BICYCLE INNOVATIONS:

Designing Farm Implements for Small Farmers

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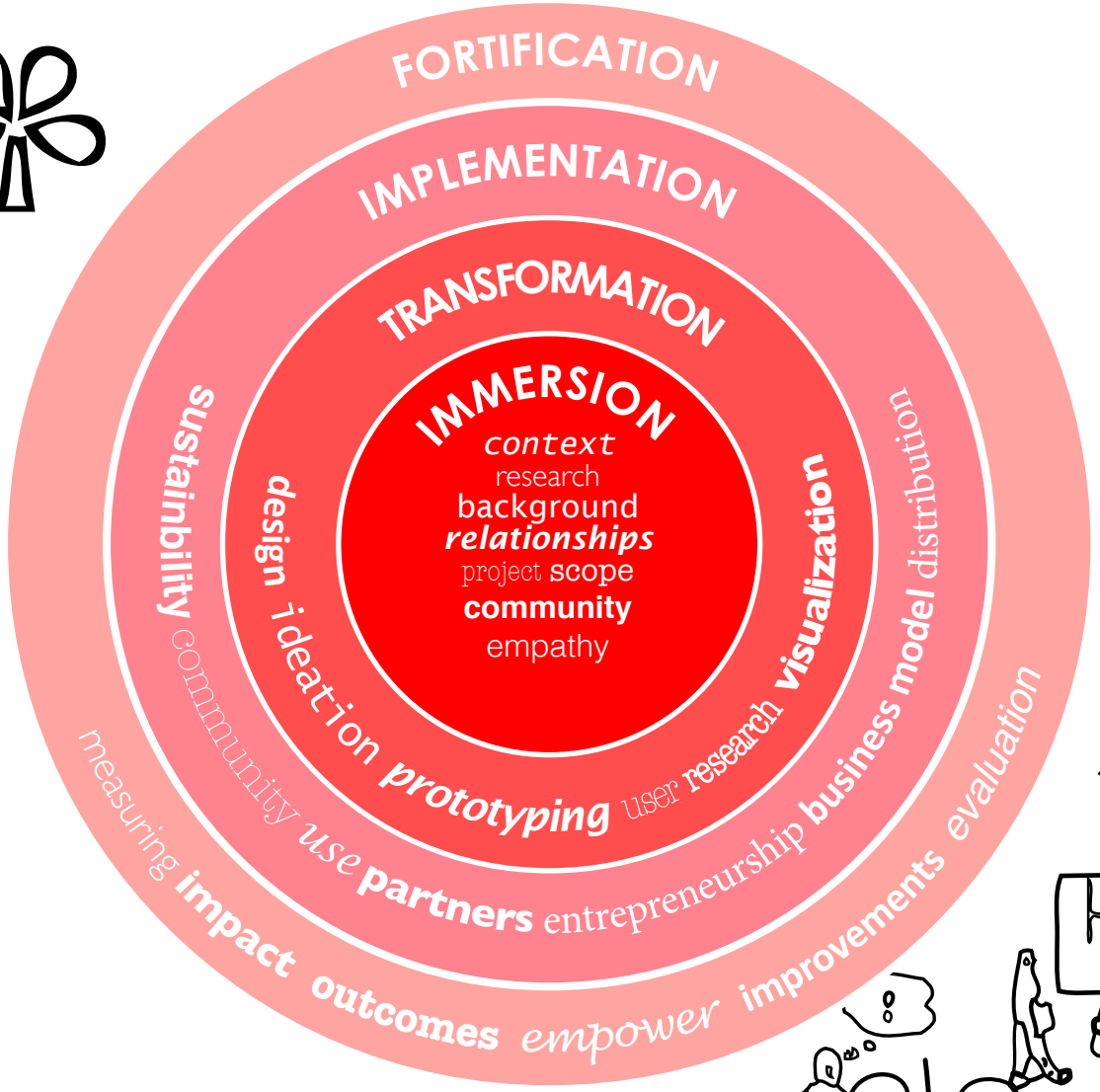
DESIGN IMPACT

