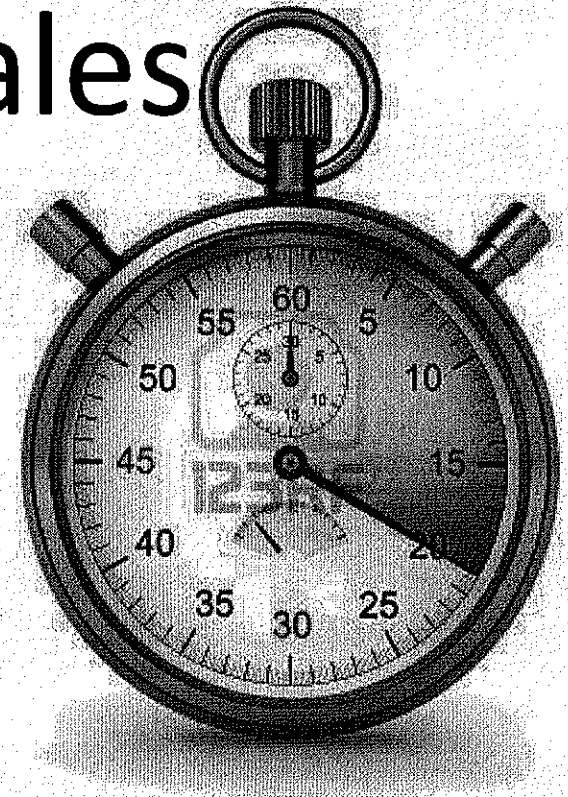
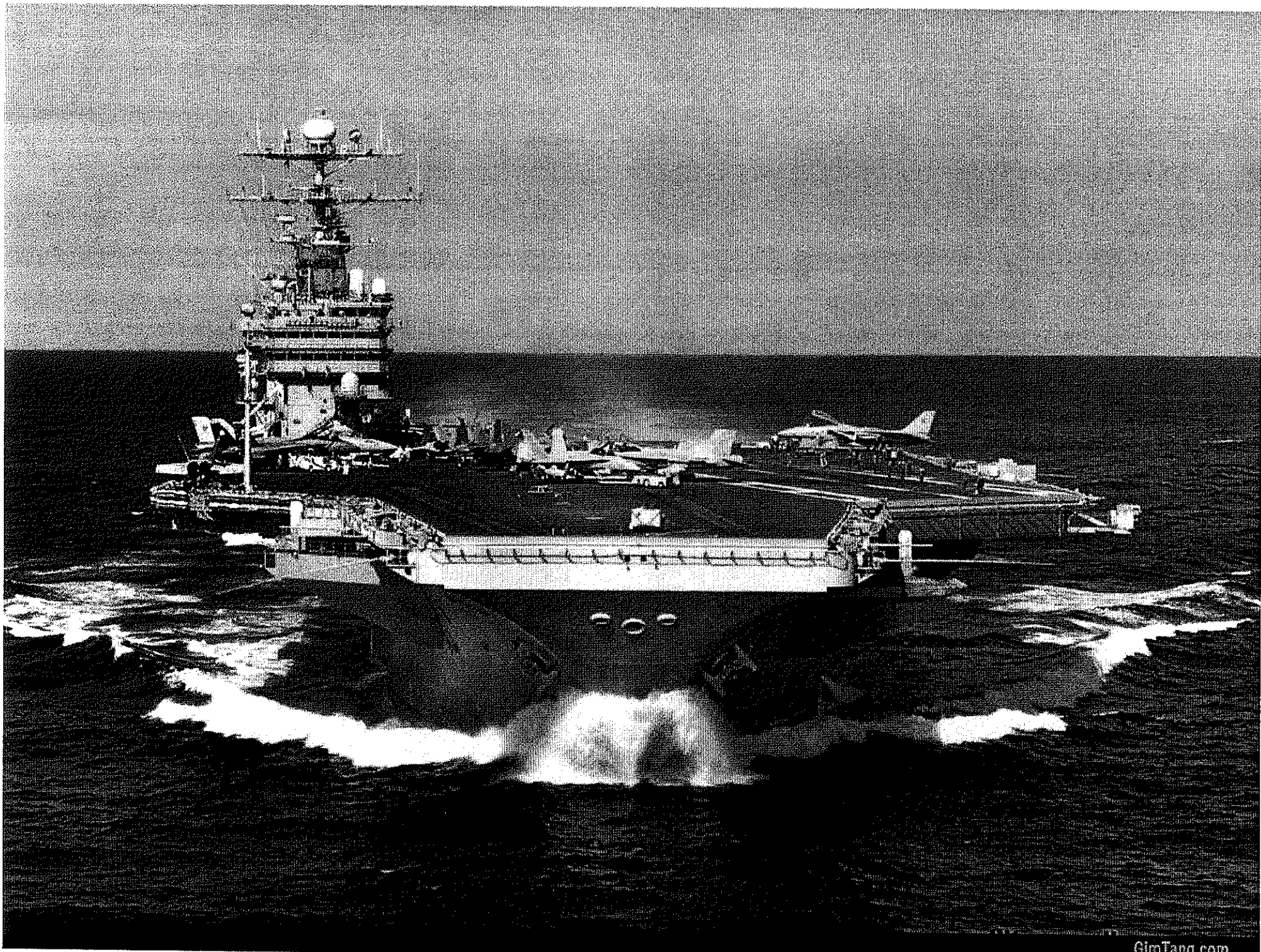


