

AGRICULTURA DE RESILIÊNCIA

11 Fev 2025 - Colóquio Nacional do Milho - ANPROMIS

3 elementos gratuitos

Ar (CO_2)

Água (Chuva)

Energia (Luz Solar)

Passagem pelo complexo catalisador SOLO/PLANTA

Usando Princípios Químicos, Físicos e Biológicos

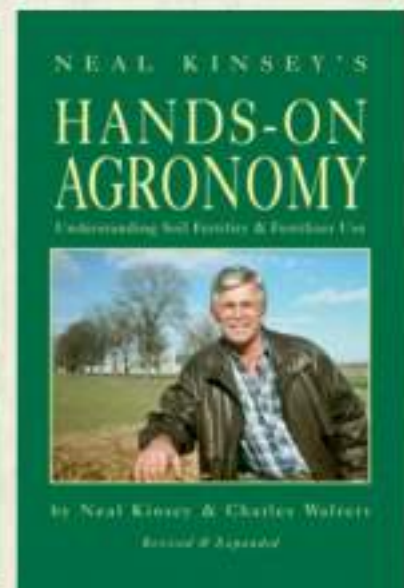
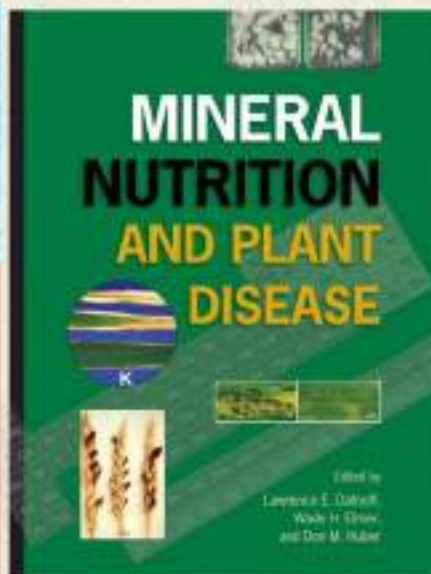
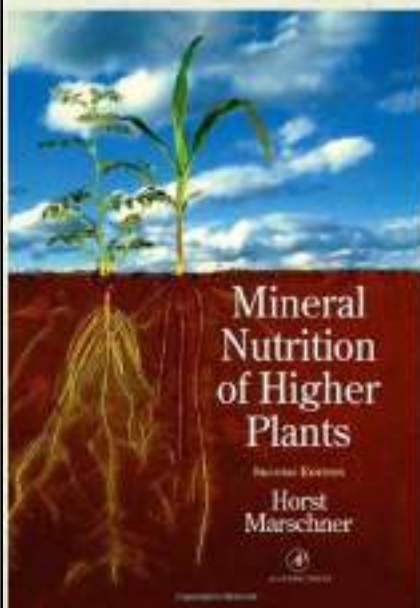
Idóneos, Comprovados e Eficientes

Geração de valor na cadeia de produção

Princípios da Saúde do Solo

1. Manter a Cobertura do Solo
2. Limitar Distúrbio
3. Aumentar a Diversidade
4. Raízes Vivas a maior parte do ano
5. Integração de Animais
6. Contexto
7. Compromisso

Princípios Baseados em Ciência e Experiência de Campo



Técnicas

- **Análise e Correção Avançada de Solos e Culturas**
- **Inoculações biológicas:**
 - sementes
 - na linha
- **Correções / Fertilizações Eficientes:**
 - quantidade, Frequência e Localização
 - forma de N, P e K
 - sementes - colostro nutricional
 - de precisão

Técnicas

- **Agricultura de Conservação**
 - sementeira directa
 - não mobilização
 - mobilização mínima
- **Culturas de Cobertura Multiespécies**
- **Redução e Mitigação do Uso de Fitofármacos**
 - Maneio Nutricional de Pestes e Doenças (Fungicidas / Insecticidas)
 - Preparação de calda de Herbicidas
 - água com baixo teor de bicarbonatos, Ca, Mg, Na
 - ácidos fúlvicos
 - acidificar pH
 - surfactante / molhante

Análise Avançada de Solos e Culturas

- **Ponto de partida e caminho a seguir:**
 - Raio X inicial - metodologia adaptada ao contexto (M3, AA 8.2, DTPA, etc)
 - Não adivinhar - Testar, Verificar, Observar
- **Análise Assimiláveis vs Totais no solo**
 - Complexo de troca catiónica segundo Albrecht e Lei dos Mínimos e dos Máximos
 - Importância dos Macronutrientes Secundários e Micronutrientes
 - Resultados da Digestão completa dos solos (na mesa vs no congelador)
- **Activação da mineralização biológica**
 - Inoculação e Revestimento de sementes e solos - Rizobactérias, Micorrizas, Mo, Co, Zn
 - Rácio C/N/S e digestão de restolhos e palhadas

Análise Avançada de Solos e Culturas

- **Uso eficiente de fertilizações**
 - Análises de seiva - Nova Crop Control
 - Programas foliares desenhados ao pormenor
 - Fertilizações adaptadas às necessidades segundo o ciclo da planta
 - Programa de uso eficiente do Azoto
 - Calibração de solos
- **Capacitação do operador agrícola**
 - Capacitação para escolher a solução mais rentável
 - Tomar decisões no dia a dia

