

0.7

DinoSwap Process Quality Review

Score 35%

Overview

This is a [DinoSwap](#) Process Quality Review completed on August 10th 2021. It was performed using the Process Review process (version 0.7.3) and is documented [here](#). The review was performed by Nic of DeFiSafety. Check out our [Telegram](#).

The final score of the review is **35%**, a **FAIL**. The breakdown of the scoring is in [Scoring Appendix](#). For our purposes, a pass is **70%**.

Summary of the Process

Very simply, the review looks for the following declarations from the developer's site. With these declarations, it is reasonable to trust the smart contracts.

- **Here are my smart contracts on the blockchain**
- **Here is the documentation that explains what my smart contracts do**
- **Here are the tests I ran to verify my smart contract**
- **Here are the audit(s) performed on my code by third party experts**
- **Here are the admin controls and strategies**

Disclaimer

This report is for informational purposes only and does not constitute investment advice of any kind, nor does it constitute an offer to provide investment advisory or other services. Nothing in this report shall be considered a solicitation or offer to buy or sell any security, token, future, option or other financial instrument or to offer or provide any investment advice or service to any person in any jurisdiction. Nothing contained in this report constitutes investment advice or offers any opinion with respect to the suitability of any security, and the views expressed in this report should not be taken as advice to buy, sell or hold any security. The information in this report should not be relied upon for the purpose of investing. In preparing the information contained in this report, we have not taken into account the investment needs, objectives and financial circumstances of any particular investor. This information has no regard to the specific investment objectives, financial situation and particular needs of any specific recipient of this information and investments discussed may not be suitable for all investors.

Any views expressed in this report by us were prepared based upon the information available to us at the time such views were written. The views expressed within this report are limited to DeFiSafety and the author and do not reflect those of any additional or third party and are strictly based upon DeFiSafety, its authors, interpretations and evaluation of relevant data. Changed or additional information could cause such

views to change. All information is subject to possible correction. Information may quickly become unreliable for various reasons, including changes in market conditions or economic circumstances.

This completed report is copyright (c) DeFiSafety 2021. Permission is given to copy in whole, retaining this copyright label.

Chain

This section indicates the blockchain used by this protocol.

✓ **Chain:** Polygon

Guidance:

Ethereum
Binance Smart Chain
Polygon
Avalanche
Terra

Code and Team

This section looks at the code deployed on the Mainnet that gets reviewed and its corresponding software repository. The document explaining these questions is [here](#). This review will answer the following questions:

- 1) Are the executing code addresses readily available? (%)
- 2) Is the code actively being used? (%)
- 3) Is there a public software repository? (Y/N)
- 4) Is there a development history visible? (%)
- 5) Is the team public (not anonymous)? (Y/N)

1) Are the executing code addresses readily available? (%)

i **Answer:** 70%

They are available at website <https://docs.dinoswap.exchange/yield-farming-jurassic-farms/farms#master-chef-contract>, as indicated in the [Appendix](#). Also the address for TARPIT.sol is no available. For this reason the score is dropped to 40%

Note: Since DinoSwap does not have an explicit "Smart Contract Addresses" section, finding the addresses takes a bit of searching with the search function of their documentation.

Guidance:

100%	Clearly labelled and on website, docs or repo, quick to find
70%	Clearly labelled and on website, docs or repo but takes a bit of looking
40%	Addresses in mainnet.json, in discord or sub graph, etc
20%	Address found but labeling not clear or easy to find
0%	Executing addresses could not be found

How to improve this score:

Make the Ethereum addresses of the smart contract utilized by your application available on either your website or your GitHub (in the README for instance). Ensure the addresses is up to date. This is a very important question towards the final score.

2) Is the code actively being used? (%)

 **Answer:** 100%

Activity is over 80,000 transactions a day on contract *FossilFarms.sol*, as indicated in the [Appendix](#).

Guidance:

100%	More than 10 transactions a day
70%	More than 10 transactions a week
40%	More than 10 transactions a month
10%	Less than 10 transactions a month
0%	No activity

3) Is there a public software repository? (Y/N)

 **Answer:** Yes

GitHub: <https://github.com/DinoSwap/fossil-farms-contract>.

Note: Not sure if this constitutes a public repository since they only have 2 files in each individual repository.