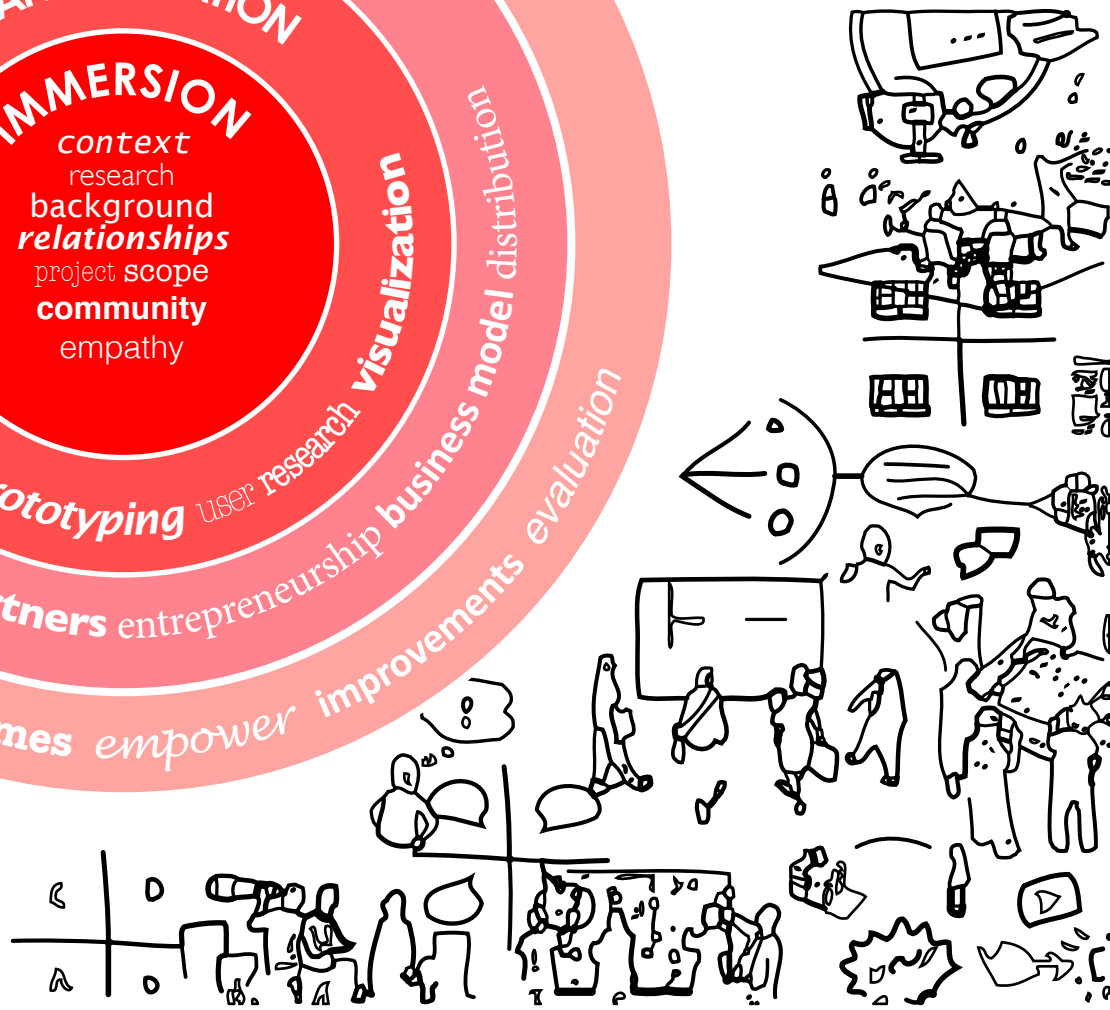
Design Impact is a non-profit organization, based in Cincinnati, Ohio, that partners professional designers with community organizations in India. These designers work on-site using Design Impact **embedded design process** with innovative organizations and the communities they serve to design and implement **life-improving solutions.**

