

HARVESTER COMMISSIONING USING JIRA TASK MANAGEMENT TOOL

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Abstract. *The purpose of the paper is to highlight how task management is applicable in agriculture. The paper illustrates a Jira project that was developed from scratch and emphasizes the importance of well defined tasks to achieve performance and transparency in carrying out job activities. In order to guarantee maximum production and resource use on a farm, task management in agriculture emphasizes the methodical planning, execution, monitoring, and organization of agricultural tasks. In addition to taking labor, equipment, materials, and environmental conditions into account, it entails planning and allocating activities associated with planting, growing, harvesting, and managing crops and livestock.*

Keywords: harvester commissioning, Jira, task management, task, issue, agronomist, operator

1. INTRODUCTION

Like it is mentioned in literature, harvester commissioning is the process of preparing and ensuring that a harvester is operational, efficient, and compliant with safety and performance standards before it is put into service [1-2].



Figure 1. Harvester.

Also, commissioning implies starting up the combine harvester for its operational use, which may include setting it up, adjusting settings, and performing initial tests to ensure it operates correctly. Proper commissioning of a harvester ensures that it operates efficiently, safely, and effectively throughout its operational life [3-7].

Considering an agricultural farm with an agronomist and several agricultural machinery operators, using task management tools the agronomist can assign tasks to operators and track the progress of these tasks in real time.

This paper deals with harvester commissioning using Jira Task management. The agronomist may effectively utilize Jira to manage the commissioning process of a harvester, ensuring all tasks are tracked, completed on time, and documented for future reference.

Commissioning a harvester using a task management tool involves several steps. Using Jira for commissioning a harvester can streamline the process by providing a structured way to track tasks, manage workflows, and collaborate effectively with team.

2. HARVESTER COMMISSIONING PROCESS

Preparing and starting up a combine harvester for operational use involves the following steps presented in the figure [1-4]:

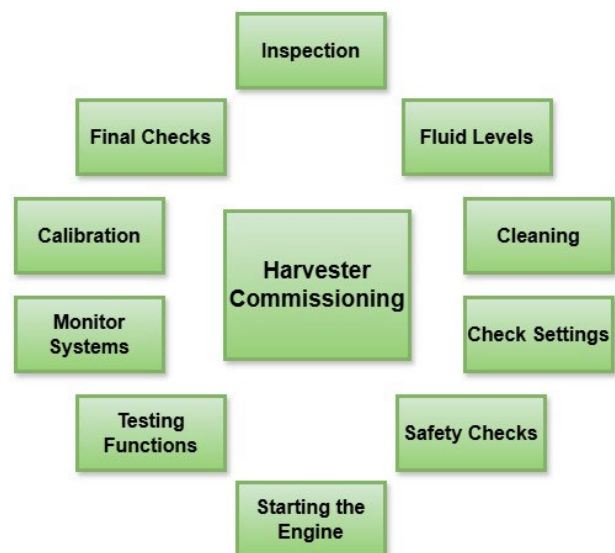


Figure 2. Harvester commissioning steps.

The first step is to inspect the harvester by checking for any visible damage or wear on the combine. After that, the operator must inspect belts, chains, and all moving parts. Another very important aspect is to check the fluid levels. Operator must ensure that all necessary fluids such

as engine oil, hydraulic fluid, fuel, coolant are at proper levels. Depending on detected fluids level, the operator should top up or change fluids.

Another step is to clean the harvester, especially the cutting platform and grain tank. Operator must remove any debris or residue from previous use.

In order to work properly, operator must check settings, more precisely adjust the header height and angle appropriate for the crop being harvested. Also, it is necessary to set the threshing and separation settings based on the crop type.

Also, safety checks are mandatory in order to work properly. Operator must verify that all safety devices and guards are in place and functioning. Also, it is mandatory to ensure that the operator's manual is accessible for reference.

Once all safety checks and preparations are complete, operator may start the engine following the manufacturer's instructions. It is mandatory to allow the engine to warm up before beginning operations.

After starting the engine, operator should engage the header and make sure all components are operating smoothly. Also, it is mandatory to test the harvesting functions such as cutting, threshing, and unloading.

