than 1 SSR: 0
Number of SSRs present in compound formation: 0

Distribution to different repeat type classes

Unit size Number of SSRs
2 1

Download summary
☐ Download summary
☐ Download tabular result format
☐ Download plot file
☐ Download region file
☐ Download statistics file

File manager

Please hover and click on the filename to view the output results

No.	File Name	Analysis status
1	opsri_example.fasta	<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;"> <input checked="" type="checkbox"/> ORF <input checked="" type="checkbox"/> SSR <input checked="" type="checkbox"/> BLAST 2 hits </div> <div style="margin-left: 10px; color: red;"> </div> </div>

Result BLAST analysis
Filename: opsri_example.fasta
Database: Public SSR database (last update: Mar, 2019)

Query	Subject	%id	Length	mismatches	Gap opening	Query start	Query end	Subject start	Subject end	E value	Bit score
213_3_11897395_3_37651_027.ab1	sMg00001_R	100.000	22	0	0	426	447	22	1	3.18e-06	41.7
213_3_11897395_3_37651_027.ab1	sMg00001_F	100.000	22	0	0	223	244	1	22	3.18e-06	41.7

[Download tabular format result](#)

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

Figure 6: File manager page

2. Analysis tools

Provides a stand alone analysis mode by selecting one of the programs:-

- Find open reading frames (ORF)
- Find Simple Sequence Repeat (SSR)
- Find homology sequence

*Please upload FASTA sequence at the File Manager Module and select your file

Home Sitemap Change password Logout Login as Mohd Amin Ab Halim Search

Oil Palm SSR Resource Interface (OPSRI)

MPOB

Open Reading Frame Search

This tool helps find open reading frames (ORF) in your DNA sequence.

Select your file

opsri_example.fasta

START ORF

Open result file

Simple Sequence Repeat Search

The integrated MISA and Primer3 program facilitate the identification of Simple sequence repeat (SSR) and design of flanking primers.

Select your file

opsri_example.fasta

START SSR

Open result file

Basic Local Alignment Search Tool (BLAST+)

Similarity search against SSR database to identify useful SSR markers

Select your file

opsri_example.fasta

START BLAST

Open result file

**** Note:** Please note that the pipeline performance and results depend on the data-set and parameters, host hardware, system and bioinformatics software, the number of concurrent users and etc. so kindly be patient in waiting to receive your results. Work is ongoing to upgrade hardware, software and etc. Thank you.

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

Figure 7: Interface for the user to choose the program of choice

3. Analysis pipeline

Integrated analysis pipeline system with:-

- i. Find ORF
- ii. MISA
- iii. Primer3
- iv. BLAST

Home Sitemap Change password Logout Login as Mohd Amin Ab Halim

Search

Oil Palm SSR Resource Interface (OPSRI)

ANALYSIS PIPELINE

This tool will help you quickly find open reading frames (ORF) and SSR in your DNA sequence, automatically design flanking primers and perform similarity search. Users need to upload a new file to start the pipeline.

Select your file here.

#	File name	File type	Create date	Analysis
1	opsri_example.fasta	DNA	04-07-2019	Start the pipeline

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

Figure 8: Analysis pipeline page

4. SSR database

Explore a comprehensive collection of oil palm SSR primers. SSR primer pairs that have been tested and found to be polymorphic can be identified using this module.

Oil Palm SSR Resource Interface (OPSRI)

MPOB SSR markers database

Search by:

Please choose your search method

Explore SSR database

Show 10 entries

Search:

No.	Library	Marker name	Motif	Study	Date
1557	Pisifera V5 Assembly	sPSc00523	(AC)6	zinc finger protein MAGPIE-like	
1285	Pisifera V5 Assembly	sPSc00335	(CT)10	WR11 TF	June-13
1553	Pisifera V5 Assembly	sPSc00519	(GA)8	very long chain fatty acid condensing enzyme CUT1/ 3-ketoacyl-CoA synthase (KCS1, 6)	
1542	Pisifera V5 Assembly	sPSc00508	(A)13	tubulin beta chain genes (Tub1, 4, 6, 7)	
1548	Pisifera V5 Assembly	sPSc00514	(AG)9	trehalose-6-phosphate synthase (TPS)	
1422	Gene Thresher database	sMg00325	(T)10	Transcriptional Factor for height	June-13
1400	Gene Thresher database	sMg00322	(GA)9	Transcriptional Factor for height	June-13
1398	Gene Thresher database	sMg00320	(T)11	Transcriptional Factor for height	June-13
1396	Gene Thresher database	sMg00318	(GCA)5	Transcriptional Factor for height	June-13
1363	Gene Thresher database	sMg00285	(GA)7	Transcriptional Factor for height	June-13

