

# BOUNDBROOK FARM

內  
溪  
鴨  
米



# VERMONT RICE

Our mission is to grow  
staff-of-life foods for  
ourselves and our  
neighbors.

We are dedicated to a  
human-scale farming  
future that works in  
cooperation with nature.

[www.vermontrice.net](http://www.vermontrice.net)



## *Creating a pilot commercial-scale integrated rice-duck farm*

- An alternative approach to producing crops from wet, heavy soils without erosion
- A man-made wetland with natural wetland benefits
- A community-oriented model
- Building a local base of knowledge for the ancient art of rice farming

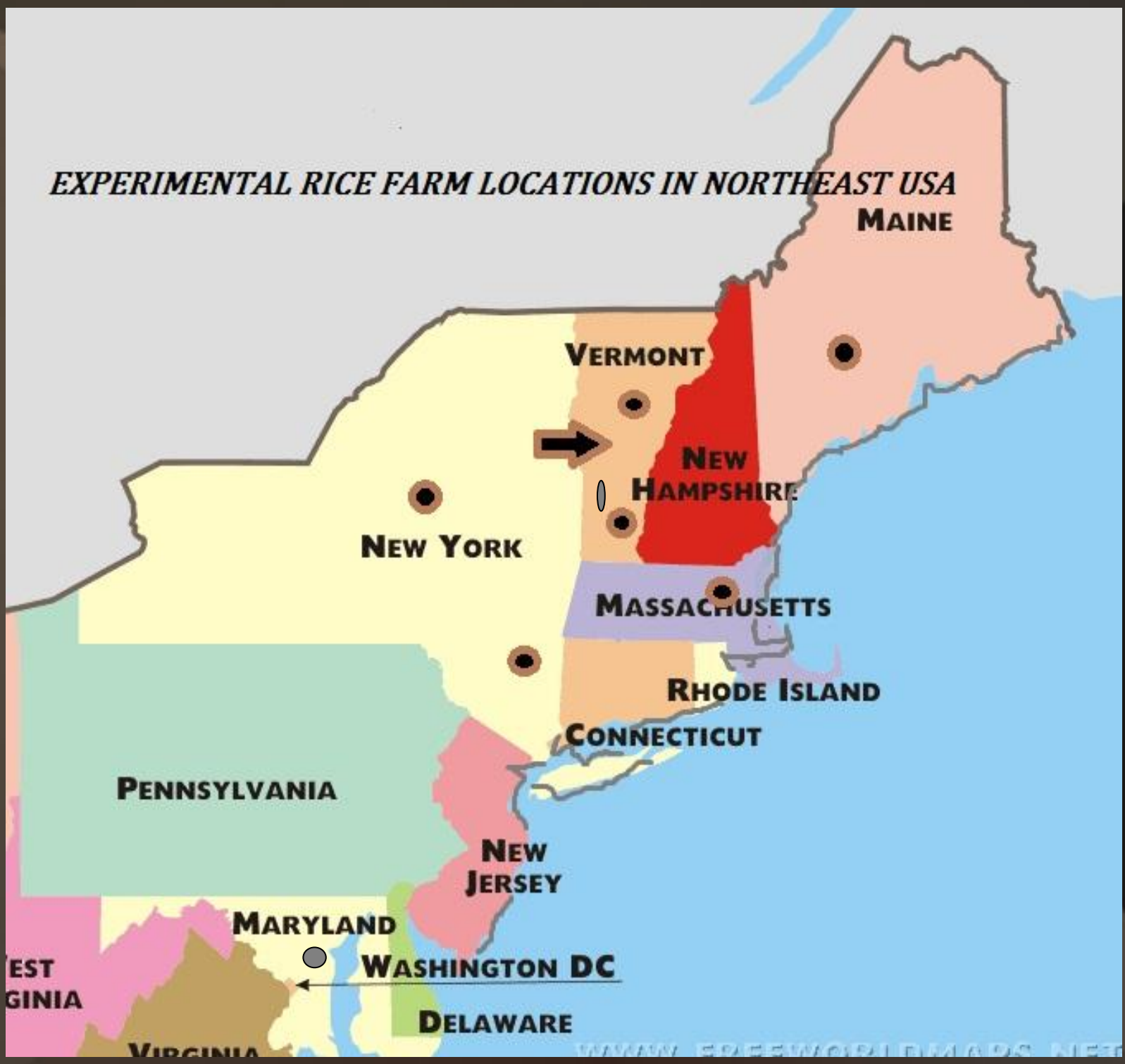


# United States

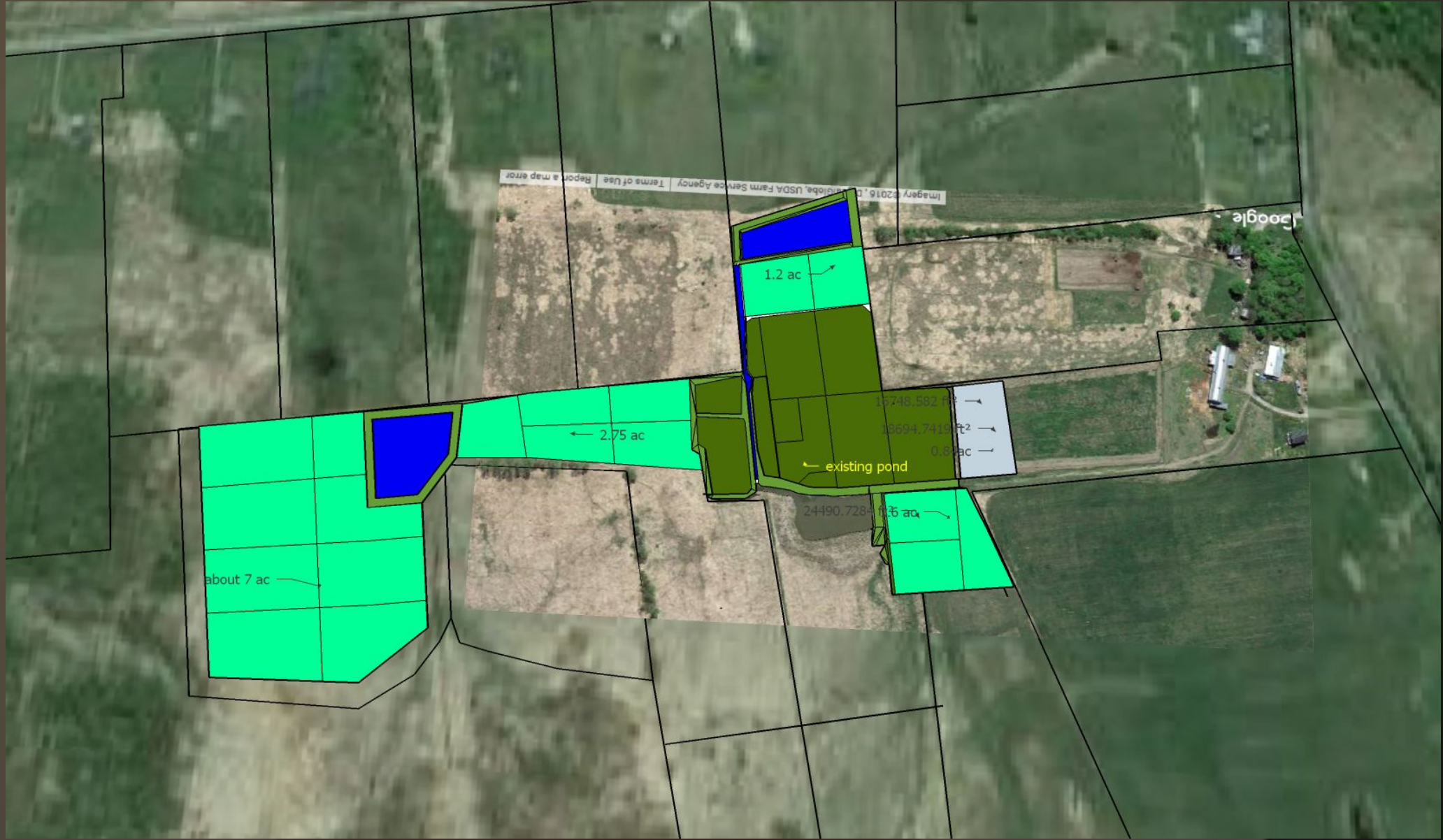
○ National capital



*EXPERIMENTAL RICE FARM LOCATIONS IN NORTHEAST USA*







about 7 ac

← 2.75 ac

1.2 ac

24490.728 ft²

15748.582 ft²

18694.7419 ft²

0.9 ac

existing pond

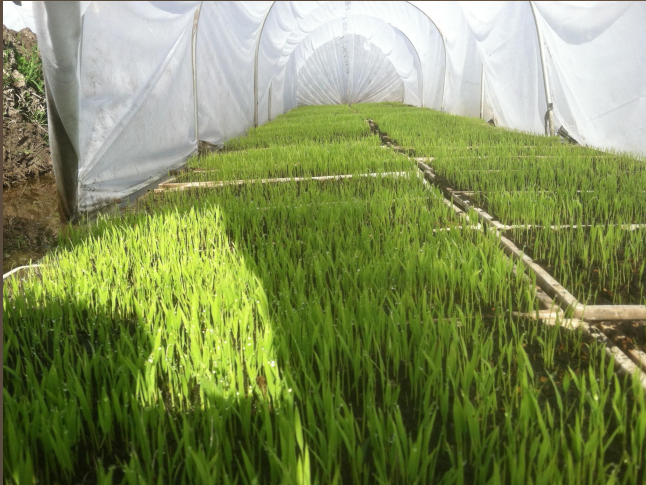
0.3 ac

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Google



# The Vermont Rice Farming Year



Planting / Nursery  
April - June



Ducking brooding /  
Rice Transplanting  
Early June



Duck Rice period  
Late June - early August



Flowering / Ripening  
August-Late September



Harvest  
Late September / Early  
October



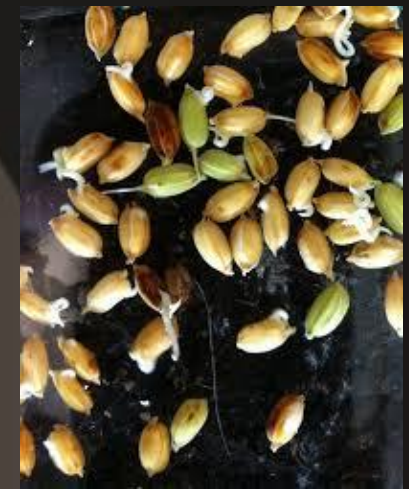
Drying, Milling and Marketing  
October onwards



# Planting and Nursery Phase

## Step 1: Seed germination

- Soak seeds in cold water to hydrate for up to 5 days
- Soak in 70 degree water for up to 48 hours to germinate



## Planting and Nursery Phase, continued

Step 2: Sow seeds into trays

- I use ½" of rich bedding mix
- About 20 seeds per square inch
- Cover loosely with soil
- Water well