O método de Albrecht

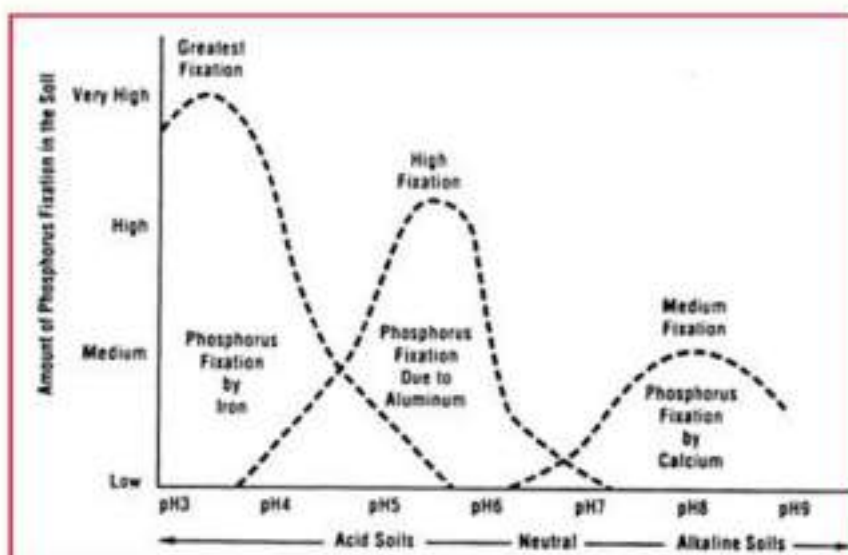
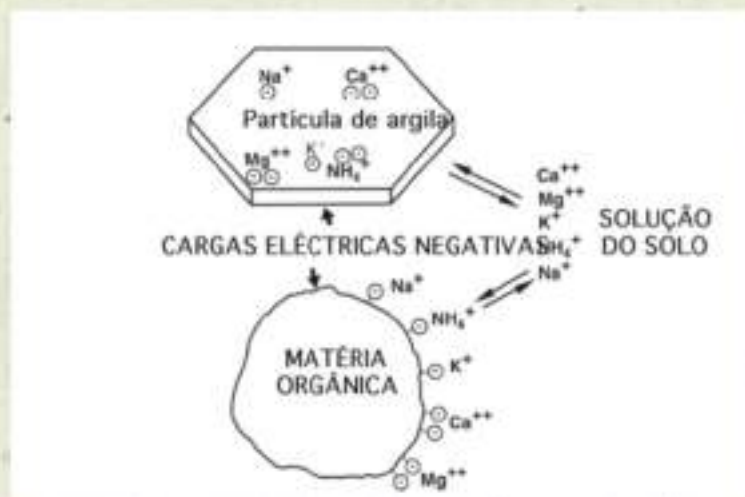
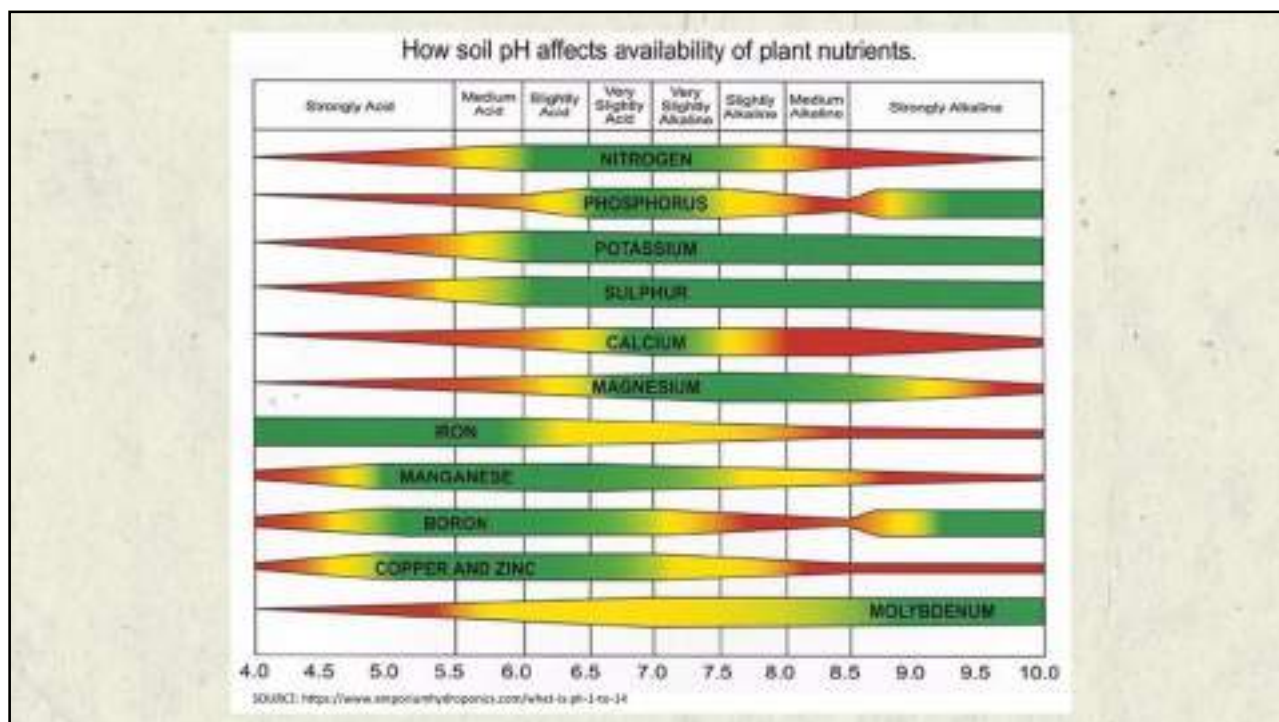
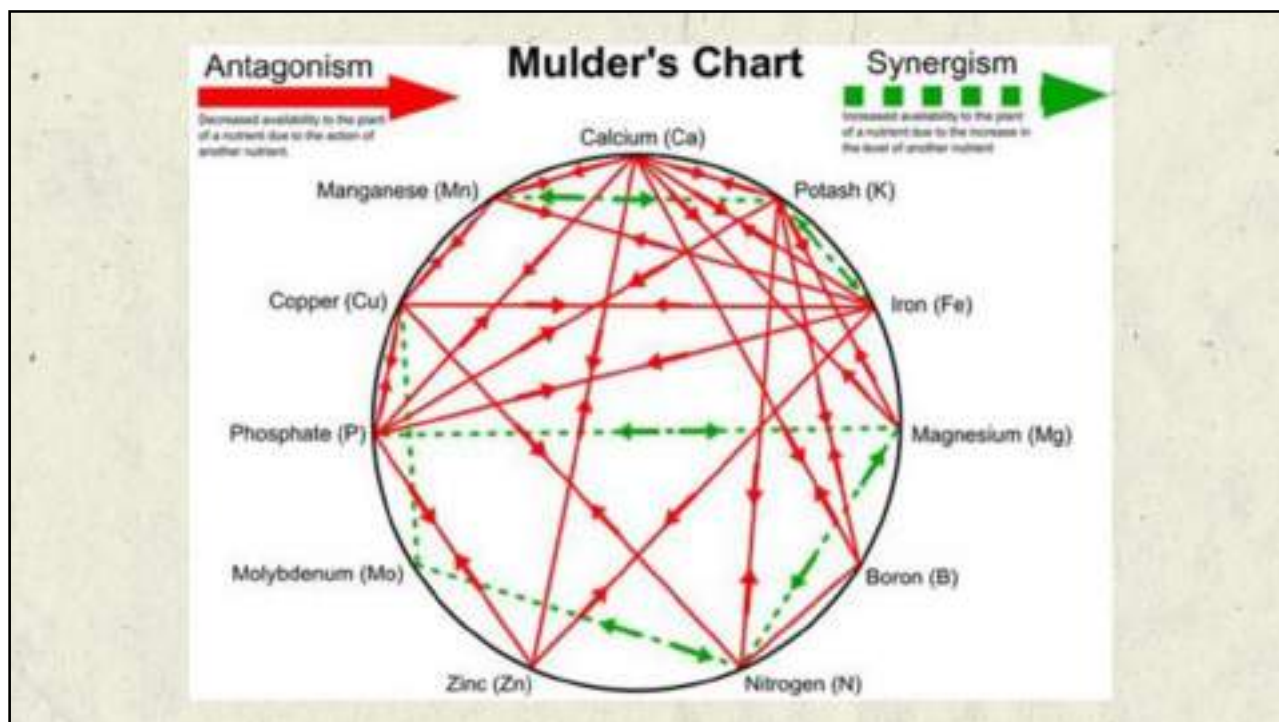