Is there a public software repository with the code at a minimum, but also normally test and scripts. Even if the repository was created just to hold the files and has just 1 transaction, it gets a **"Yes"**. For teams with private repositories, this answer is **"No"**.

4) Is there a development history visible? (%)

 **Answer:** 0%

With 2 commits and 1 branch, this is an unhealthy software repository.

This metric checks if the software repository demonstrates a strong steady history. This is normally demonstrated by commits, branches and releases in a software repository. A healthy history demonstrates a history of more than a month (at a minimum).

Guidance:

100%	Any one of 100+ commits, 10+branches
70%	Any one of 70+ commits, 7+branches
50%	Any one of 50+ commits, 5+branches
30%	Any one of 30+ commits, 3+branches
0%	Less than 2 branches or less than 30 commits

How to improve this score:

Continue to test and perform other verification activities after deployment, including routine maintenance updating to new releases of testing and deployment tools. A public development history indicates clearly to the public the level of continued investment and activity by the developers on the application. This gives a level of security and faith in the application.

5) Is the team public (not anonymous)? (Y/N)

 **Answer:** No

Location: No public team info was found.

For a **"Yes"** in this question, the real names of some team members must be public on the website or other documentation (LinkedIn, etc). If the team is anonymous, then this question is a **"No"**.


Documentation

This section looks at the software documentation. The document explaining these questions is [here](#).

Required questions are;

- 6) Is there a whitepaper? (Y/N)
- 7) Are the basic software functions documented? (Y/N)
- 8) Does the software function documentation fully (100%) cover the deployed contracts? (%)
- 9) Are there sufficiently detailed comments for all functions within the deployed contract code (%)
- 10) Is it possible to trace from software documentation to the implementation in code (%)

6) Is there a whitepaper? (Y/N)

 **Answer:** Yes

Location: <https://docs.dinoswap.exchange/>.

7) Are the basic software functions documented? (Y/N)

 **Answer:** No

There are no software functions documented in the DinoSwap documentation.

How to improve this score:

Write the document based on the deployed code. For guidance, refer to the [SecurEth System Description Document](#).

8) Does the software function documentation fully (100%) cover the deployed contracts? (%)

 **Answer:** 0%

There are no software functions documented in the DinoSwap documentation.

Guidance:

100% All contracts and functions documented
80% Only the major functions documented
79-1% Estimate of the level of software documentation
0% No software documentation

How to improve this score:

This score can be improved by adding content to the software functions document such that it comprehensively covers the requirements. For guidance, refer to the [SecurEth System Description Document](#). Using tools that aid traceability detection will help.

9) Are there sufficiently detailed comments for all functions within the deployed contract code (%)

 **Answer:** 100%

Code examples are in the [Appendix](#). As per the [SLOC](#), there is 136% commenting to code (CtC).

The Comments to Code (CtC) ratio is the primary metric for this score.

Guidance:

100%	CtC > 100	Useful comments consistently on all code
90-70%	CtC > 70	Useful comment on most code
60-20%	CtC > 20	Some useful commenting
0%	CtC < 20	No useful commenting

10) Is it possible to trace from software documentation to the implementation in code (%)

 **Answer: 0%**

There are no software functions documented in the DinoSwap documentation, and therefore no traceability towards their source code.

Guidance:

100%	Clear explicit traceability between code and documentation at a requirement level for all code
60%	Clear association between code and documents via non explicit traceability
40%	Documentation lists all the functions and describes their functions
0%	No connection between documentation and code

How to improve this score:

This score can improve by adding traceability from documentation to code such that it is clear where each outlined function is coded in the source code. For reference, check the SecurEth guidelines on [traceability](#).

Testing

This section looks at the software testing available. It is explained in this [document](#). This section answers the following questions;

- 11) Full test suite (Covers all the deployed code) (%)
- 12) Code coverage (Covers all the deployed lines of code, or explains misses) (%)
- 13) Scripts and instructions to run the tests (Y/N)
- 14) Report of the results (%)
- 15) Formal Verification test done (%)
- 16) Stress Testing environment (%)

11) Is there a Full test suite? (%)

 **Answer: 0%**

There is no testing suite inside of the DinoSwap GitHub repository. Therefore, we cannot evaluate the TtC.

