

FARM HACK

A Glossary of Terms

Hack

An unusual assembly of available components to address a particular challenge. A hack is an individual effort and creates an isolated workable solution. A hack is the basis for empowerment using global knowledge and local production.

Tool

A tool is any workable hack that has been tested and replicated over time, and by other parties. A tool becomes a tool through documentation and communication. A tool can be a physical object, or a method or framework that can be documented (i.e. software). There are four types of tools that can be used in combination to address a challenge:

Observation

An observation tool is used to record behavior over time and describe the conditions of change. Observation technology also enhances the basic human senses to enable greater perception into the environment (how things work).

Examples include qualitative such the cameras, microscopes, telescope, and thermal imaging and quantitative tools such as analog and digital sensors such as thermometers, barometers, pH, soil and air moisture sensors.

Analysis

An Analytic tool is any tool used to interpret and make use of observations and observational data. Examples include tables, charts, statistical tools (i.e. spreadsheets) and models used to predict future system behavior based on past observations

Communication

Communication tools are used to share observation and analyst with other individuals and organizations. Communications tools enable the compounding effect of knowledge and experience. Examples include printed text, digital text, photographs, and digital media. This also includes the infrastructure to enable the movement and exchange of observations and analysis over time to enable collaboration.

Action

Action tools are what we use to act on and change our environment. Action tools and our choices of tools are a reflection of our understanding of our environment defined by our collective observation, analysis and communication. Examples include a cover crop roller, a moldboard plow, animal or plant breeding choices, crop rotation choices and related practices.

Adaptive Management

Adaptive Management is a process of continual improvement by adjusting "action" based on high frequency observations and analysis rather than by recipe or prescription. It requires a high level of system understanding and observation, analysis and communications feedback.

Component

A discrete portion of a tool that has a particular function. Components can be assembled in different combinations to create to hacks or tools. The larger the library of components, the more "genetic" diversity to choose from when creating new tools or hacks.

Tool (see prior description for types of tools)

A tool is composed of groups of components assembled to address a particular challenge (as identified by a challenge statement).

Kit

A kit is a group of tools which are assembled together to address higher level challenges (personal or organizational). Kits are modular and tools can be swapped in and out to address changes in systems understanding and different approaches.

Replication of efforts

The conscious process of repeating other's efforts, and communicating the results of those efforts.

Duplication of efforts

The undesired state of isolated problem solving without knowledge of prior or parallel work, or conscious communication of the results of those efforts.

Challenge Statement

Also called a problem statement. A statement that clearly describes the motivation, objective and approach of the person organization and/or tool. A problem statement is used to clarify the purpose of the action.

There are three primary types of challenge statements

- 1) Personal Statements
- 2) Tool Statements
- 3) Organizational Statements

In general organizational statements focus on high level goals, mid level goals are addressed by personal statements, and tool statements focus on detailed, low level goals. The basic syntax for each is as follows:

Personal Statements

I am a _____, I want _____, because _____.

Tool Statements

This tool was created by _____, to _____, because _____.

Organizational Statements

Our objective is _____, because _____.

Some Design Principles to Consider

Biology before steel and diesel – is there a way to approach this problem by using biological systems that add to soil health – such as cultural practices like cover cropping, mulching, crop or animal rotations etc.

Designed to empower owner of tool to use, modify and improve – different from industrial tools which user does not own in the sense that there are aspects of the tool that are inaccessible to the user. If you can not modify a tool then you do not really own it, but are just borrowing it from the system that created it.

Design with replicability in mind – Could this part be recreated in a farm shop in a small town? For example, a welded and machined part is generally easier to replicate than a casting.

Use of "off the shelf" or commonly available components, or components that are or can be repurposed – Use common dimension materials, such as off the shelf steel stock. Could a more easily sourced part do the job as well?

Modularity – Functions can be removed and replaced without reengineering the entire tool. Tool function can be changed by adding or subtracting parts.

Adaptability- Tools can be used for many functions and can be changed to new functions easily.

Universal couplers/fastener spacing– Use standard connectors for electronics, hydraulics, air lines, power take offs, hubs and bearings.

Designed for transparent function– functional components are clearly laid out and purpose is clear for the user.

Design for Disassembly – Modularity also lends itself to disassembly. If a welded joint is used, provide easy access to the joint for cutting. Avoid hidden bolts and make bearings, belts and chains accessible. Make sure that belt and chain tensioners have enough play to enable easy removal

Holistic approach – does this tool make me enjoy working with it as much as getting the job done faster?