Figure 2. Phosphorus availability across pH ranges (California Fertilizer Association, 1995).



BROOKSIDE LABORATORIES, INC.		SOL. ASST. AND INVENTORY REPORT																																																					
Sample Information		City	State																																																				
Infectious Condition		Source	Date																																																				
Sample Location																																																							
Sample Description																																																							
Lab Number																																																							
Total Package Capacity (ML/100 g)																																																							
pH																																																							
Organic Matter (WTC/LWT %)																																																							
Estimated Nitrogen Release																																																							
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BROOKSIDE LABORATORIES, INC.

** TOTAL SOIL ANALYSIS **

Order Arrived:
Box 1 de Main St - Sources - 3080-
1208 Labona, FR

File Number: 91942
Date Received: 10/10/2024
Date Reported: 10/15/2024

Submitted by: Home Office

Lab Number	0131	
Description	CIVIC SKARAPAT	
	ppm	kg/ha
Phosphorus	182.9	993 (9200)
Calcium	1812.9	80619
Magnesium	7125.8	30001
Potassium	987.5	2012
Sodium	149.4	833
Sulfur	106.0	537
Boron	28.1	
Iron	22254.9	
Manganese	1815.8	
Copper	21.9	
Zinc	29.8	
Aluminum	26124.4	

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Box 1 de Main St - Sources - 3080-
1208 Labona, FR

File Number: 91942
Date Received: 10/10/2024
Date Reported: 10/15/2024

Submitted by: Home Office

Lab Number	0131	
Description	CIVIC SKARAPAT	
	ppm	kg/ha
Phosphorus	415.1	2325 (9200)
Calcium	1225.2	2771
Magnesium	2279.0	4001
Potassium	1042.7	2336
Sodium	233.9	822
Sulfur	116.3	283
Boron	89.7	
Iron	40000.7	
Manganese	847.8	
Copper	21.4	
Zinc	45.4	
Aluminum	10388.4	

NovaCropControl
postbus 2218 - 5001 CE - Tilburg
www.novacropcontrol.nl

Pflanzensaft-Probe

Name: [REDACTED]

Adresse: [REDACTED]

Hinweise: [REDACTED]