Guidance:

100%	TtC > 120% Both unit and system test visible
80%	TtC > 80% Both unit and system test visible
40%	TtC < 80% Some tests visible
0%	No tests obvious

How to improve this score:

This score can improved by adding tests to fully cover the code. Document what is covered by traceability or test results in the software repository.

12) Code coverage (Covers all the deployed lines of code, or explains misses) (%)

 **Answer: 0%**

There is no evidence of DinoSwap code coverage in any of their documentation, nor in their Certik audit report.

Guidance:

100%	Documented full coverage
99-51%	Value of test coverage from documented results
50%	No indication of code coverage but clearly there is a reasonably complete set of tests
30%	Some tests evident but not complete
0%	No test for coverage seen

How to improve this score:

This score can improved by adding tests that achieve full code coverage. A clear report and scripts in the software repository will guarantee a high score.

13) Scripts and instructions to run the tests (Y/N)

 **Answer: 0%**

As there is no testing suite, there is also a lack of scripts or instructions to run tests.

How to improve this score:

Add the scripts to the repository and ensure they work. Ask an outsider to create the environment and run the tests. Improve the scripts and docs based on their feedback.

14) Report of the results (%)

 **Answer: 0%**

There are no testing result reports in the DinoSwap GitHub repository.

Guidance:

100% Detailed test report as described below

70% GitHub code coverage report visible

0% No test report evident

How to improve this score

Add a report with the results. The test scripts should generate the report or elements of it.

15) Formal Verification test done (%)

 **Answer: 0%**

There is no evidence of a DinoSwap Formal Verification test in their documentation or in further web research.

16) Stress Testing environment (%)

 **Answer: 0%**

There is no evidence of DinoSwap's testnet smart contract usage in any of their documentation.

Security

This section looks at the 3rd party software audits done. It is explained in this [document](#). This section answers the following questions;

17) Did 3rd Party audits take place? (%)

18) Is the bounty value acceptably high?

17) Did 3rd Party audits take place? (%)

 **Answer: 90%**

Certik has published a DinoSwap audit report of their staking/farming functions on July 7th 2021.

DinoSwap launched their staking pools on July 16th 2021

Note: Most of the fix recommendations were successfully implemented by the DinoSwap team.

Guidance:

- 100% Multiple Audits performed before deployment and results public and implemented or not required
- 90% Single audit performed before deployment and results public and implemented or not required
- 70% Audit(s) performed after deployment and no changes required. Audit report is public
- 50% Audit(s) performed after deployment and changes needed but not implemented
- 20% No audit performed
- 0% Audit Performed after deployment, existence is public, report is not public and no improvements deployed OR smart contract address' not found, (where question 1 is 0%)

Deduct 25% if code is in a private repo and no note from auditors that audit is applicable to deployed code

18) Is the bounty value acceptably high (%)

 **Answer:** 0%

No evidence of a DinoSwap Bug Bounty program was found in their documentation or in further web searches.

Guidance:

- 100% Bounty is 10% TVL or at least \$1M AND active program (see below)
- 90% Bounty is 5% TVL or at least 500k AND active program
- 80% Bounty is 5% TVL or at least 500k
- 70% Bounty is 100k or over AND active program
- 60% Bounty is 100k or over
- 50% Bounty is 50k or over AND active program
- 40% Bounty is 50k or over
- 20% Bug bounty program bounty is less than 50k
- 0% No bug bounty program offered

An active program means that a third party (such as Immunefi) is actively driving hackers to the site. An inactive program would be static mentions on the docs.

Access Controls

This section covers the documentation of special access controls for a DeFi protocol. The admin access controls are the contracts that allow updating contracts or coefficients in the protocol. Since these contracts can allow the protocol admins to "change the rules", complete disclosure of capabilities is vital for user's transparency. It is explained in this [document](#). The questions this section asks are as follow;

- 19) Can a user clearly and quickly find the status of the admin controls?
- 20) Is the information clear and complete?
- 21) Is the information in non-technical terms that pertain to the investments?
- 22) Is there Pause Control documentation including records of tests?

19) Can a user clearly and quickly find the status of the access controls (%)

 **Answer:** 0%

DinoSwap currently does not have any official governance or access control documentation. However, according to their recent Medium articles, this will be a upcoming addition to their ecosystem.