# *Planting and Nursery Phase, continued!*

## Part 3: Seed Incubator

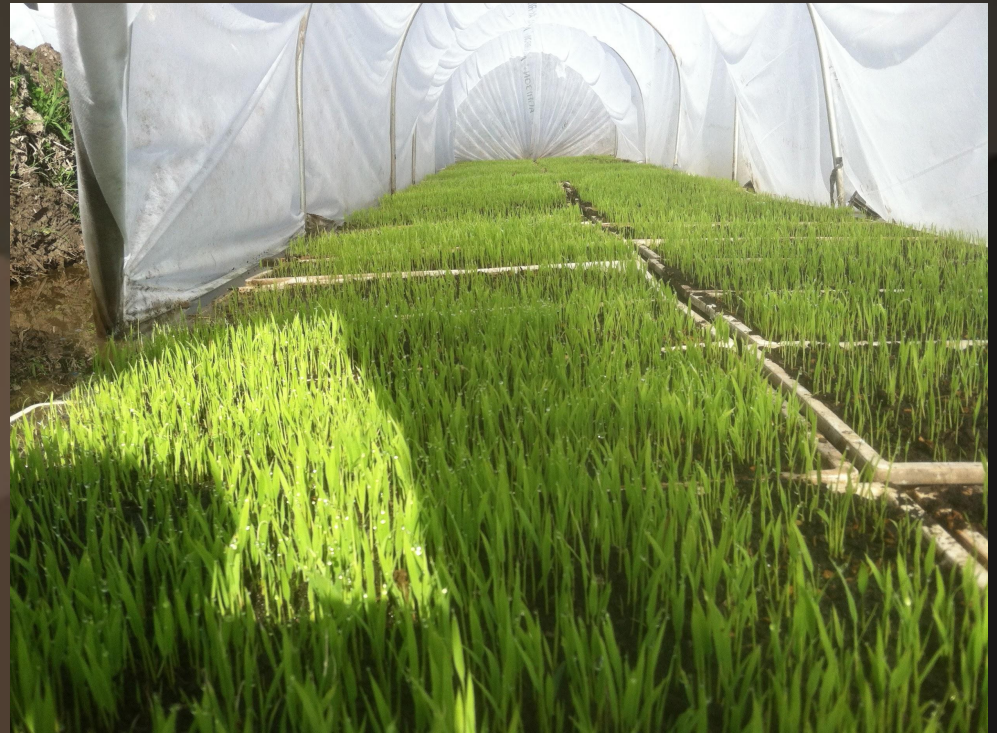
- An incubator is a box or rack with a minimum of space between trays
- Keep between 55-70 degrees
- When seedlings are 1/2" tall, it's time to move them outdoors





# Planting and Nursery Phase, Continued

- High tunnels, low tunnels and greenhouses can all work
- Seedlings take up a lot of space (about 300 sf to the acre), so economy may be an issue
- Seedlings can be watered from above or from below
- Sustained temperatures below 50 degrees or above 85 can seriously harm seedlings.





# Transplanting

Early June



Human power: 1 / 20 - 1/10 th acre per person per day

Machine power: 1 acre per day plus, 2 person crew



















While Transplanting is going on, you also raise ducklings.

About 100 to the acre!



Ducklings should be hatched about 5 days before you plan to finish transplanting



# Ducks and Rice, Together!

- Ducks go to the paddy at 10-15 days old
- Balance of wet and dry
- Feed some grain daily to maintain communication
- Watch out daily for predators and escapees









# Machine weeding



Our prototype made  
from a Mantis  
tiller



Mechanized Three-Row  
Weeder

Chinese 3-row  
version



# Ripening



Mid August - Late September



# Harvest



Late September - Early October



# Postharvest Processing



Winnowing - Drying - Hulling - Polishing - Packaging - Marketing



# *Selling the Crop!*

- Average regional yields on successful plots 2000-2500 lbs finished rice / acre
- Regional growers mill their own and sell direct for \$4-8 per lb
- Gross revenue of \$8000-20000 per acre
- Mature organic rice operations produce usually produce 3000-3500 lbs finished rice





# Takao Furuno, author of The Power of Duck







07 17 2015



合鴨家族

古野農場

桂川町寿命

飛騨の小豆粉です  
石臼で搗いています  
良質 安心の味です!!