Probendatum:

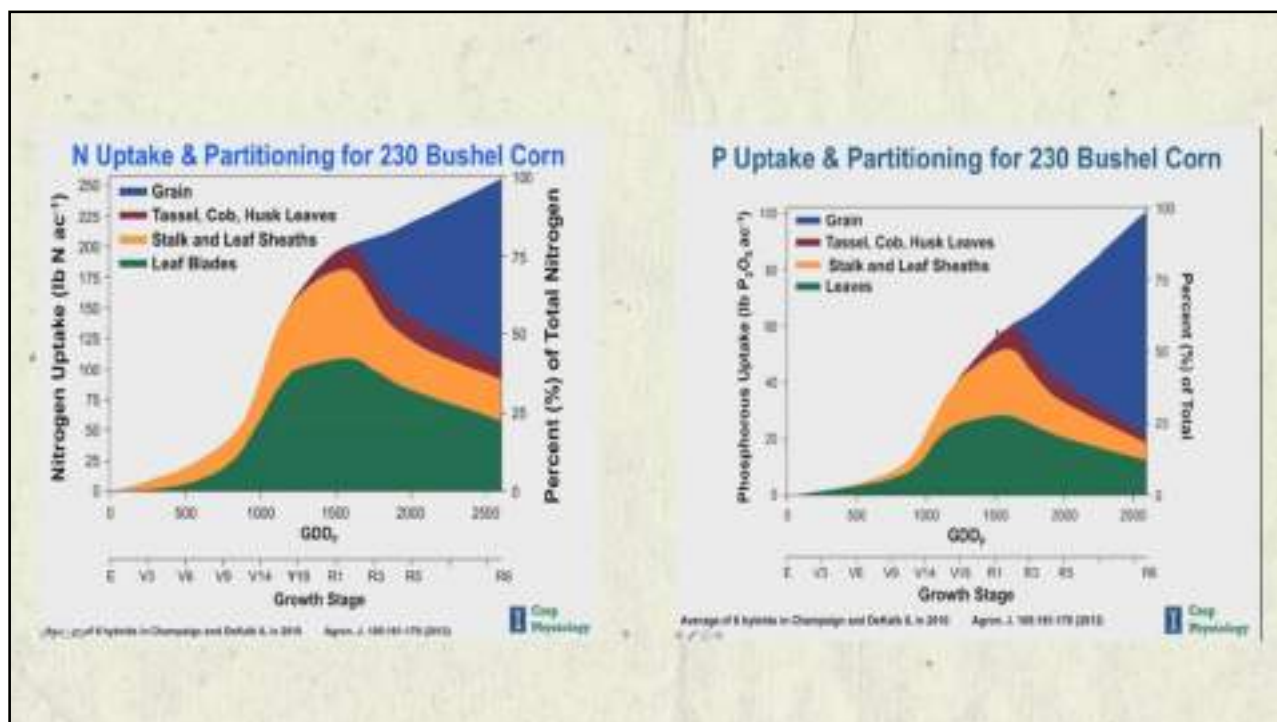
Lage/Grundstück: [REDACTED]