Also, in order to work properly, operator must check monitors to observe any warnings or alerts and to make necessary adjustments based on monitoring feedback.

Another mandatory step is to calibrate the combine's settings for yield and moisture monitoring.

Finally, operator should conduct a final walk-around of the machine to ensure everything is properly secured and in place.

Once all these checks and preparations are complete, operator may proceed to the field for harvesting. Following these steps will help ensure that combine harvester is properly prepared and started for efficient and safe operation in the field.

3. JIRA TASK MANAGEMENT TOOL

A software program called the task management tool, which aids in teamwork, is used to track all of the workload. The entire project is located in the backlog, which is separated into requirements known as tickets. Using Jira task management tool for commissioning a harvester can streamline the process by providing a structured way to track tasks, manage workflows, and collaborate effectively with team. In order to set up and use Jira for harvester commissioning, the following steps should be followed [8-11]:

In order to set up a Jira Project, using a computer, the agronomist should create a new project by accessing Jira dashboard and selecting "Create Project." For the current case, the suitable template is "Task Tracking".

After creating the project, user should configure the project settings, set up project details, including project name and key, and also customize workflow settings.

Once the project is created, the agronomist will break down the traditional tasks from harvester commissioning into issues. Also, the agronomist will create individual issues under the project for each task such as:

- Pre-Commissioning Preparation
- Inspection of Equipment
- Setup and Configuration
- Functional Testing
- Field Testing
- Safety Checks
- Final Review and Documentation
- Maintenance Planning

The agronomist will use different issue types such as tasks, subtasks or even bugs if there is any problem in the favorable completion of a task. For each issue, the agronomist should fill in the description, acceptance criteria, and any relevant attachments such as manuals or checklists [8-11].

After completing the description, each issue should be assigned to specific team members responsible for completion. Once the issue is assigned, each operator should move the issue through workflow. As issue progress, move it through the workflow to keep track of status. The member responsible for each task has the obligation to complete that task within a predefined time

The agronomist must encourage team members to update task statuses regularly and leave comments for collaboration. Task management tools offer transparency in both progress of a task and completion of tasks.

In order to assure the good functionality of the machine, the agronomist may create separate issues for testing the harvester after commissioning and link them to relevant tasks. Also, the agronomist should review and ensure all commissioned tasks meet the required standards.

After completing the commissioning, it is necessary to gather feedback from the team and document lessons learned in the project by creating a final review issue summarizing outcomes and insights for future projects.

By following these steps, a team may effectively utilize Jira to manage the commissioning process of a harvester, ensuring all tasks are tracked, completed on time, and documented for future reference.

4. JIRA PROJECT FOR HARVESTER COMMISSIONING

The goal of this part of the paper is to present the Jira project for harvester commissioning. Considering an agricultural farm with an agronomist and multiple operators of agricultural machinery, the agronomist can use task management systems to allocate tasks to operators and monitor the jobs' progress in real time. Task management in agriculture involves organizing, planning, and executing various agricultural activities to optimize productivity and efficiency.

Like it is mentioned in literature, for various fields of industry, including agriculture, a team may use Jira in order to oversee a process, making sure that every task is monitored, finished on schedule, and recorded for future use [12-13].

Commissioning a harvester can be streamlined by using Jira task management platform, which offers an organized method of tracking tasks, managing processes, and fostering productive team collaboration. The agronomist is the one who divides the conventional tasks from harvester commissioning, into issues after the project has been created.

Considering the literature, in the presented paper, the following division is proposed [14]:

The 1st created task is pre-commissioning activities which involves two subtasks such as documentation review and visual check. Within documentation review subtask, the operator should gather all relevant documentation, including manuals, schematics, and maintenance records. Within visual check subtask, the operator should look for any signs of damage, wear, or loose components on the combine.

The 2nd task is represented by belts and chains inspection which includes two subtasks, more precisely belts check and chains check. Within belts check subtask, the operator should inspect for fraying or excessive wear belts and replace them if necessary. Same thing for chains check subtask, the operator should inspect and replace damaged chains.