National Innovation Foundation - India

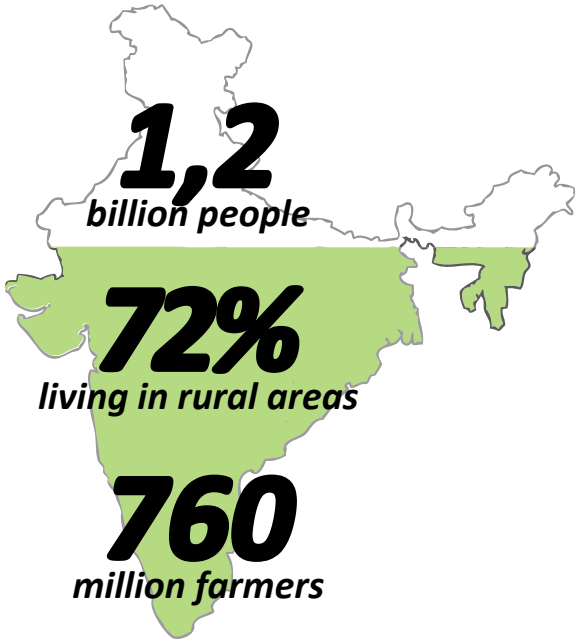
NIF's mission is to help India become an **inventive and creative** society and a global leader in sustainable technologies without social and economic handicaps affecting evolution and diffusion of **green grassroots innovations**.

Social Problems





Capacity Building + Solutions with



83.9%
of all farmers

2 HEC.
of land or less

USD $45
per month (max)

0.9%
of all farmers

10 HEC.
of land or more

USD $175
per month (min)

Limited acces to

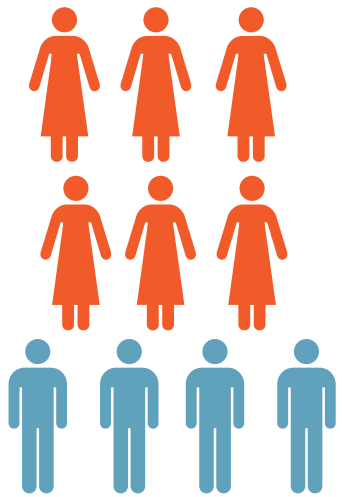
Nutrition Facts

Minimun Intake

Rural 2400 cal **Urban** 2100 cal

	Cal Intake	*% of Poulation*
Rural Avg. Intake	2047	81%
Urban Avg. Intake	2080	57%

women's contribution




WEEDER


PUMP


THRESHER


SPRAY

BICYCLE WEEDER

Fixed Handles
Aluminium

Fixed Stem (welded)