Guidance:

- 100% Clearly labelled and on website, docs or repo, quick to find
- 70% Clearly labelled and on website, docs or repo but takes a bit of looking
- 40% Access control docs in multiple places and not well labelled
- 20% Access control docs in multiple places and not labelled
- 0% Admin Control information could not be found

20) Is the information clear and complete (%)

 **Answer:** 0%

DinoSwap currently does not have any official governance or access control documentation. However, according to their recent Medium articles, this will be a upcoming addition to their ecosystem.

Guidance:

All the contracts are immutable -- 100% OR

- a) All contracts are clearly labelled as upgradeable (or not) -- 30% AND
- b) The type of ownership is clearly indicated (OnlyOwner / MultiSig / Defined Roles) -- 30% AND
- c) The capabilities for change in the contracts are described -- 30%

How to improve this score:

Create a document that covers the items described above. An [example](#) is enclosed.

21) Is the information in non-technical terms that pertain to the investments (%)

 **Answer:** 0%

DinoSwap currently does not have any official governance or access control documentation. However, according to their recent Medium articles, this will be a upcoming addition to their ecosystem.

Guidance:

- 100% All the contracts are immutable
- 90% Description relates to investments safety and updates in clear, complete non-software I language
- 30% Description all in software specific language
- 0% No admin control information could not be found

How to improve this score:

Create a document that covers the items described above in plain language that investors can understand. An [example](#) is enclosed.

22) Is there Pause Control documentation including records of tests (%)

 **Answer:** 0%

There is no evidence of a Pause Control or similar function in the DinoSwap documentation.

Guidance:

- 100% All the contracts are immutable or no pause control needed and this is explained OR
- 100% Pause control(s) are clearly documented and there is records of at least one test within 3 months
- 80% Pause control(s) explained clearly but no evidence of regular tests
- 40% Pause controls mentioned with no detail on capability or tests
- 0% Pause control not documented or explained

How to improve this score:

Create a document that covers the items described above in plain language that investors can understand. An [example](#) is enclosed.

Appendices

Author Details

The author of this review is Rex of DeFi Safety.

Email : rex@defisafety.com Twitter : @defisafety

I started with Ethereum just before the DAO and that was a wonderful education. It showed the importance of code quality. The second Parity hack also showed the importance of good process. Here my aviation background offers some value. Aerospace knows how to make reliable code using quality processes.

I was coaxed to go to EthDenver 2018 and there I started [SecuEth.org](#) with Bryant and Roman. We created guidelines on good processes for blockchain code development. We got [EthFoundation funding](#) to assist in their development.

Process Quality Reviews are an extension of the SecurEth guidelines that will further increase the quality processes in Solidity and Vyper development.

DeFiSafety is my full time gig and we are working on funding vehicles for a permanent staff.

Scoring Appendix

	Total	DinoSwap	
PQ Audit Scoring Matrix (v0.7)	Points	Answer	Points
Total	260		91
Code and Team			35%
1) Are the executing code addresses readily available? (%)	20	40%	8
2) Is the code actively being used? (%)	5	100%	5
3) Is there a public software repository? (Y/N)	5	Y	5
4) Is there a development history visible? (%)	5	0%	0
5) Is the team public (not anonymous)? (Y/N)	15	n	0
Code Documentation			
6) Is there a whitepaper? (Y/N)	5	Y	5
7) Are the basic software functions documented? (Y/N)	10	n	0
8) Does the software function documentation fully (100%) cover the deployed contracts? (%)	15	0%	0
9) Are there sufficiently detailed comments for all functions within the deployed contract code? (%)	5	100%	5
10) Is it possible to trace from software documentation to the implementation in code (%)	10	0%	0
Testing			
11) Full test suite (Covers all the deployed code) (%)	20	0%	0
12) Code coverage (Covers all the deployed lines of code, or explains misses) (%)	5	0%	0
13) Scripts and instructions to run the tests? (Y/N)	5	0	0
14) Report of the results (%)	10	0%	0
15) Formal Verification test done (%)	5	0%	0
16) Stress Testing environment (%)	5	0%	0
Security			
17) Did 3rd Party audits take place? (%)	70	90%	63
18) Is the bug bounty acceptable high? (%)	10	0%	0
Access Controls			
19) Can a user clearly and quickly find the status of the admin controls	5	0%	0
20) Is the information clear and complete	10	0%	0
21) Is the information in non-technical terms	10	0%	0
22) Is there Pause Control documentation including records of tests	10	0%	0
Section Scoring			
Code and Team	50	36%	
Documentation	45	22%	
Testing	50	0%	