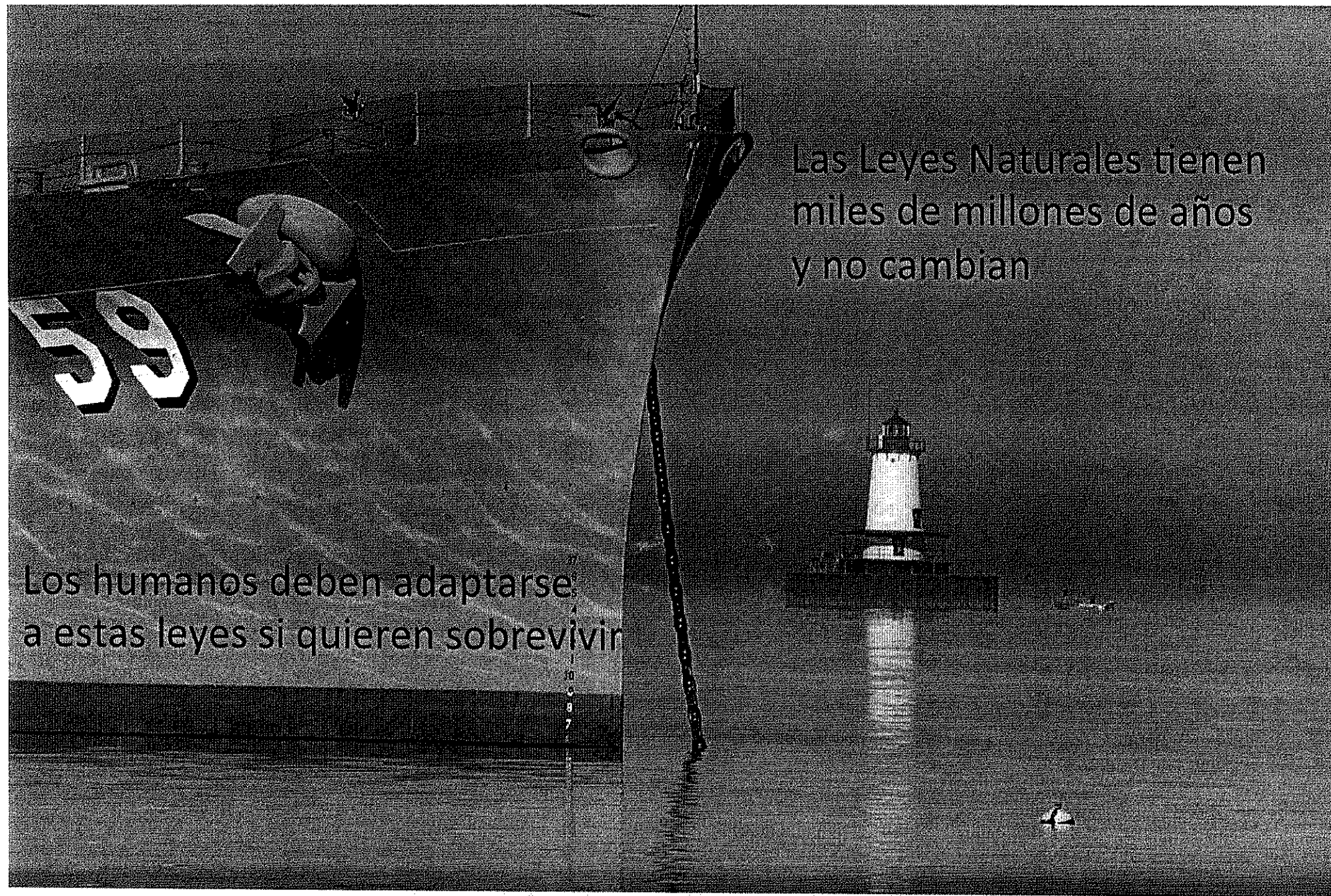
INTRODUCCIÓN al uso de BIOFERTILIZANTES

Gustavo Alés
gustavoales@hotmail.com
697 617 695

La agricultura tendrá futuro
solo si deja de luchar
absurdamente contra
las leyes naturales