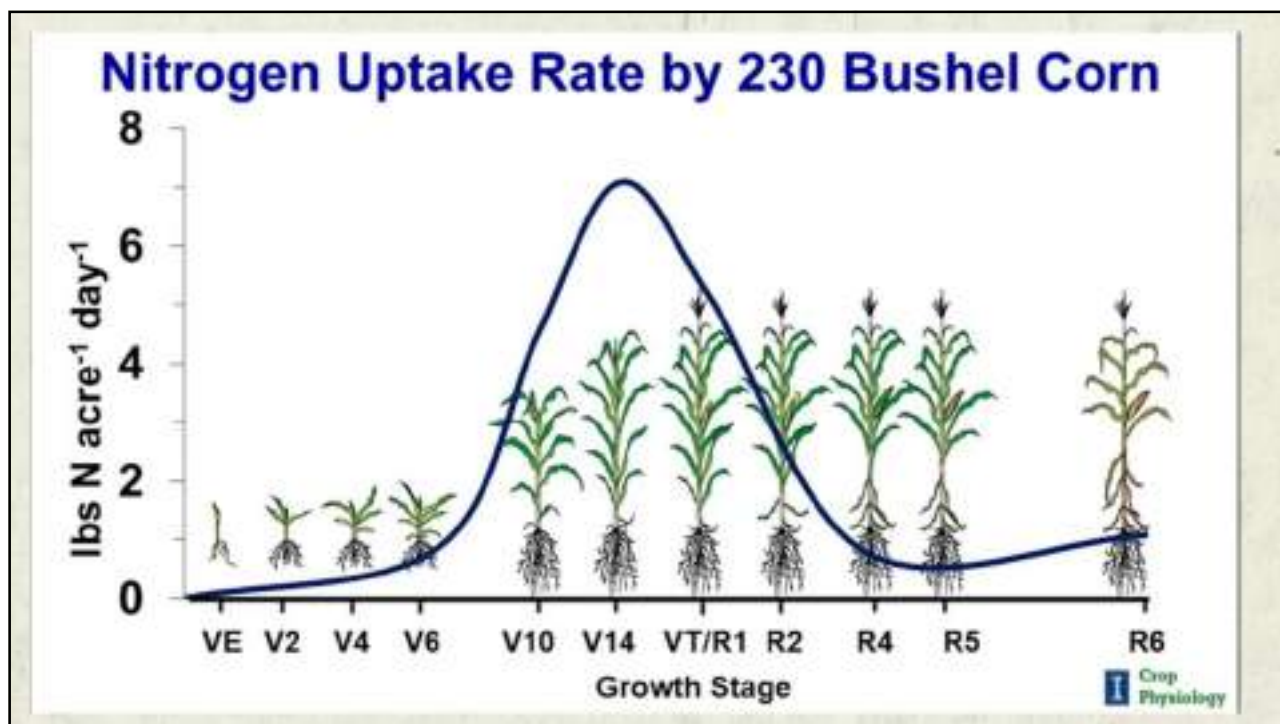
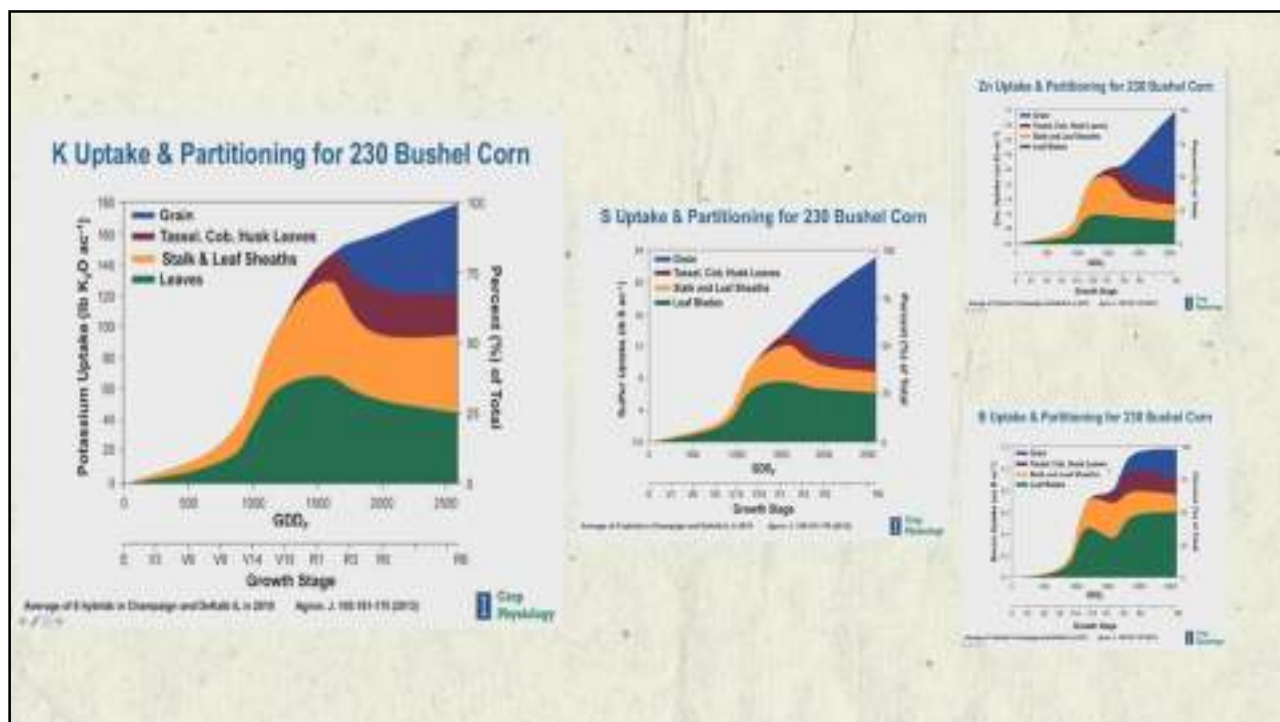
Anbau: [REDACTED]

Ernte: [REDACTED]

Pflanzenteil: [REDACTED]

Mineral		Aktuelles Niveau	Optimum	
Zucker	%	6,2	0,5 - 2,8	
	%	BOM		
pH		8,2	6,2 - 6,8	
		BOM		
EC	mS/cm	12,3	14,5 - 17,9	
	mS/cm	BOM		
K - Kalium	ppm	6657	6275 - 8050	
	ppm	5387		
Ca - Kalzium	ppm	499	575 - 1500	
	ppm	1301		
K / Ca		13,51		
		4,14		
Mg - Magnesium	ppm	179	250 - 430	
	ppm	816		
Na - Natrium	ppm	14	12 - 34	
	ppm	37		
NH ₄ - Ammonium	ppm	172	280 - 655	