The 3rd task is fluid check which includes four subtasks such as engine oil check, hydraulic fluid check, fuel check and coolant check. Within engine oil check subtask, the operator should check the oil level and ensure it is clean. Also, the operator must add or change the oil if required. Within hydraulic fluid subtask the operator should confirm the hydraulic fluid level is appropriate. Within fuel subtask the operator should fill the fuel tank with the recommended type of diesel or fuel. Within coolant subtask the operator should check coolant levels and top off if needed.

The 4th task is cleaning the harvester which includes

two subtasks such as debris removal and grain tank cleaning. Within debris removal subtask, the operator should clean dust and debris from the machine and remove any remnants from previous operations. Within grain tank cleaning, the operator should ensure the grain tank is clean and ready for harvest.

The 5th task is settings adjustments composed of subtasks such as threshing speed and separation configuration. Within threshing speed subtask, the operator should set the threshing speed based on the specific crop type. Within separation configuration subtask, the operator should set the separation adjustments based on the specific crop type.

The 6th task is header configuration which involves adjusting the height and angle of the header according to the crop being harvested.

The 7th task is safety check and includes two subtasks such as safety guards and operator's manual availability. Within safety guards subtask, the operator should ensure all safety covers and guards are in place. Within operator's manual availability subtask, the operator should have the manual accessible for reference during operations.

The 8th task is Starting the Machine and involves two subtasks such as ignition and warming up. Within ignition subtask, the operator should turn the ignition key to start the engine, following the manufacturer's instructions. Within the warming up subtask, the operator should allow the engine to warm up for a few minutes to ensure proper functioning.

The 9th task is function tests and involves two subtasks such as header engagement and harvesting functions. Within header engagement subtask, the operator slowly engages the header and check for operational smoothness. Within harvesting functions subtask, the operator tests the combine's primary functions, including cutting and threshing.

The final task is represented by safety and security issue. Within this task the operator conducts a final check around the combine to confirm everything is secure and in working order before heading to the field.

By following these procedures, the operator may be sure that the harvester is set up and operating safely and effectively in the field. A harvester that is properly commissioned will run effectively, safely, and efficiently for the duration of its useful life.

In the following figure may be seen the divided tasks and subtasks for the commissioning process, highlighting the essentiality of the task monitorization in order to achieve progress and have transparency in any fields of industry [14]:

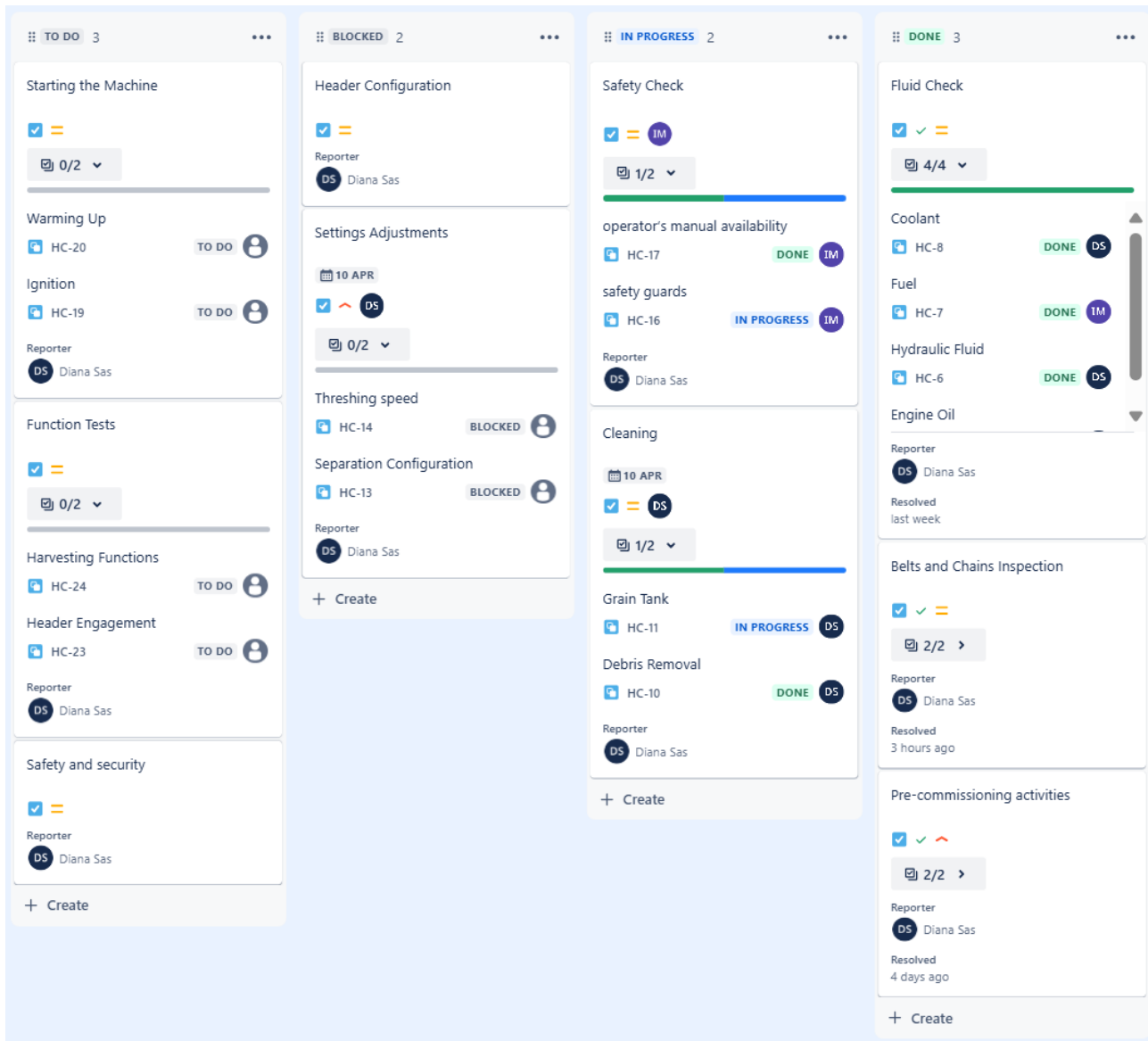


Figure 3. Harvester Commissioning Jira Project.

By effectively managing tasks in agriculture, farmers can maximize efficiency, reduce waste, and enhance overall productivity.

Using task management in agriculture highlights systematic organization, planning, execution, and monitoring of agricultural activities to ensure optimal productivity and resource utilization on a farm. It involves scheduling and assigning tasks related to planting, cultivating, harvesting, and managing crops and livestock, while also considering factors such as labor, equipment, inputs and environmental conditions.

Like it is mentioned in literature, a detailed view of a task provides comprehensive information about that specific task. To access the detailed view, click on the task from the issue list or backlog. The detailed view for the task Fluid Check is presented in the following figure [14]:

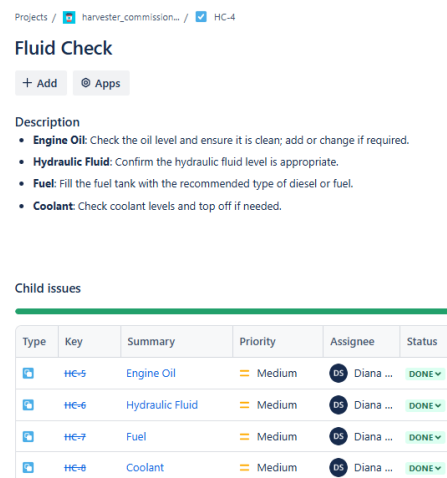


Figure 4. Detailed view for Fluid Check Task.

5. CONCLUSIONS

The paper's goal is to emphasize the applicability of task management in agriculture. Highlighting the significance of well-divided tasks to achieve performance and transparency in carrying out work tasks, the paper presents a Jira project created from scratch.

As stated in the literature, Jira can be used by a team to manage a process in a variety of industries, including agricultural, ensuring that each work is tracked, completed on time, and documented for future reference.

Using the Jira task management software, which provides an orderly way to track tasks, manage procedures, and stimulate constructive team collaboration, helps simplify the commissioning of a harvester. The operator may ensure that the harvester is set up and functioning safely and efficiently in the field by adhering to the instructions provided. For the rest of its useful life, a properly commissioned harvester will operate safely, effectively, and efficiently.

Commissioning a harvester can be made more efficient by using Jira, which offers an organized method of managing processes, keeping track of activities, and facilitating productive team collaboration.

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