Security	80	79%	
Access Controls	35	0%	

Executing Code Appendix

Master Chef Contract

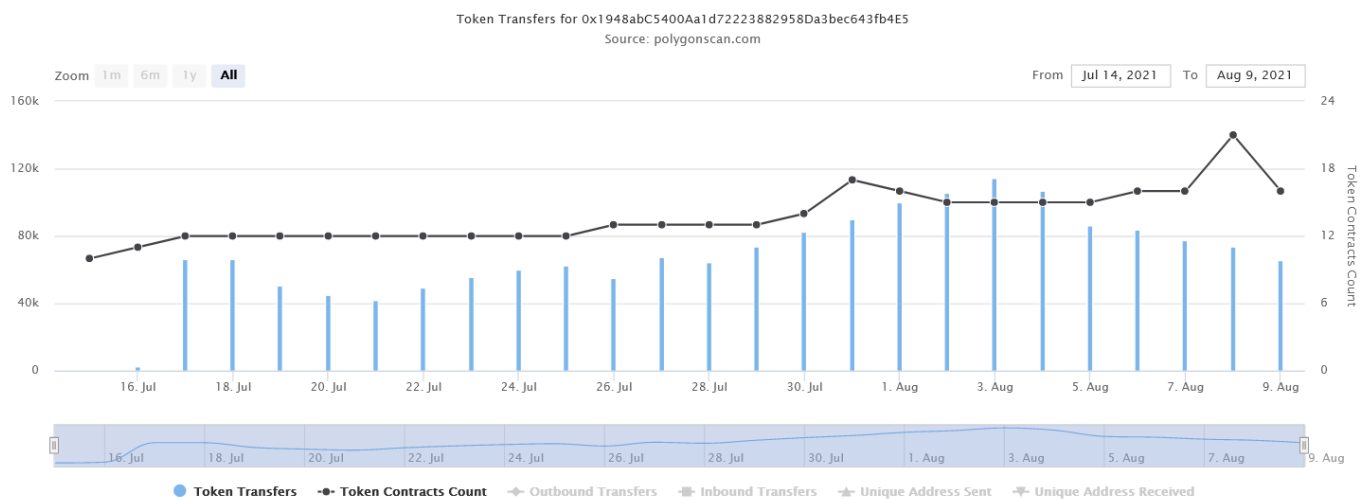
Contract Address: 0x1948abC5400Aa1d72223882958Da3bec643fb4E5

Link: <https://polygonscan.com/address/0x1948abC5400Aa1d72223882958Da3bec643fb4E5>

Code Used Appendix

Time Series: Address Token (ERC-20) Transfers

Wed 14, Jul 2021 - Sun 8, Aug 2021



Example Code Appendix

```

1 pragma solidity ^0.6.12;
2
3 contract FossilFarms is Ownable {
4
5     using SafeMath for uint256;
6     using SafeERC20 for IERC20;
7
8     struct UserInfo
9     {
10         uint256 amount;           // How many LP tokens the user has provided.
11         uint256 rewardDebt;       // Reward debt. See explanation below.
12     }
13
14     struct PoolInfo
15     {
16