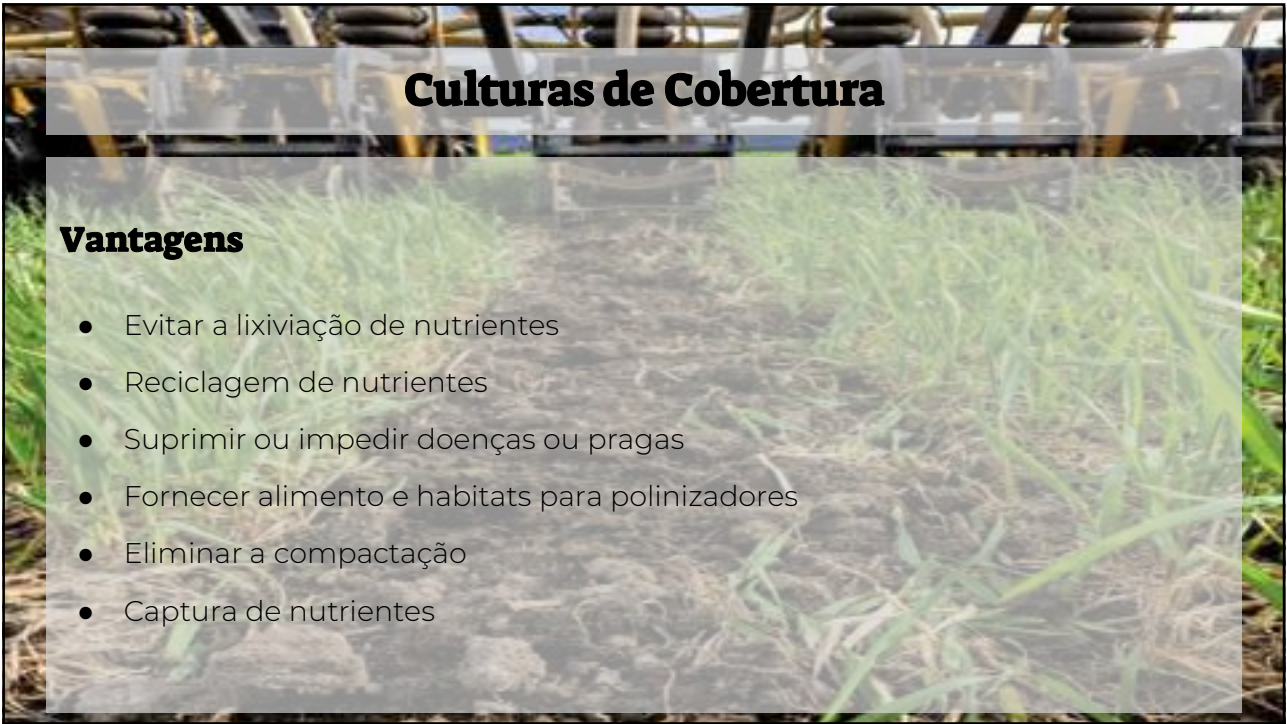




Culturas de Cobertura

Vantagens

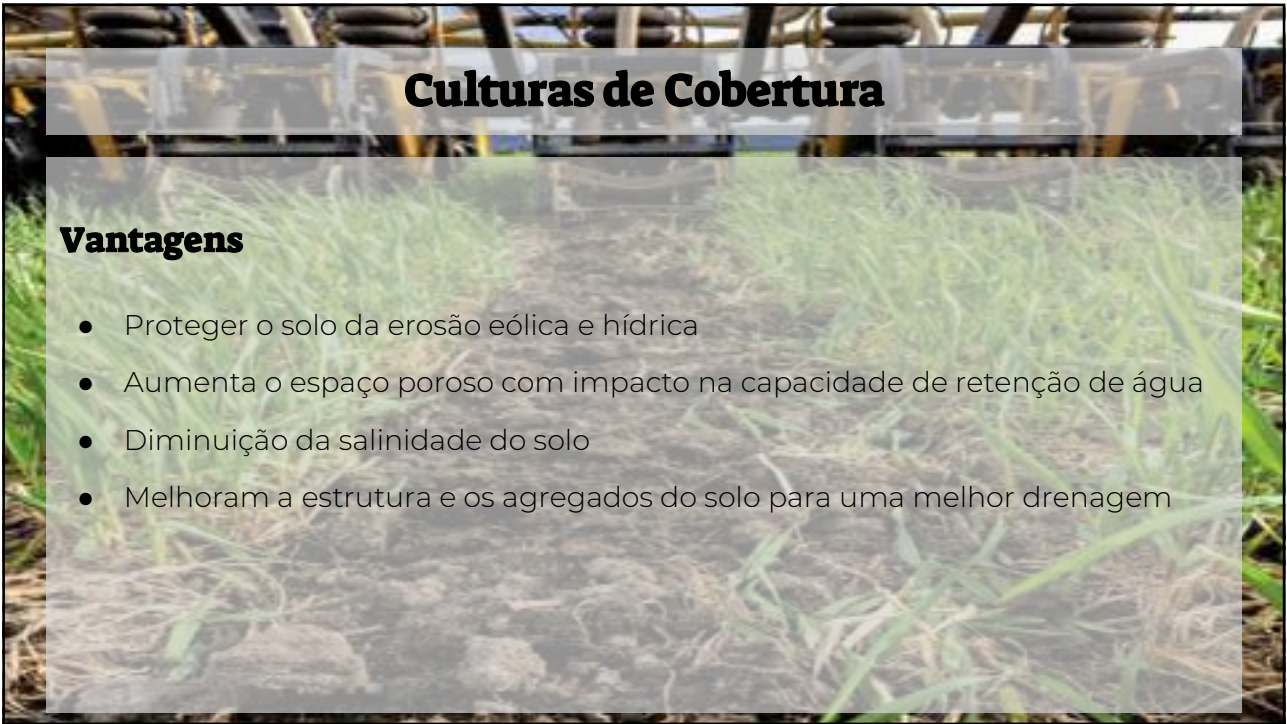
- Aumento a matéria orgânica no solo sem importação
- Fixação de azoto
- Protecção do solo através da produção de biomassa
- Reciclar nutrientes do subsolo
- Promoção da Robustez do microbioma do solo
- Controlo ou supressão de infestantes