Showing 1 to 10 of 1,714 entries

Previous 1 2 3 4 5 ... 172 Next

Search by:-

- i. Marker name - Fill in marker name
e.g : sMg00026
- ii. SSR type - Choose SSR type at the drop down menu
e.g: p3
- iii. Primer sequence - Fill in primer sequence (max 27 char)
e.g: CCCGAATTAAGCCTGATGAA
- iv. Screening result - Fill in marker name
e.g: sMg00200
- v. Genotyped result - Fill in marker name
e.g: sMg00200

5. Publication

List of publications contribute to the public data in the SSR database

The screenshot displays the 'Oil Palm SSR Resource Interface (OPSRI)' website. The header includes navigation links: Home, Sitemap, Change password, Logout, and Login as Mohd Amin Ab Halim. A search bar is located in the top right corner. The main title 'Oil Palm SSR Resource Interface (OPSRI)' is prominently displayed. Below the title, the 'Publications' section is highlighted, stating: 'This section contains a collection of oil palm related SSR publications used in OPSRI.' A sidebar on the left contains icons for various functions. The main content area lists six publications in a grid format, each with a thumbnail image of the article's first page and a brief summary.

Publications
This section contains a collection of oil palm related SSR publications used in OPSRI.

Fine-mapping and cross-validation of QTLs linked to fatty acid composition in multiple interspecific crosses of oil palm
BMC Genomics (2016) 17:289
Ngoot-Chin Ting, Zulkifli Yaakub, Katialisa Kamaruddin, Sean Mayes, Festo Massawe, Ravigadevi Sambanthamurthi, Johannes Jansen, Eng-Ti Leslie Low, Maizura Ithnin, Ahmad Kushairi, Xavier Arulandoo, Rozana Rosli, Kuang-Lim Chan, Nadzirah Amiruddin, Kandha Sriharan, Chin Ching Lim, Rajanaidu Nookiah, Mohd Din Amiruddin and Rajinder Singh

QTLs for oil yield components in an elite oil palm (*Elaeis guineensis*) cross
Euphytica (2016) 212(3):399-425
Tzer-Ying Seng, Enrique Ritter, Siti Hawa Mohamed Saad, Ling-Jiun Leao, Rajinder Singh, Faridah Qamaruz Zaman, Soon-Guan Tan, Sharifah Shahruil Rabbiah Syed Alwee and Vengeta Rao

Identification of QTLs associated with callogenesis and embryogenesis in oil palm using genetic linkage maps improved with SSR markers
PLoS ONE (2013) 8(1):e53076
Ngoot-Chin Ting, Johannes Jansen, Jayanthi Nagappan, Zamzuri Ishak, Cheuk-Weng Chin, Soon-Guan Tan, Suan-Choo Cheah, Rajinder Singh

***Elaeis oleifera* Genomic-SSR Markers: Exploitation in Oil Palm Germplasm Diversity and Cross-Amplification in Arecaceae**
Int J Mol Sci (2012) 13(4):4069-4088
Noorhariza Mohd Zaki, Rajinder Singh, Rozana Rosli and Ismanizan Ismail

Development and Characterization of *Elaeis oleifera* Microsatellite Markers
Sains Malaysiana (2010) 39(6):909-912
Noorhariza Mohd Zaki, Ismanizan Ismail, Rozana Rosli, Ngoot-Chin Ting and Rajinder Singh

Exploiting an oil palm EST database for the development of gene-derived SSR markers and their exploitation for assessment of genetic diversity
Biologia (2008) 63(2):227-235
Rajinder Singh, Noorhariza Mohd Zaki, Ngoot-Chin Ting, Rozana Rosli, Soon-Guan Tan, Eng-Ti Leslie Low, Maizura Ithnin and Suan-Choo Cheah

Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. © 2019 MPOB

6. Contact us

Fast communication method to interact with MPOB

The screenshot shows the 'Oil Palm SSR Resource Interface (OPSRI)' website. The header is red with navigation links: Home, Sitemap, Change password, Logout, and Login as Mohd Amin Ab Halim. A search bar is on the right. The main banner features a palm tree image and the text 'Oil Palm SSR Resource Interface (OPSRI)' with the MPOB logo. Below the banner, a sidebar on the left contains icons for home, search, help, and other functions. The main content area has a heading 'Show your appreciation to the research community in MPOB' and a text box labeled 'Place your comments here.' with a 'Send' button. At the bottom, there is a 'Reviews' section with a scroll bar. The footer contains copyright information for the Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia, and the contact number +603 8769 4400.

Home Sitemap Change password Logout Login as Mohd Amin Ab Halim Search

Oil Palm SSR Resource Interface (OPSRI)

Show your appreciation to the research community in MPOB

Place your comments here.

Send

Reviews

© Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. Copyright © MPOB 2019

Figure 11: Contact us page

1. Home

Redirect to the web homepage

2. Sitemap

Redirect to the sitemap page

The screenshot displays the 'Oil Palm SSR Resource Interface (OPSRI)' website. The top navigation bar is red and contains links for 'Home', 'Sitemap', 'Change password', 'Logout', and 'Login as Mohd Amin Ab Halim'. A search bar is located on the right. The main header features a background image of an oil palm tree and the text 'Oil Palm SSR Resource Interface (OPSRI)' with the MPOB logo. The 'Sitemap' section is highlighted in blue. It lists the following categories and their sub-items:

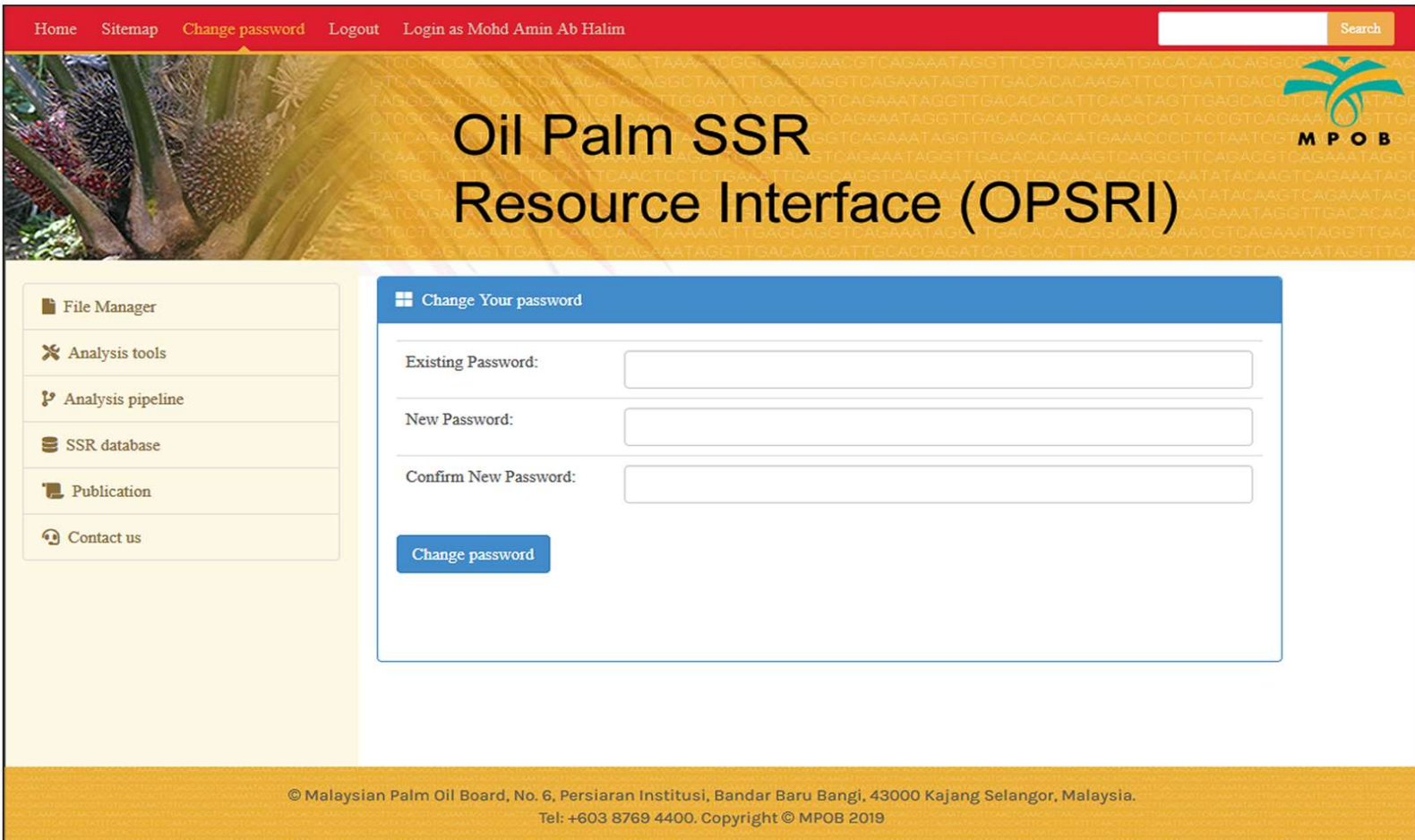
- File Manager**
- Analysis tools**
 - Find ORF
 - Microsatellite search and Primer design
 - Blast analysis
- Analysis pipeline**
 - Find ORF, Blast, Microsatellite and primer design
- SSR database**
 - SSR marker sources
- Publication**
- Contact us**