Fabricated Fork
Welded Steel

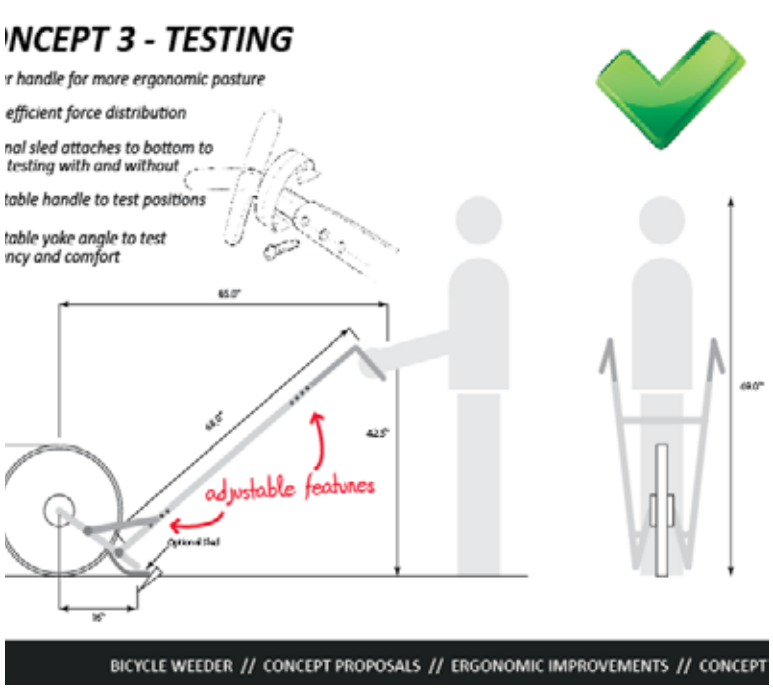
Fabricated Frame
Welded Steel

Angle Adjustment
Standard Nut & Bolt

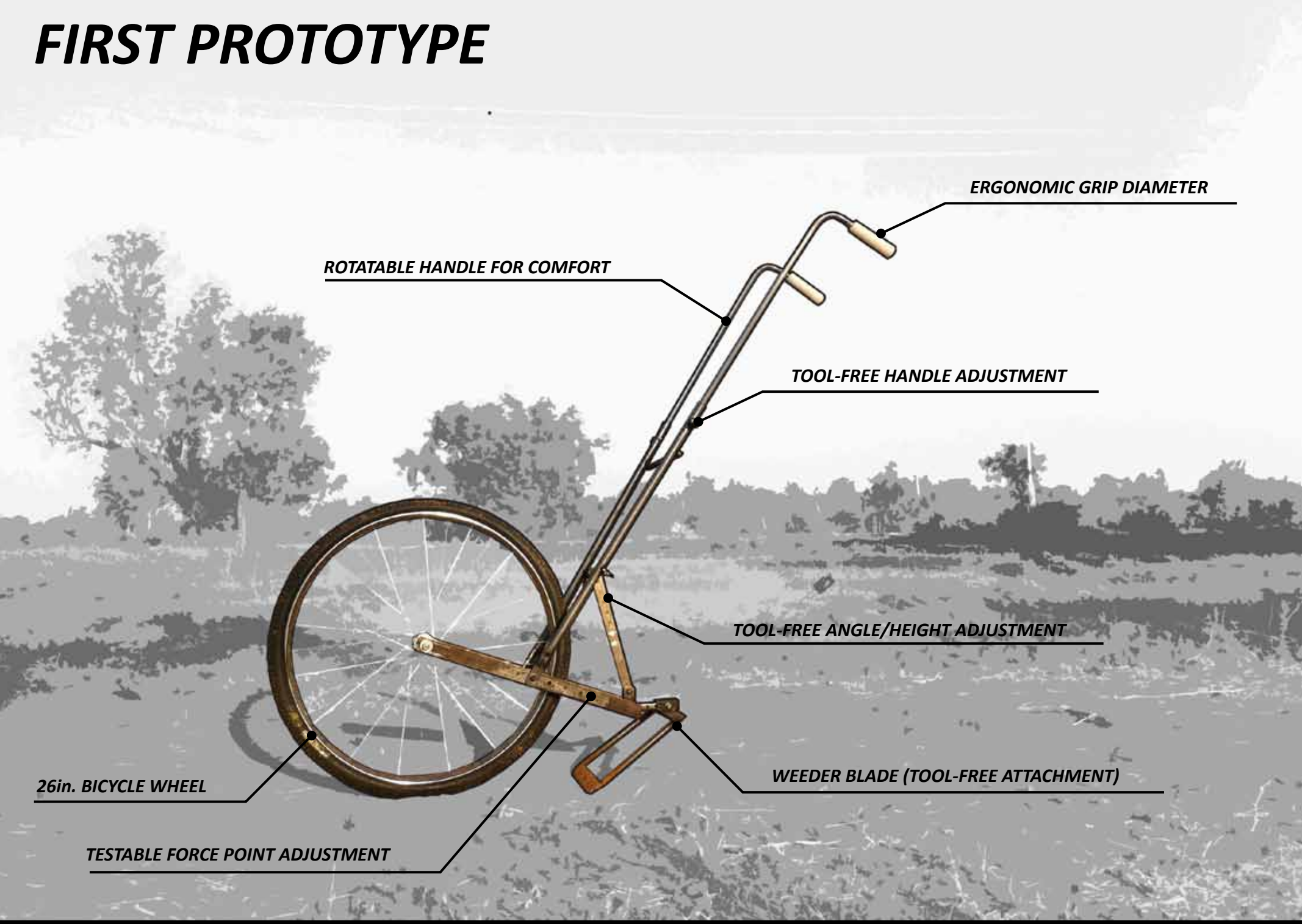
Axis of Adjustment
Standard Bolt

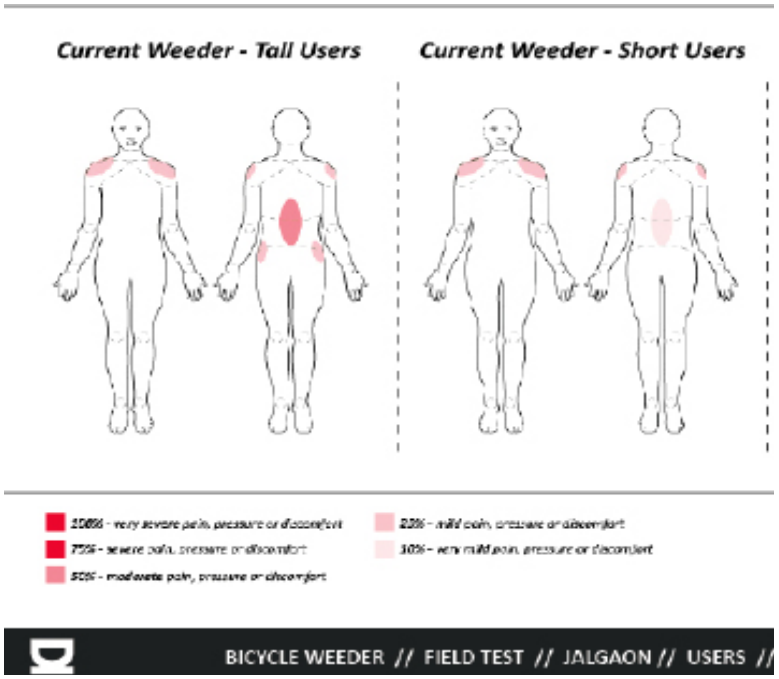
Removable Blade (forged)

Semi-Adj. Blade Arm (steel)


NCEPT 3 - TESTING
r handle for more ergonomic pasture
efficient force distribution
nal sled attaches to bottom to
testing with and without
table handle to test positions
table yoke angle to test
ncy and comfort
adjustable features
BICYCLE WEEDER // CONCEPT PROPOSALS // ERGONOMIC IMPROVEMENTS // CONCEPT

FIRST PROTOTYPE




Current Weeder - Tall Users
Current Weeder - Short Users
100% - very severe pain, pressure or discomfort
75% - severe pain, pressure or discomfort
50% - moderate pain, pressure or discomfort
25% - mild pain, pressure or discomfort
10% - very mild pain, pressure or discomfort
BICYCLE WEEDER // FIELD TEST // JALGAON // USERS //