```

```

16         IERC20 lpToken;                // Address of LP token contract.
17         uint256 allocPoint;            // How many allocation points assigned to this pool
18         uint256 lastRewardBlock;       // Last block number that DINO distribution occurred
19         uint256 accDinoPerShare;       // Accumulated DINO per share, times 1e12. See below
20     }
21
22     IERC20 public DINO;                // DINO token
23     PoolInfo[] public poolInfo;        // Info of each pool.
24     uint256 public dinoPerBlock;       // DINO tokens created per block.
25     uint256 public startBlock;         // The block number at which DINO distribution starts
26     uint256 public endBlock;           // The block number at which DINO distribution ends
27     uint256 public totalAllocPoint = 0; // Total allocation points. Must be the sum of all
28
29     mapping (uint256 => mapping (address => UserInfo)) public userInfo;    // Info of each
30
31     event Deposit(address indexed user, uint256 indexed pid, uint256 amount);
32     event Withdraw(address indexed user, uint256 indexed pid, uint256 amount);
33     event EmergencyWithdraw(address indexed user, uint256 indexed pid, uint256 amount);
34
35     constructor(IERC20 _DINO, uint256 _dinoPerBlock, uint256 _startBlock, uint256 _endBlock) {
36         DINO = _DINO;
37         dinoPerBlock = _dinoPerBlock;
38         startBlock = _startBlock;
39         endBlock = _endBlock;
40     }
41
42     /**
43      * @dev Adds a new lp to the pool. Can only be called by the owner. DO NOT add the same
44      * @param _allocPoint How many allocation points to assign to this pool.
45      * @param _lpToken Address of LP token contract.
46      * @param _withUpdate Whether to update all LP token contracts. Should be true if DINO
47      */
48     function add(uint256 _allocPoint, IERC20 _lpToken, bool _withUpdate) public onlyOwner {
49         if (_withUpdate) {
50             massUpdatePools();
51         }
52         uint256 lastRewardBlock = block.number > startBlock ? block.number : startBlock;
53         totalAllocPoint = totalAllocPoint.add(_allocPoint);
54         poolInfo.push(PoolInfo({
55             lpToken: _lpToken,
56             allocPoint: _allocPoint,
57             lastRewardBlock: lastRewardBlock,
58             accDinoPerShare: 0
59         }));
60     }
61
62     /**
63      * @dev Update the given pool's DINO allocation point. Can only be called by the owner
64      * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
65      * @param _allocPoint How many allocation points to assign to this pool.
66      * @param _withUpdate Whether to update all LP token contracts. Should be true if DINO
67      */
68     function set(uint256 _pid, uint256 _allocPoint, bool _withUpdate) public onlyOwner {

```

```

69         if (_withUpdate) {
70             massUpdatePools();
71         }
72         totalAllocPoint = totalAllocPoint.sub(poolInfo[_pid].allocPoint).add(_allocPoint);
73         poolInfo[_pid].allocPoint = _allocPoint;
74     }
75
76     /**
77      * @dev Return reward multiplier over the given _from to _to blocks based on block count
78      * @param _from First block.
79      * @param _to Last block.
80      * @return Number of blocks.
81     */
82     function getMultiplier(uint256 _from, uint256 _to) internal view returns (uint256) {
83         if (_to < endBlock) {
84             return _to.sub(_from);
85         } else if (_from >= endBlock) {
86             return 0;
87         } else {
88             return endBlock.sub(_from);
89         }
90     }
91
92     /**
93      * @dev View function to see pending DINO on frontend.
94      * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
95      * @param _user Address of a specific user.
96      * @return Pending DINO.
97     */
98     function pendingDino(uint256 _pid, address _user) external view returns (uint256) {
99         PoolInfo storage pool = poolInfo[_pid];
100         UserInfo storage user = userInfo[_pid][_user];
101         uint256 accDinoPerShare = pool.accDinoPerShare;
102         uint256 lpSupply = pool.lpToken.balanceOf(address(this));
103         if (block.number > pool.lastRewardBlock && lpSupply != 0) {
104             uint256 multiplier = getMultiplier(pool.lastRewardBlock, block.number);
105             uint256 dinoReward = multiplier.mul(dinoPerBlock).mul(pool.allocPoint).div(totalAllocPoint);
106             accDinoPerShare = accDinoPerShare.add(dinoReward.mul(1e12).div(lpSupply));
107         }
108         return user.amount.mul(accDinoPerShare).div(1e12).sub(user.rewardDebt);
109     }
110
111     /**
112      * @dev Update reward variables for all pools. Be careful of gas spending!
113     */
114     function massUpdatePools() public {
115         uint256 length = poolInfo.length;
116         for (uint256 pid = 0; pid < length; ++pid) {
117             updatePool(pid);
118         }
119     }
120
121     ...