Las Leyes Naturales tienen
miles de millones de años
y no cambian

Los humanos deben adaptarse
a estas leyes si quieren sobrevivir



LEYES NATURALES

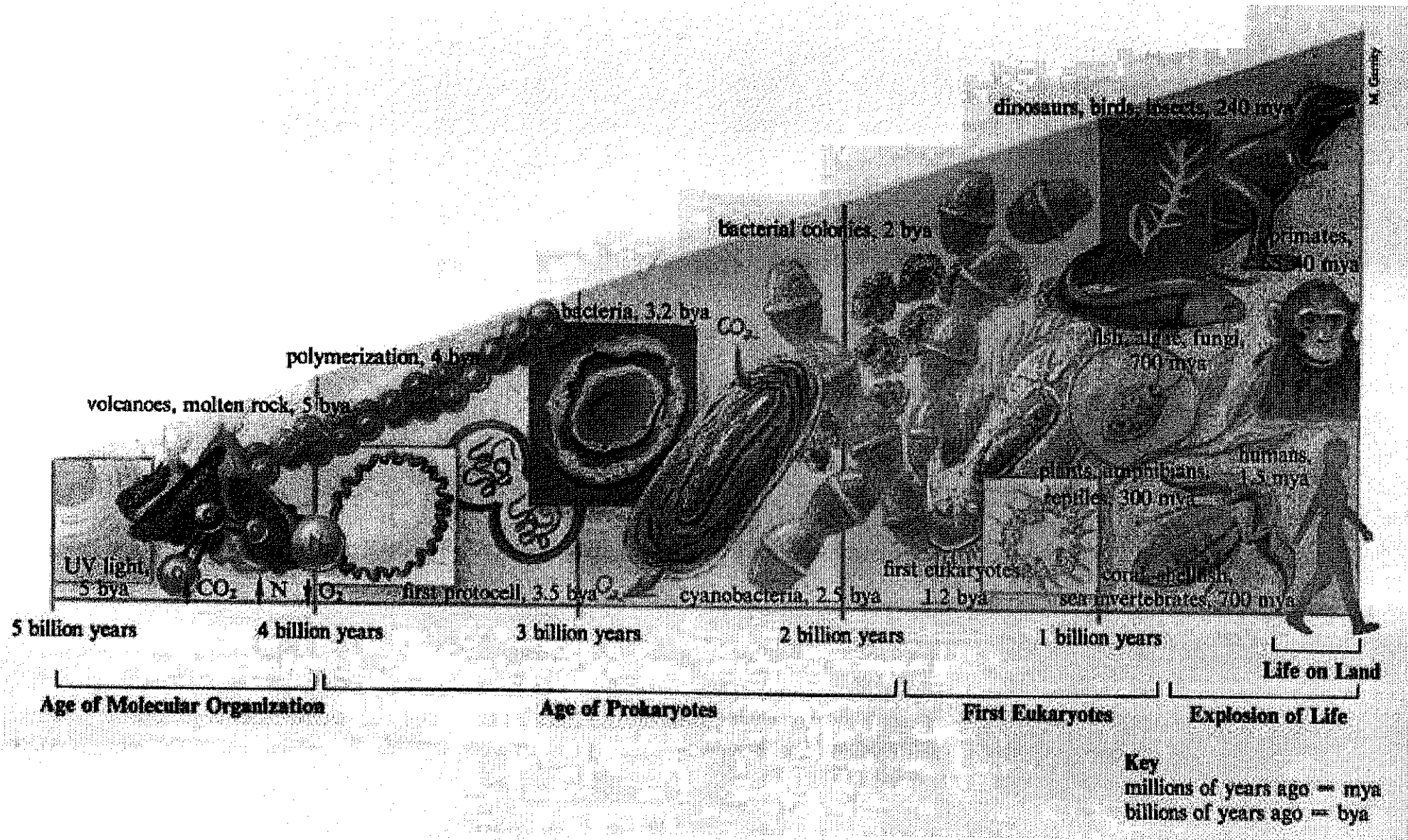
Ciclo del Agua

Ciclo de Nutrientes

Flujo de Energía

Dinámicas poblacionales

Complejidad creciente



La **Agricultura** tiene
10.000 años
de historia

El primer tractor es del siglo XIX

Los abonos nitrogenados
se fabrican desde los años 50

El primer herbicida sintético
es de principios de 1960

El primer invernadero en España
se construyó el año 1978

The background of the entire image is a dark, grainy texture that resembles parched, cracked earth. The cracks are irregular and form a network of polygonal shapes across the entire frame.

Partimos de un modelo agrícola
contaminante, depredador de recursos
naturales, inviable, insano y
socialmente destructivo

AGRICULTURA
TÓXICA

Alta dependencia de insumos externos
Amplio uso de Biocidas (un producto químico para cada problema)
Semilla (híbrida o transgénica) ajena a la explotación agrícola
Mecanización con maquinaria pesada
Grandes extensiones de monocultivos reiterados
Actividad subvencionada e intervenida políticamente
Especialización geográfica en pocos cultivos y variedades
Baja biodiversidad y homogeneidad paisajística
Gran separación geográfica entre producción y consumo
Producción orientada a grandes circuitos (exportación y mayoristas)
Abismo de precios entre producción y consumo
Fertilización química
Plástico para el forzamiento climático de las cosechas
Elevado consumo energético (combustibles fósiles)
Agricultura y Ganadería separadas
Alimentación industrial y comida rápida
Despilfarro de comida
Alimentos poco saludables
Falta de relevo generacional
Desprestigio social del trabajo agrario
Agricultura SIN agricultores ni agricultoras

Las prácticas de la **Agricultura Tóxica** generan problemas agrícolas que **no** se pueden resolver desde sus postulados técnicos

Problema	Práctica	Problema creado
Ineficiencia laboral	Mecanización	Erosión Dependencia energética Mayores costos de inversión Incremento de la deuda Mayores y menos fincas
Poca producción	Fertilización inorgánica	Contaminación del Agua Incremento de enfermedades Dependencia energética Mayores costos de funcionamiento Poca flexibilidad
Pérdidas en cultivos	Pesticidas	Resistencia Contaminación del Agua Nuevas plagas Dependencia externa Mayores costos de funcionamiento
Bajas cosechas	Mejora genética (Híbridos y Transgénicos)	Dependencia externa Incremento de plagas y enfermedades Resistencia vertical Pérdida de adaptación local Mayores costos de funcionamiento

**DESTRUCCIÓN
del SUELO**

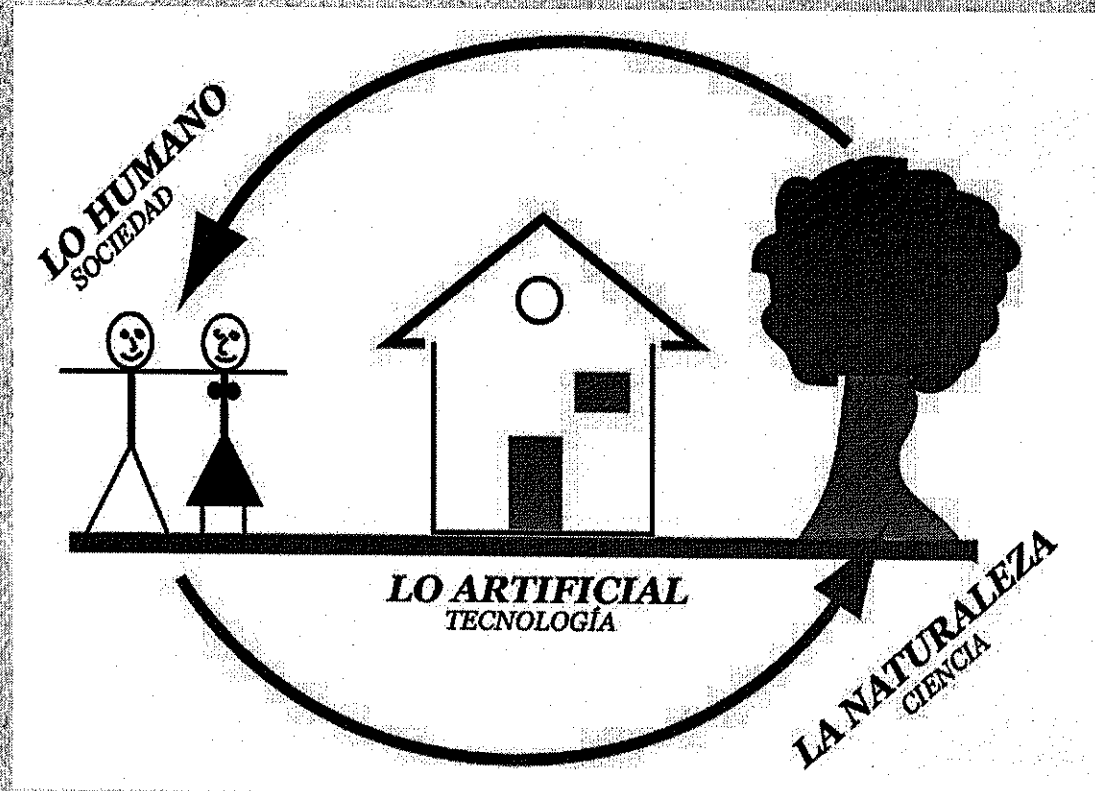
iii ¿Por qué **NO** debemos desanimarnos? !!!

Porque **Nunca** en la Historia hemos sabido
cómo hacer Agricultura y Ganadería
y construir **Suelo Fértil** a la vez

iii Y AHORA **SÍ** SABEMOS !!!