Culturas de Cobertura

Vantagens

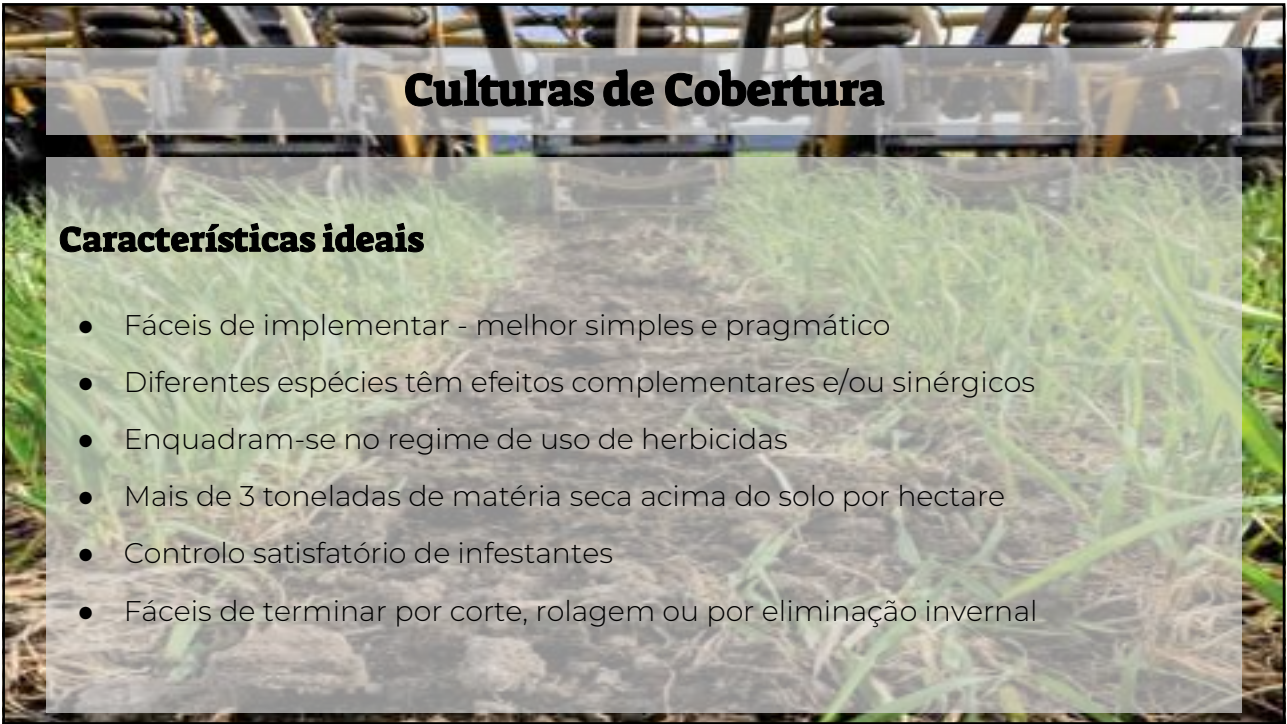
- Evitar a lixiviação de nutrientes
- Reciclagem de nutrientes
- Suprimir ou impedir doenças ou pragas
- Fornecer alimento e habitats para polinizadores
- Eliminar a compactação
- Captura de nutrientes



Culturas de Cobertura

Vantagens

- Proteger o solo da erosão eólica e hídrica
- Aumenta o espaço poroso com impacto na capacidade de retenção de água
- Diminuição da salinidade do solo
- Melhoram a estrutura e os agregados do solo para uma melhor drenagem



Culturas de Cobertura

Características ideais

- Fáceis de implementar - melhor simples e pragmático
- Diferentes espécies têm efeitos complementares e/ou sinérgicos
- Enquadram-se no regime de uso de herbicidas
- Mais de 3 toneladas de matéria seca acima do solo por hectare
- Controlo satisfatório de infestantes
- Fáceis de terminar por corte, rolagem ou por eliminação invernal



Culturas de Cobertura

Características ideais

- São habitat para os inimigos naturais das pragas ou doenças ou controlam-nas
- Impacto positivo (ou não prejuízo) sobre N, P ou K
- No caso de necessidade terminação fácil com pouca dose de herbicida
- Não são infestantes ou hospedeiras de pragas ou doenças
- Não têm efeito supressor sobre a cultura principal
- Retorno financeiro do investimento surge em 3 anos ou menos