ハチ味噌です  
ハチ味噌  
トナリやからどうぞ  
どぞ生地に焼いてください。

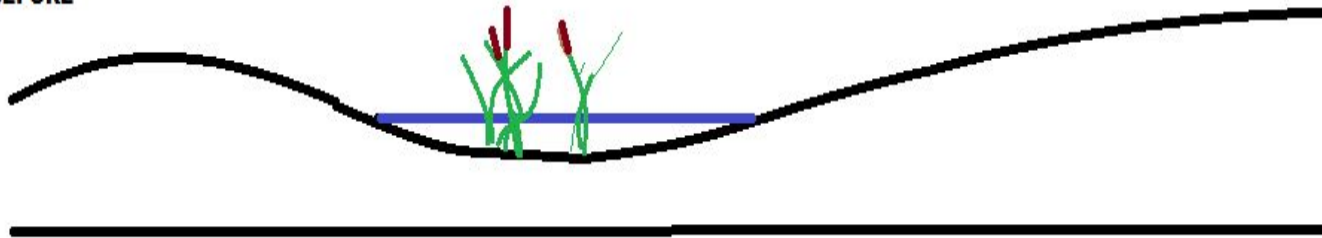


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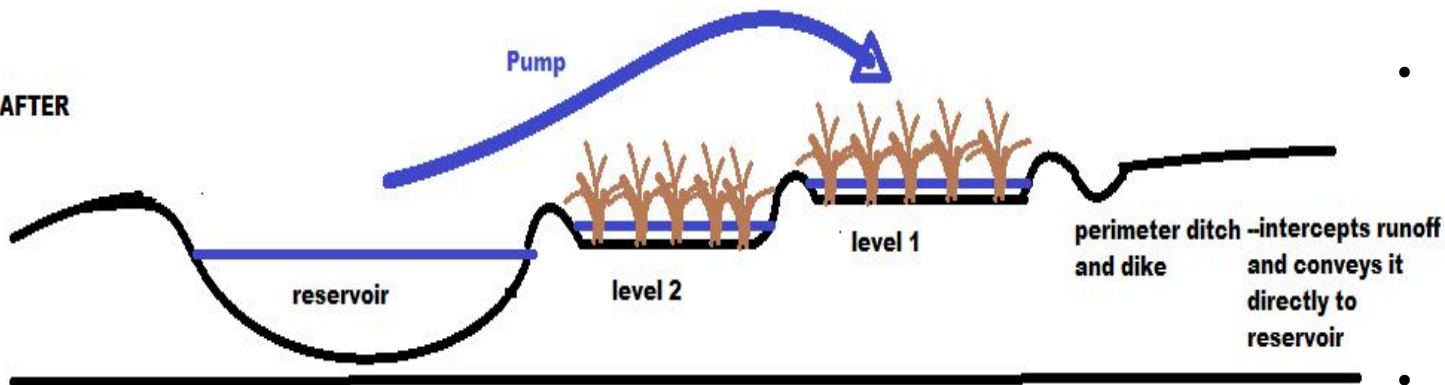


# The Paddy System, Simplified

BEFORE



AFTER



- A perimeter ditch redirects water around your project area and fills the reservoir when it rains
- The paddies should gravity drain easily from highest to lowest to the reservoir
- It's important to be able to raise or lower water levels at will