Agroecología

Es el arte, la técnica, la cultura y la sabiduría
de producir alimentos sanos y suficientes
sin destruir nuestros sustentos vitales
(agua, suelo, biodiversidad, paisaje)
y creando sociedades justas, armoniosas y equitativas





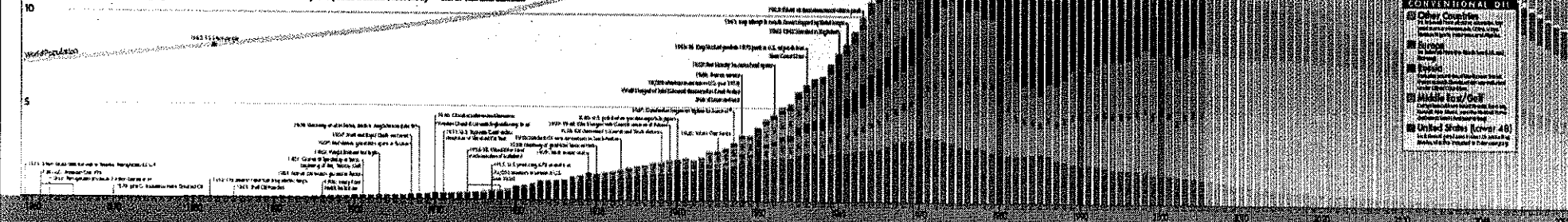
La **AGROECOLOGÍA** apuesta por
una AGRICULTURA y una GANADERIA
sin VENENOS tóxicos
sin abonos QUÍMICOS
sin tanto PETRÓLEO
sin INTERMEDIARIOS
sin TRANSGÉNICOS ... pero
CON muchos más hombres y mujeres
que VIVAN del CAMPO dignamente.

Alta dependencia de insumos externos



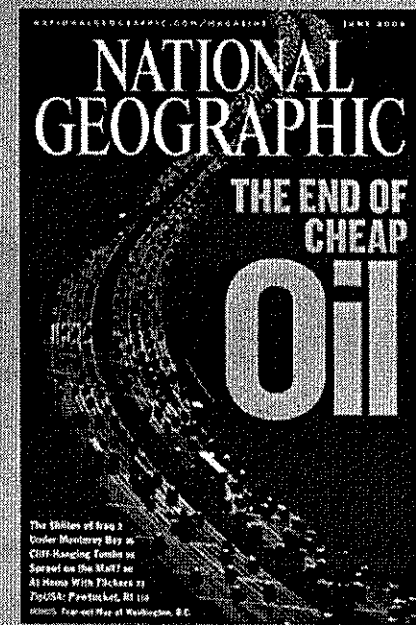
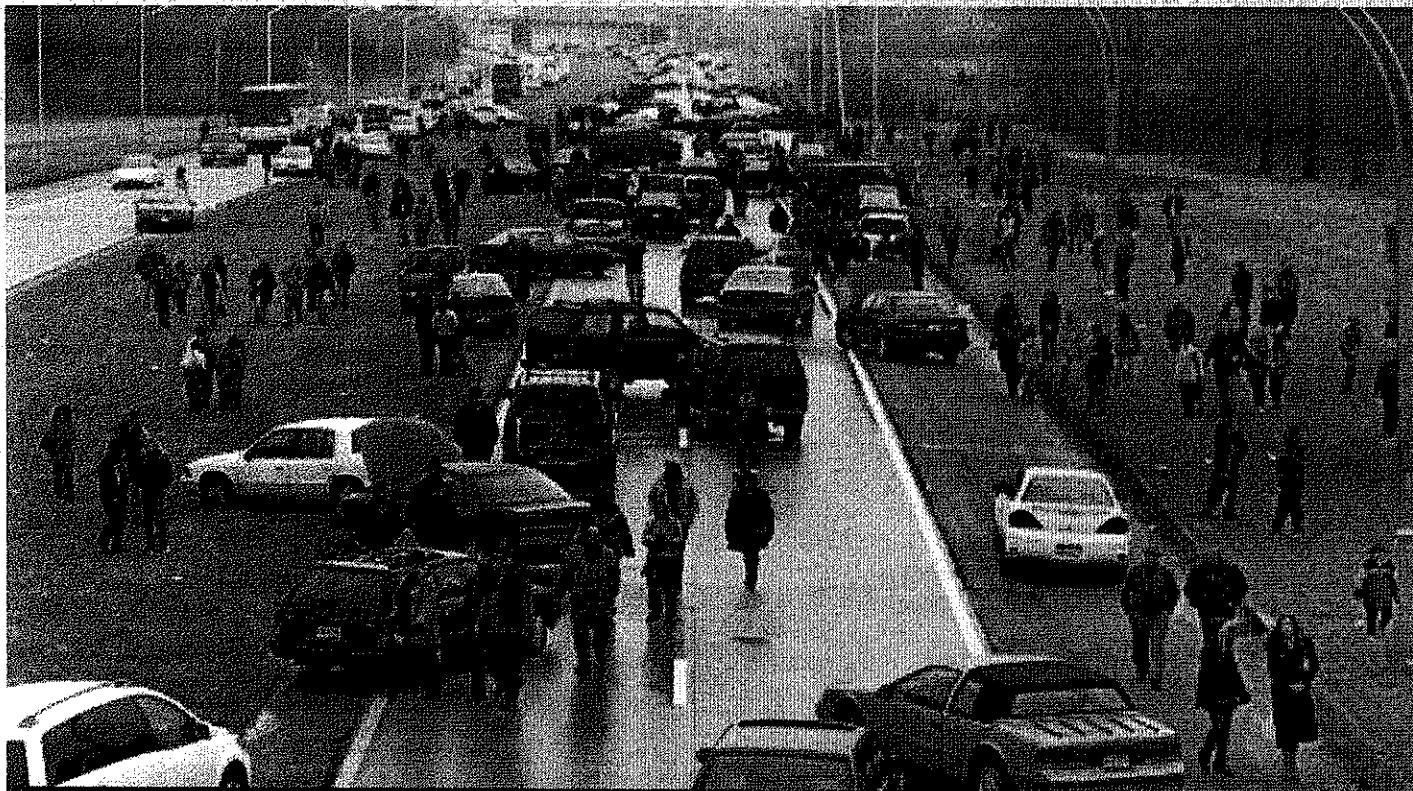
The Oil Age

World Oil Production 1859 - 2050

[illegible]

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]