```

```

121  /**
122
123     * @dev Update reward variables of the given pool to be up-to-date.
124     * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
125     */
126     function updatePool(uint256 _pid) public {
127         PoolInfo storage pool = poolInfo[_pid];
128         if (block.number <= pool.lastRewardBlock) {
129             return;
130         }
131         uint256 lpSupply = pool.lpToken.balanceOf(address(this));
132         if (lpSupply == 0) {
133             pool.lastRewardBlock = block.number;
134             return;
135         }
136         uint256 multiplier = getMultiplier(pool.lastRewardBlock, block.number);
137         uint256 dinoReward = multiplier.mul(dinoPerBlock).mul(pool.allocPoint).div(totalAllocPoint);
138         pool.accDinoPerShare = pool.accDinoPerShare.add(dinoReward.mul(1e12).div(lpSupply));
139         pool.lastRewardBlock = block.number;
140     }
141
142  /**
143     * @dev Deposit LP tokens to the Fossil Farm for DINO allocation.
144     * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
145     * @param _amount Amount of LP tokens to deposit.
146     */
147     function deposit(uint256 _pid, uint256 _amount) public {
148         PoolInfo storage pool = poolInfo[_pid];
149         UserInfo storage user = userInfo[_pid][msg.sender];
150         updatePool(_pid);
151         if (user.amount > 0) {
152             uint256 pending = user.amount.mul(pool.accDinoPerShare).div(1e12).sub(user.rewardDebt);
153             safeDinoTransfer(msg.sender, pending);
154         }
155         pool.lpToken.safeTransferFrom(address(msg.sender), address(this), _amount);
156         user.amount = user.amount.add(_amount);
157         user.rewardDebt = user.amount.mul(pool.accDinoPerShare).div(1e12);
158         emit Deposit(msg.sender, _pid, _amount);
159     }
160
161  /**
162     * @dev Withdraw LP tokens from the Fossil Farm.
163     * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
164     * @param _amount Amount of LP tokens to withdraw.
165     */
166     function withdraw(uint256 _pid, uint256 _amount) public {
167         PoolInfo storage pool = poolInfo[_pid];
168         UserInfo storage user = userInfo[_pid][msg.sender];
169         require(user.amount >= _amount, "Can't withdraw more token than previously deposited");
170         updatePool(_pid);
171         uint256 pending = user.amount.mul(pool.accDinoPerShare).div(1e12).sub(user.rewardDebt);
172         safeDinoTransfer(msg.sender, pending);
173         user.amount = user.amount.sub(_amount);
174         user.rewardDebt = user.amount.mul(pool.accDinoPerShare).div(1e12);

```



```

173         user.rewardDebt = user.amount.mul(pool.accrualRate).div(1e12);
174         pool.lpToken.safeTransfer(address(msg.sender), _amount);
175         emit Withdraw(msg.sender, _pid, _amount);
176     }
177
178     /**
179     * @dev Withdraw without caring about rewards. EMERGENCY ONLY.
180     * @param _pid ID of a specific LP token pool. See index of PoolInfo[].
181     */
182     function emergencyWithdraw(uint256 _pid) public {
183         PoolInfo storage pool = poolInfo[_pid];
184         UserInfo storage user = userInfo[_pid][msg.sender];
185         pool.lpToken.safeTransfer(address(msg.sender), user.amount);
186         emit EmergencyWithdraw(msg.sender, _pid, user.amount);
187         user.amount = 0;
188         user.rewardDebt = 0;
189     }
190
191     /**
192     * @dev Safe transfer function, just in case if rounding error causes the Fossil Farm
193     * @param _to Target address.
194     * @param _amount Amount of DINO to transfer.
195     */
196     function safeDinoTransfer(address _to, uint256 _amount) internal {
197         uint256 dinoBalance = DINO.balanceOf(address(this));
198         if (_amount > dinoBalance) {
199             DINO.transfer(_to, dinoBalance);
200         } else {
201             DINO.transfer(_to, _amount);
202         }
203     }

```

SLOC Appendix

Solidity Contracts

Language	Files	Lines	Blanks	Comments	Code	Complexity
Solidity	4	2382	279	1212	891	103

Comments to Code 1212/891 = 136%

Javascript Tests

Language	Files	Lines	Blanks	Comments	Code	Complexity
JavaScript	N/A	N/A	N/A	N/A	N/A	N/A

Tests to Code = N/A