07 14 2015



# Commercial-scale Rice Equipment





# *Hand Methods*

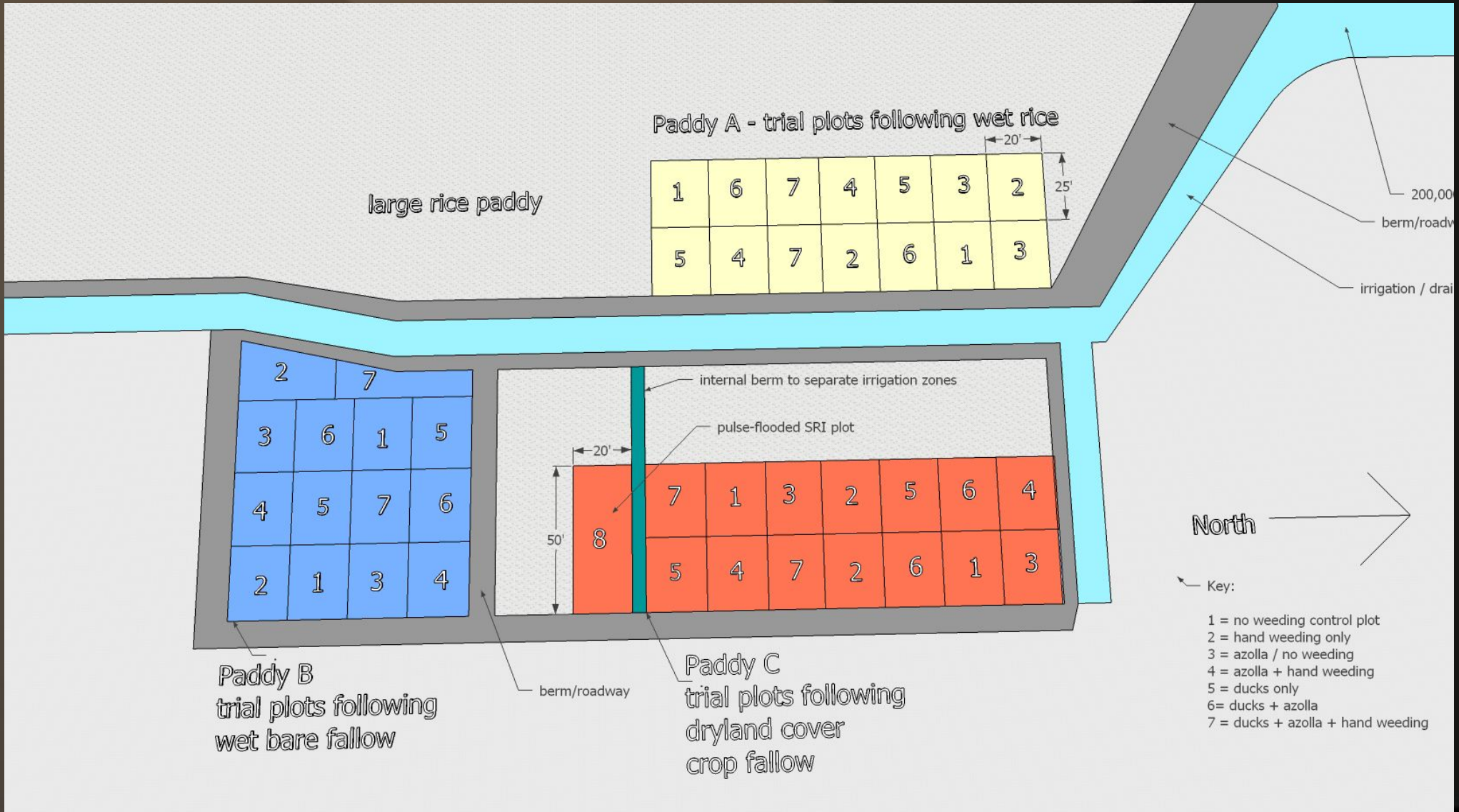


Most rice worldwide is grown using these methods





# FNE 15-816: Wet Rice Weed Control Trials





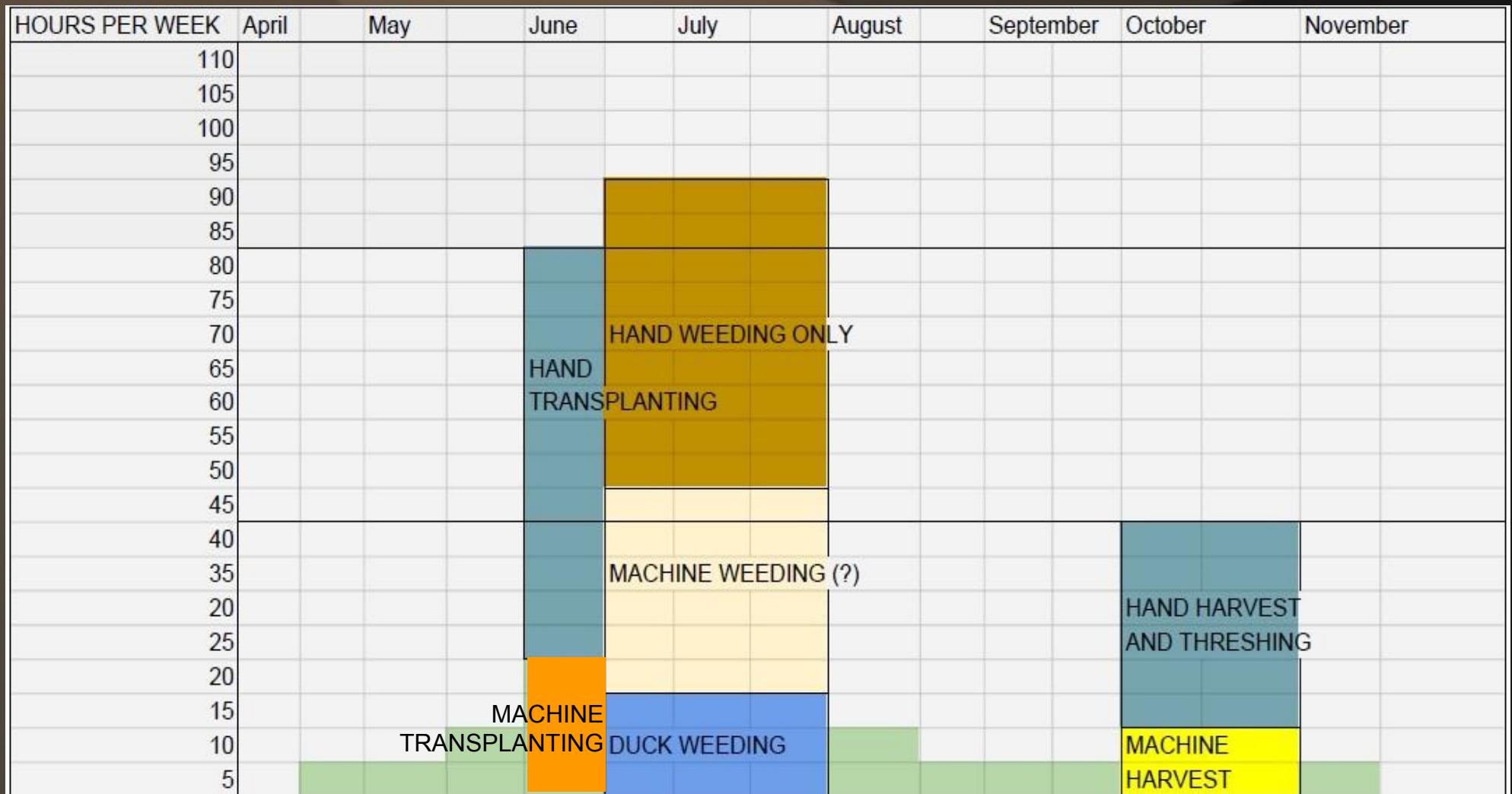
<b>FNE 15-813 Field Trial Results</b>		<b>Control</b>	<b>Hand Weeding</b>	<b>Ducks Only</b>	<b>Ducks and Hand Weeding</b>
<b>Following Rice and Ducks</b>	Yield, lbs	2.00	28.10	31.00	36.00
	Labor	0.00	14.25	0.00	5.00
	Lbs yield / labor	n/a	1.97	n/a	7.20
	Weed Suppression	Very Poor	Good	Very Good	Very Good
<b>Following Wet Fallow</b>	Yield, lbs	5.00	15.50	29.20	34.00
	Labor	0.00	13.30	0.00	5.50
	Lbs yield / labor	n/a	1.17	n/a	6.18
	Weed Suppression	Very Poor	Good	Very Good	Very Good
<b>Following Cover Crop</b>	Yield, lbs	2.90	18.50	26.00	29.80
	Labor	0.00	12.50	0.00	8.80
	Lbs yield / labor	n/a	1.48	n/a	3.39
	Weed Suppression	Very Poor	Good	Very Good	Very Good

- Without a weeding plan, you won't grow much rice
- Hand weeding alone carries a high labor cost (essentially doubles or triples production costs)
- Ducks alone produce acceptable results
- Ducks with modest hand labor produce the best results, but even this labor allotment should be weighed against gains.
- Hand labor speed can be cut by about 50% through the use of specialized weeding tools.



# Labor over the Rice Season

## Man-Hours per week per Acre







*The End!*