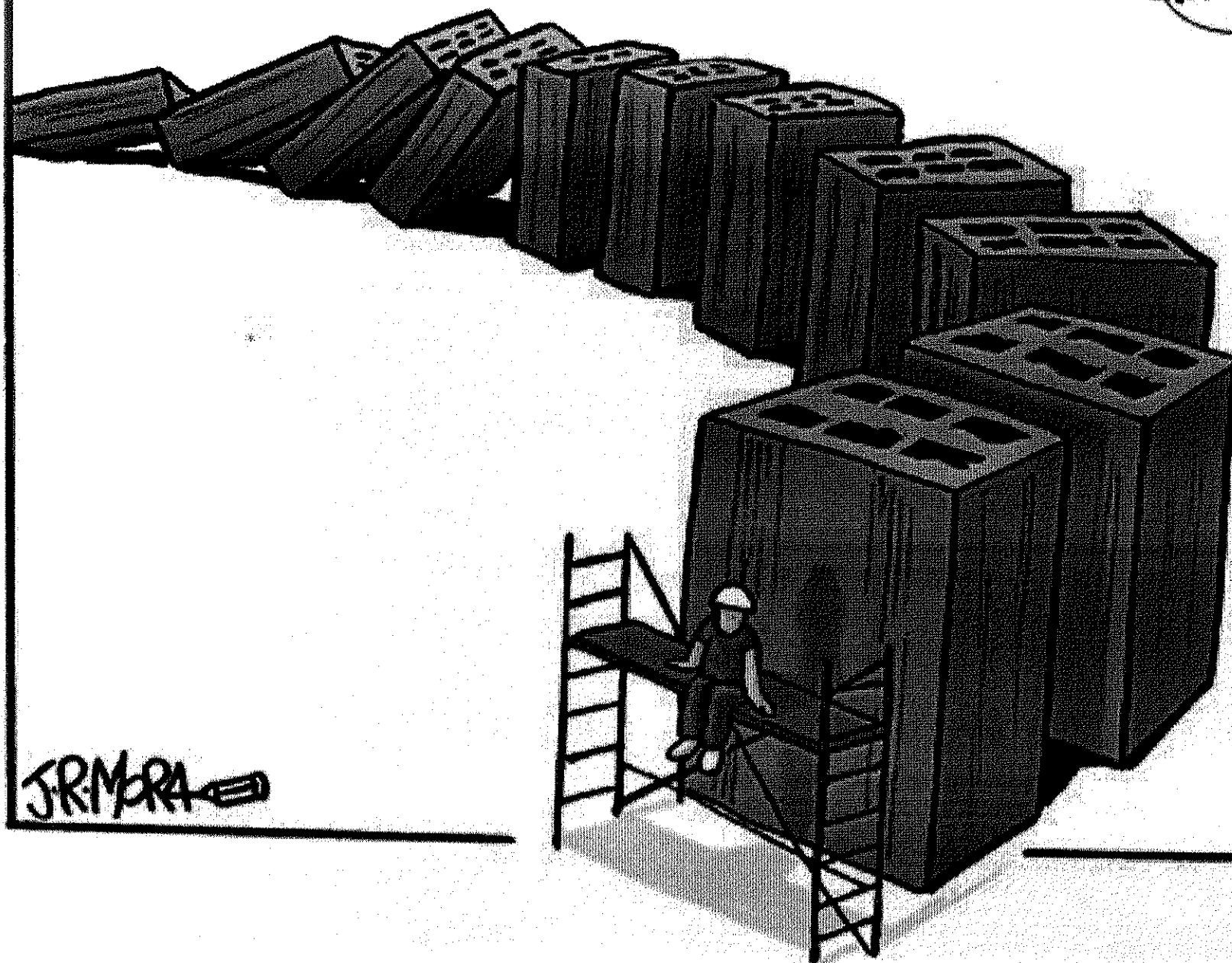
"One thing is clear: the era of easy oil is over. What we all do next will determine how well we meet the energy needs of the entire world in this century and beyond."

- David J. O'Reilly, Chairman & CEO, Chevron Corporation, July 2005

LES DIJIMOS QUE LOS DESASTRES QUE ESTABAN ORGANIZANDO LOS HEREDARIAN SUS NIETOS, PERO FUE UN ERROR DE CÁLCULO, EN REALIDAD LOS VAN A DISFRUTAR USTEDES.