The footer contains the copyright information: '© Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia. Tel: +603 8769 4400. Copyright © MPOB 2019'.

Figure 12: Sitemap page

3. Change password

Redirect to the change password page



The screenshot displays the 'Change Your password' page of the Oil Palm SSR Resource Interface (OPSRI). The page features a red navigation bar at the top with links for Home, Sitemap, Change password, Logout, and Login as Mohd Amin Ab Halim. A search bar is located on the right side of the navigation bar. The main header area has a background image of an oil palm tree and the text 'Oil Palm SSR Resource Interface (OPSRI)' along with the MPOB logo. On the left side, there is a sidebar menu with links to File Manager, Analysis tools, Analysis pipeline, SSR database, Publication, and Contact us. The central content area contains a form titled 'Change Your password' with three input fields: 'Existing Password:', 'New Password:', and 'Confirm New Password:'. A blue 'Change password' button is positioned below the input fields. The footer of the page contains copyright information for the Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia, and the contact number +603 8769 4400, with a copyright notice for MPOB 2019.

Home Sitemap Change password Logout Login as Mohd Amin Ab Halim Search

Oil Palm SSR
Resource Interface (OPSRI)

MPOB

File Manager
Analysis tools
Analysis pipeline
SSR database
Publication
Contact us

Change Your password

Existing Password:

New Password:

Confirm New Password:

Change password

© Malaysian Palm Oil Board, No. 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang Selangor, Malaysia.
Tel: +603 8769 4400. Copyright © MPOB 2019

Figure 13: Change password page

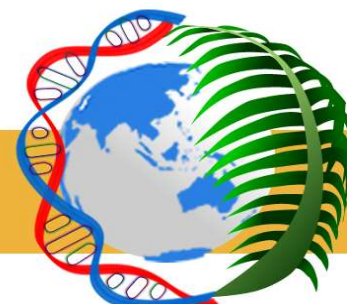
4. Logout

Exit the website and go to Login page

Related web tools



<http://genomsawit.mpob.gov.my>



GENOMSAWIT



<http://gbrowse.mpob.gov.my>



The Oil palm gene Database
PALMXplore
<http://palmxplore.mpob.gov.my>

COMPETITIVE EDGE THROUGH BIOTECHNOLOGY

OPSRI is a web-based pipeline system that is integrated with several useful tools, namely MISA, Primer3 and BLAST for SSR, primer design and annotation. Three modules (Analysis, Database and Query) are provided in a graphical user interface to facilitate the task and assist in data archiving. In addition, other useful information such as SSR type, SSR motif, primer information, and marker profile in specific populations is also captured.

Bioinformatics Unit

ADVANCED
BIOTECHNOLOGY
AND BREEDING CENTRE