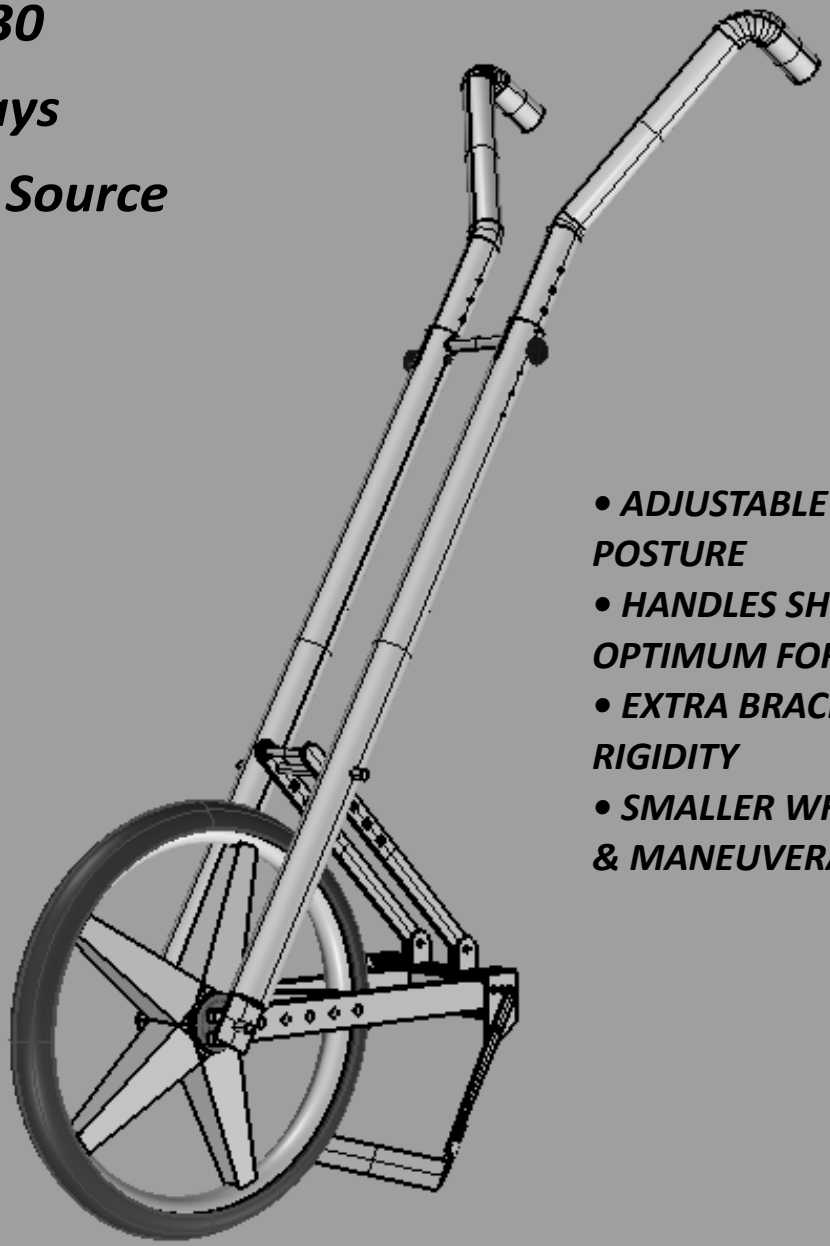
THE NEW PROTOTYPE

MATERIALS: AVAILABLE LOCALLY

EST. COST OF GOODS: USD$ 20-30

EST. PRODUCTION TIME: 2-3 Days

DISTRIBUTION MODEL: Open Source



- ***ADJUSTABLE FOR ERGONOMIC POSTURE***
- ***HANDLES SHORTENED FOR OPTIMUM FORCE***
- ***EXTRA BRACING FOR ADDED RIGIDITY***
- ***SMALLER WHEEL = CONTROL & MANEUVERABILITY***

COMBO

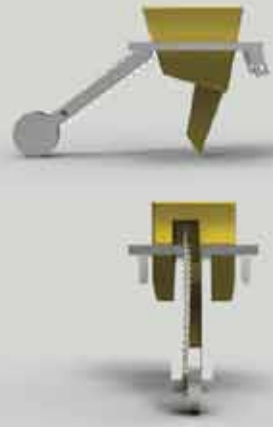
Weeder / Seeder / Sprayer

Weeder

- Vertically adjustable handlebars for different users
- Easy pin system for mounting different tools
- 16" auto rickshaw tire for good manueverability

Sprayer

- Easy to mount assembly
- Vertically adjustable boom with telescoping arms for storage
- Water platform is flexible to use with many different container forms and sizes



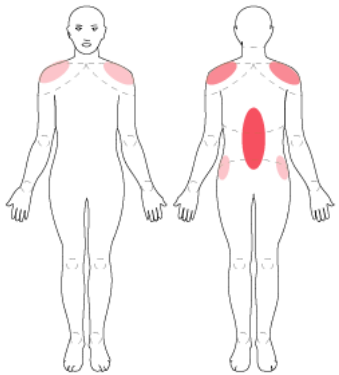
Seeder

- Easy to mount assembley
- Second wheel and drivetrain for better balance
- Easily adaptable frame for different seed containers

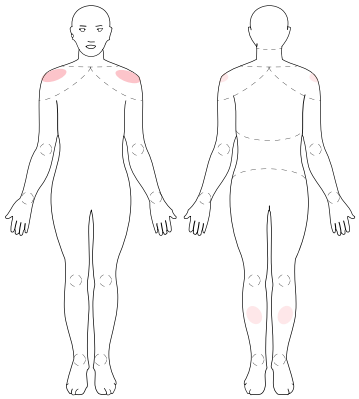
RESULTS + CONCLUSIONS

Body Pain Reduction

Traditional Weeding
(Kodali, Powrah, etc.)



NIF Prototype Weeder



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Time Saving

Comparative test trial reported: Farmers saved up to 3 hours/day after using the device.

Providing access to low-cost high-perfomance agricultural tools to small and marginal farmers will help them save time, reduce drudgery, increase work capacity and productivity.

Questions?

THANK YOU.

DI HQ

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DI FELLOWS

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