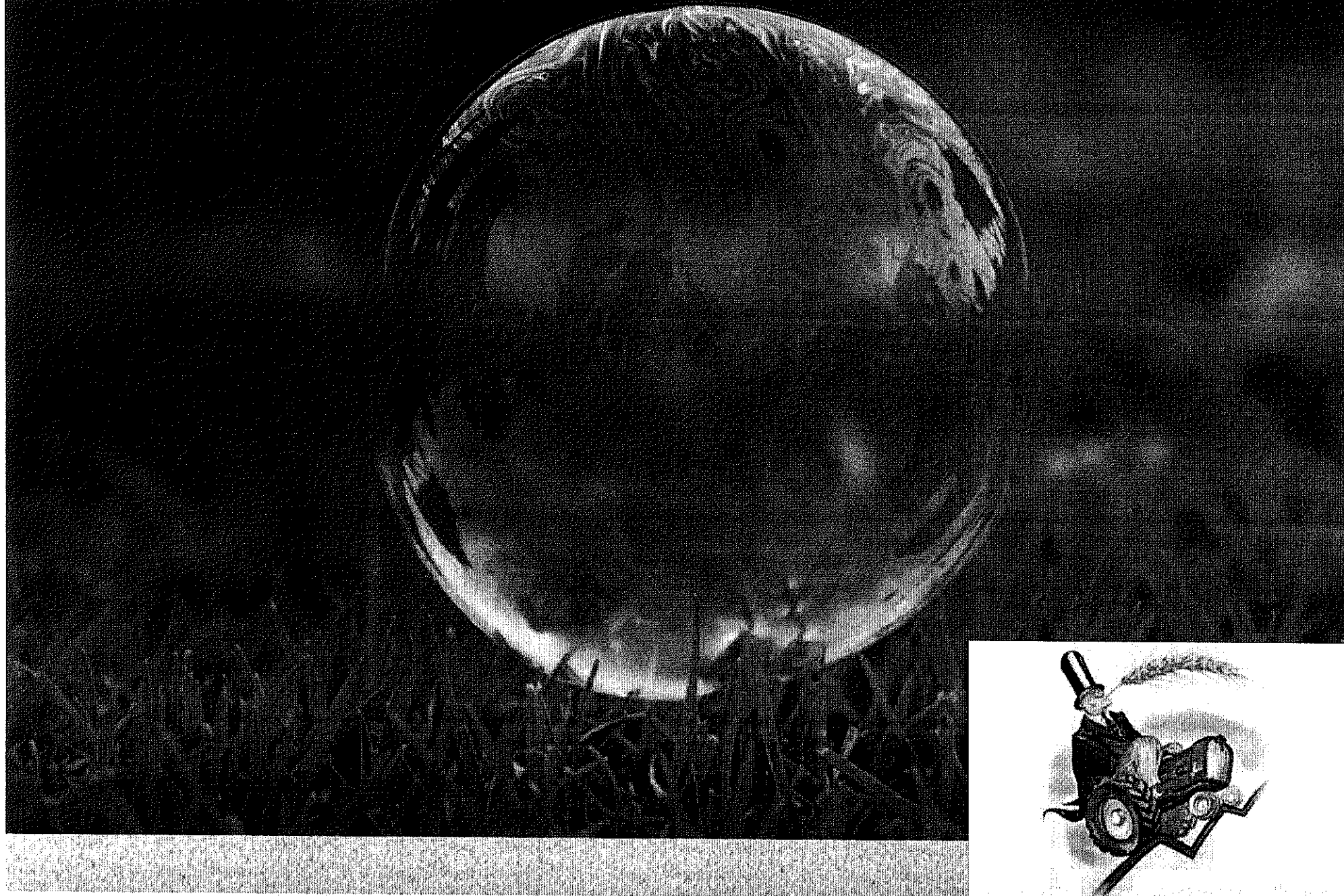


JRMORA.COM

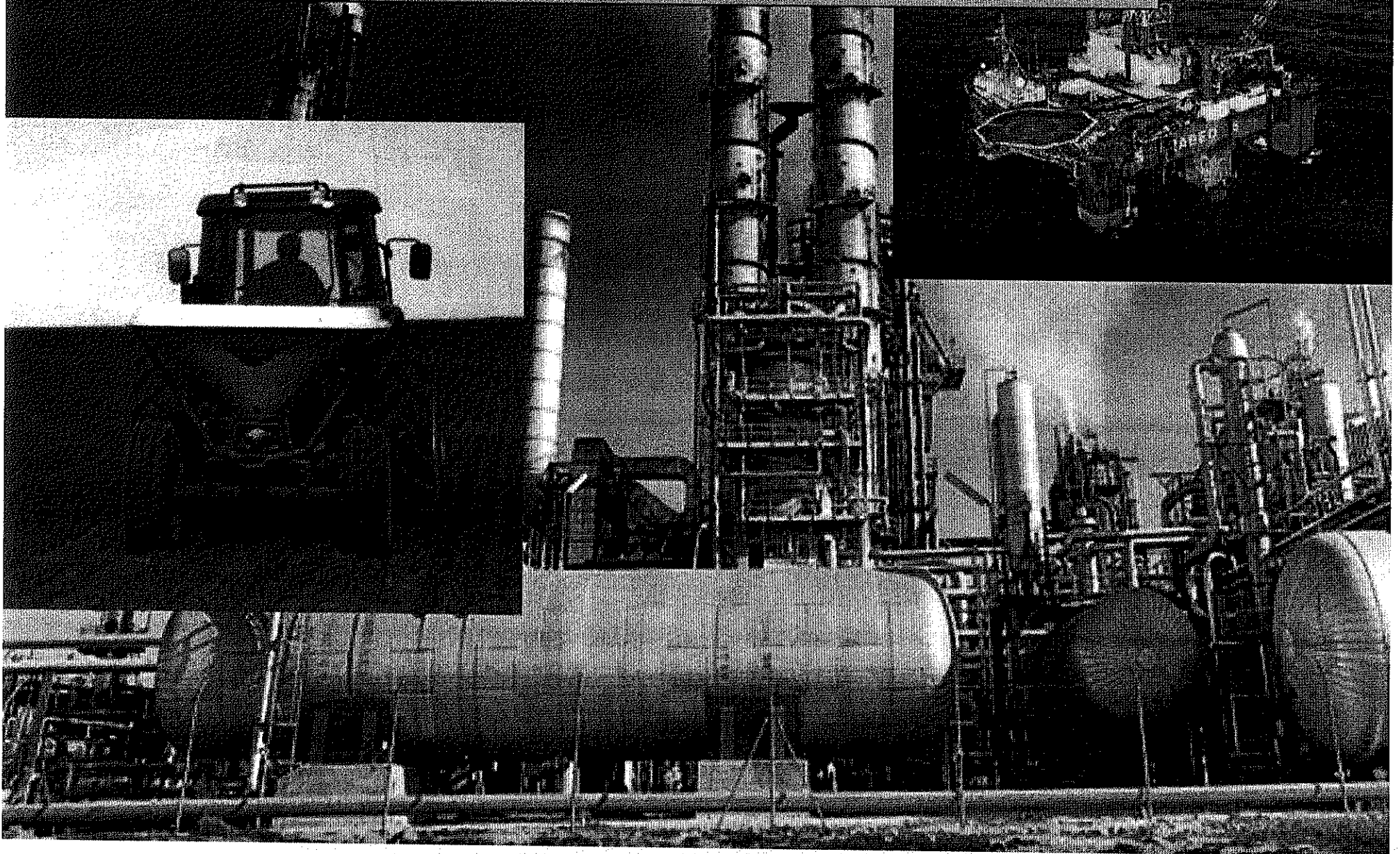


JRMORA

BURBUJA ALIMENTARIA



Fertilización Química