Cover Crop	Fall seeding rate lbs/acre	Seeding depth, inches	Reduce erosion	Increase soil organic matter	Scavenge nutrients	Promote biological nitrogen fixation	Suppress weeds	Provide supplemental hay	Provide supplemental grazing	Rooting depth/Plant water use	Minimize/Reduce surface soil compaction	Minimize/Reduce subsoil compaction	Seed size (large at Final)	Crop type	Winter Survival	Salinity Tolerance	C:N Ratio	Mycorrhizal fungi association	Seeds/lb	Shade Tolerance
Alfalfa	6.5	.25 - .75	G	G	G	Y	G	G	F	DH	G	G	F	CB	Y	P	L	M	210,000	F
Barley	30	.75 - 2.0	G	G	G	N	G	G	G	MM	G	F	L	CO	N	G	M	M	14,000	F
Brassica hybrids	7	.25 - .5	F	F	G	N	G	F	G	MM	G	G	F	CB	N	G	L	N	180,000	P
Buckwheat	30	.5 - 1.5	F	P	F	N	F	F	P	SL	F	F	L	WB	N	P	L	N	19,000	G
Cabbage, African	5	.25 - .75	F	F	G	N	F	F	F	MM	G	G	F	CB	N	G	L	N	180,000	F
Camelina, Winter	3	.25 - .5	F	F	F	N	P	F	P	NL	P	F	P	CB	S	P	L	N	400,000	P
Canola	5	.25 - .75	F	F	G	N	G	F	F	MM	G	G	F	CB	S	G	L	N	140,000	F
Clover, Balansa	5	.25 - .75	F	P	F	Y	P	P	F	SL	P	P	F	CB	N	P	L	M	500,000	F
Clover, Crimson	15	.25 - .75	F	F	F	Y	P	F	F	SM	P	P	F	CB	S	P	L	M	150,000	F
Clover, Reif	5	.25 - .75	G	F	F	Y	F	F	F	SL	F	F	F	CB	Y	P	L	M	275,000	G
Clover, Sweet	4	.25 - 1.0	G	G	F	Y	G	F	F	MM	G	G	F	CB	Y	F	L	M	260,000	G
Collards or Kale	5	.25 - .5	F	F	G	N	G	F	G	MM	G	G	F	CB	N	G	L	N	175,000	F
Corn	12	1 - 1.5	G	G	G	N	G	F	G	DH	G	G	L	WG	N	P	H	H	7,500	F
Cowpeas or Dry Beans	30	1 - 1.5	P	F	F	Y	P	P	F	SL	F	F	L	WB	N	P	L	M	4,000	F
Fava beans	75	1 - 1.5	F	F	F	Y	F	G	G	DM	F	F	L	CB	N	F	L	P	2,500	P

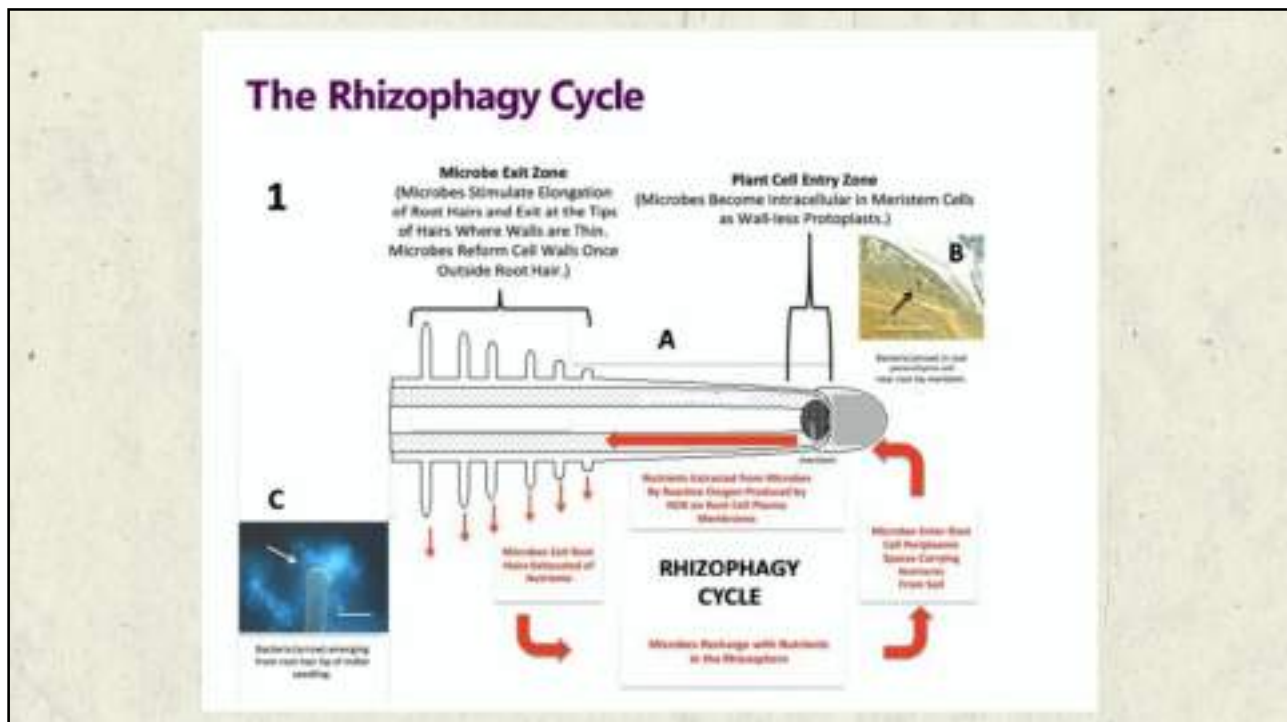






Microbioma do Solo

- **Fixação de Azoto**
- **Mineralização e Reciclagem de Nutrientes**
- **Estrutura do solo**
- **Supressão e competição com agentes patogénicos**
- **Promoção hormonal do crescimento da planta**
- **Destoxificação e Biodegradação de Resíduos**
- **Tolerância ao stress hídrico, térmico e salino**
- **Fixação de Carbono**
- **Nutrição directa à planta**
 - Ciclo Rizofágico



**Quem poe as contas no Vermelho
não tem condições para ser
Verde**

A Sustentabilidade só é possível em paralelo com a Rentabilidade

A Rentabilidade deve ser baseada na eficiência agronômica

Outros rendimentos devem ser considerados complementos