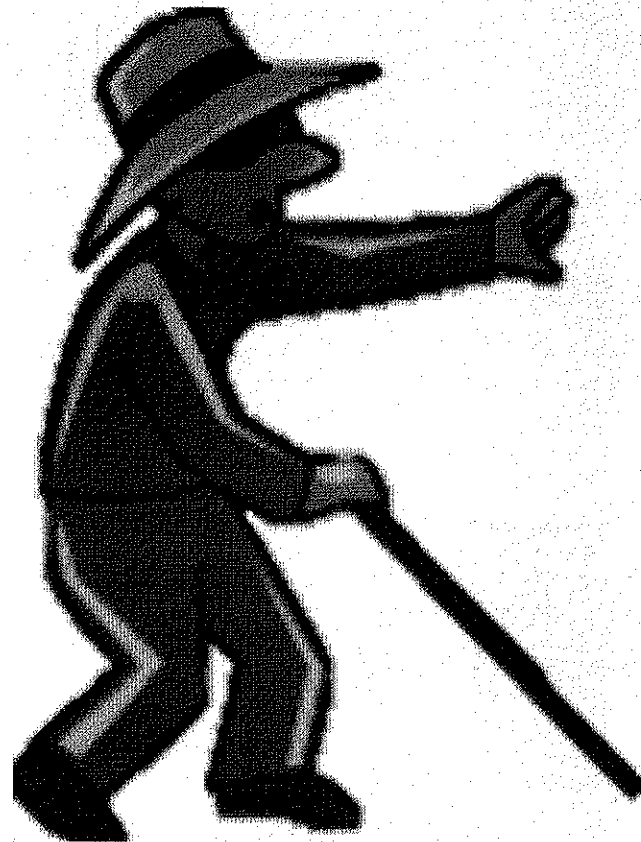




**Se ALIMENTA
al *SUELO***

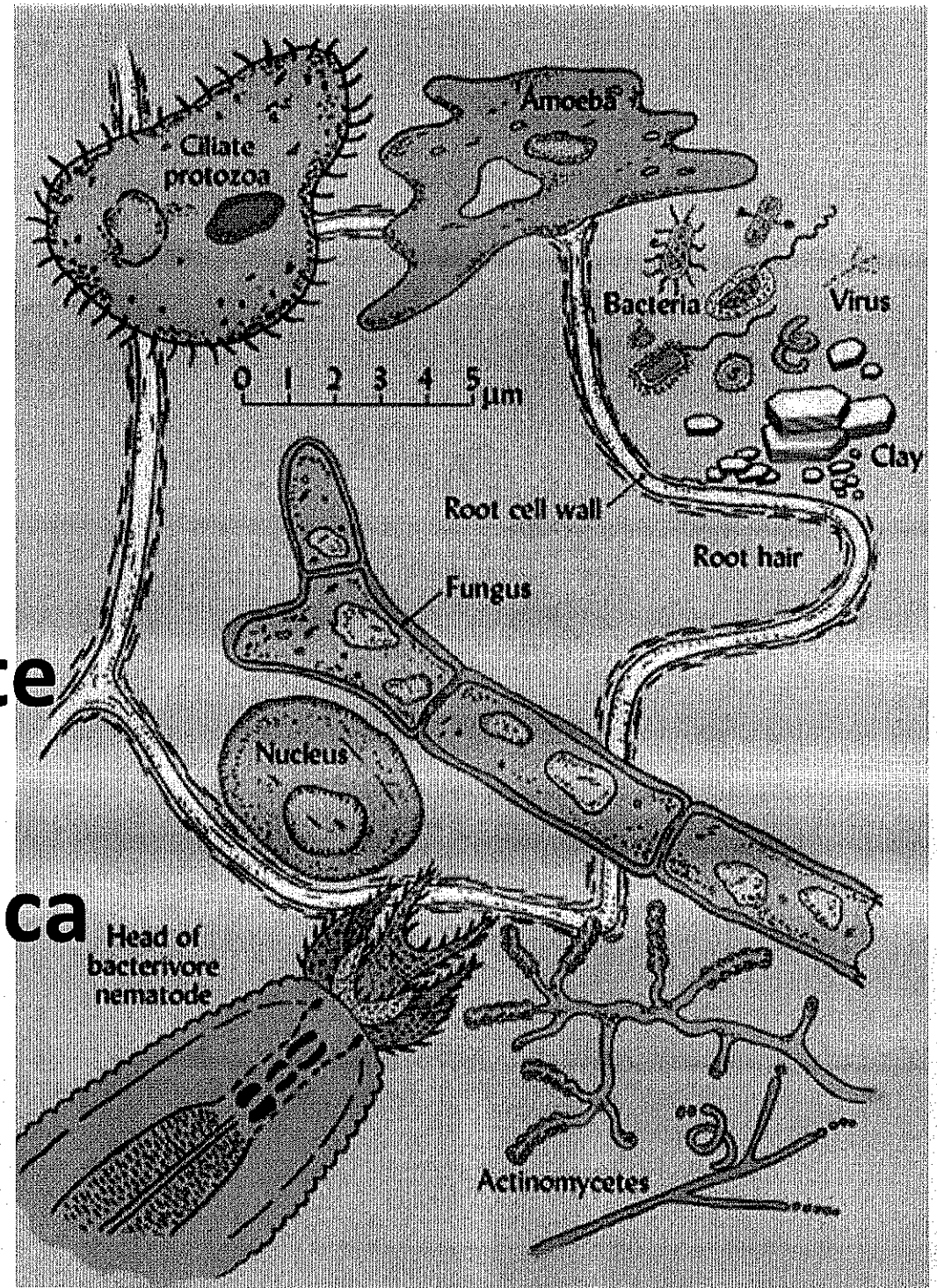
**y el SUELO
alimentará a la
PLANTA**

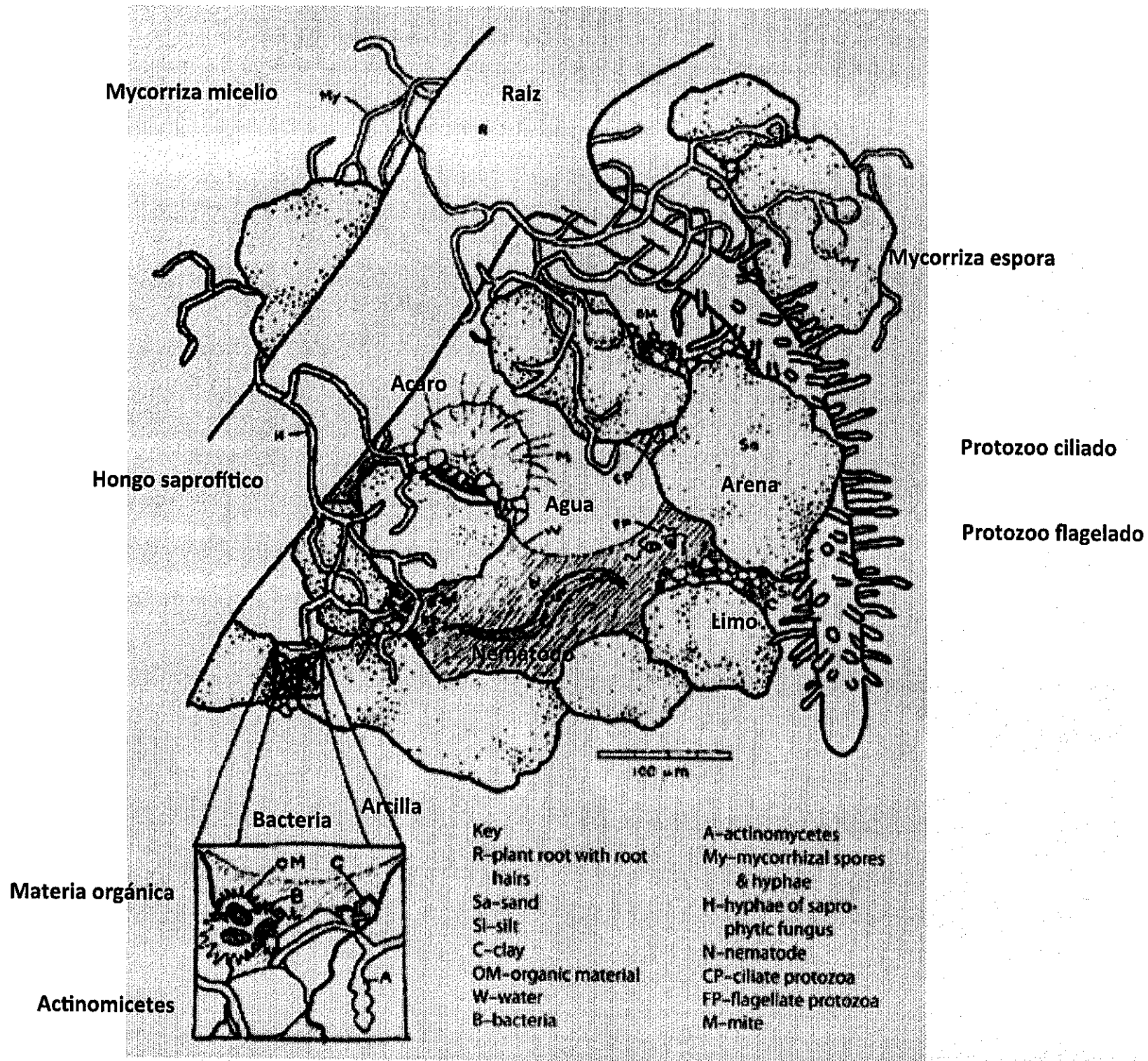
La Agricultura es ciega ...





**... lo más importante
ocurre bajo tierra y
a escala microscópica**





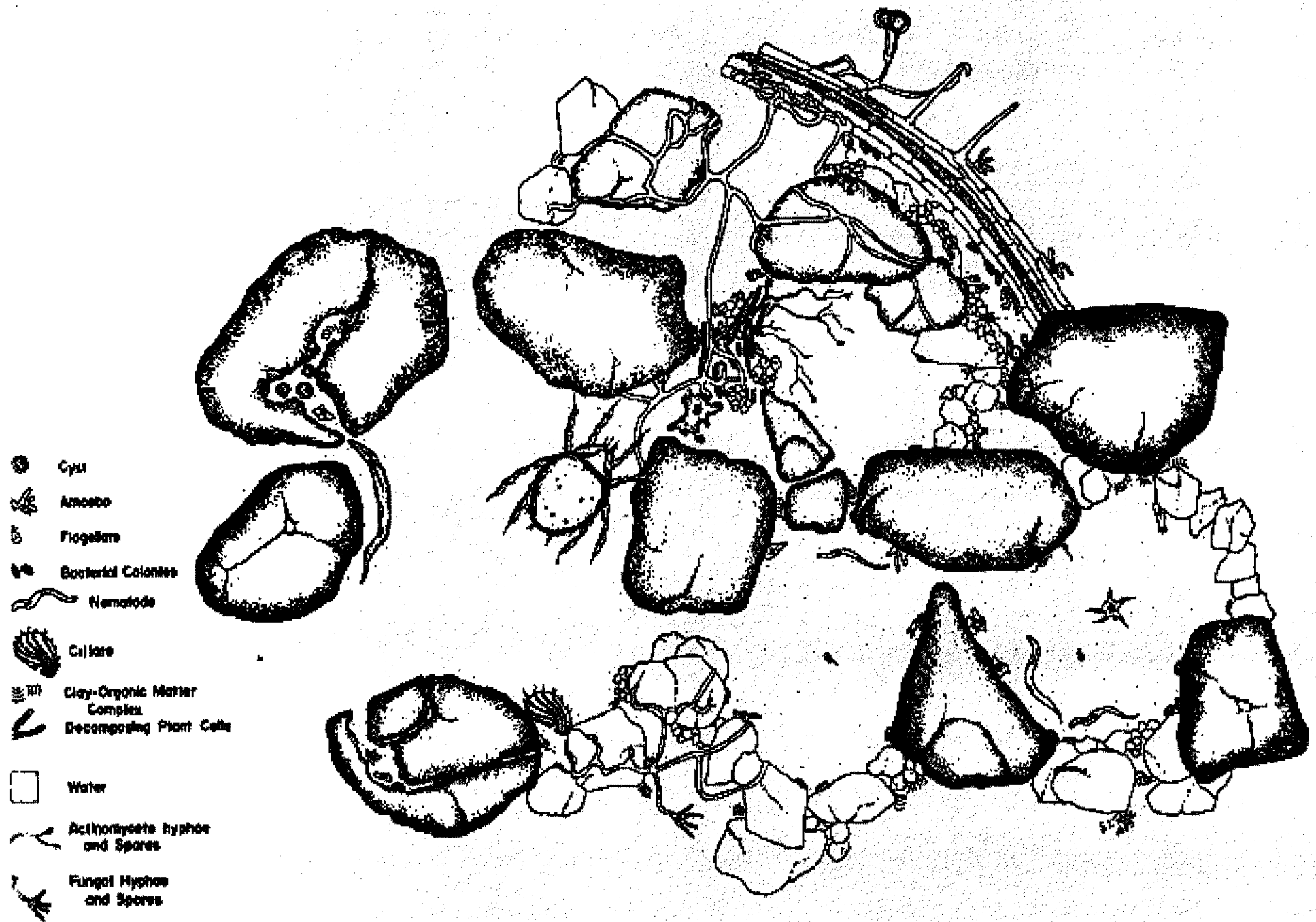
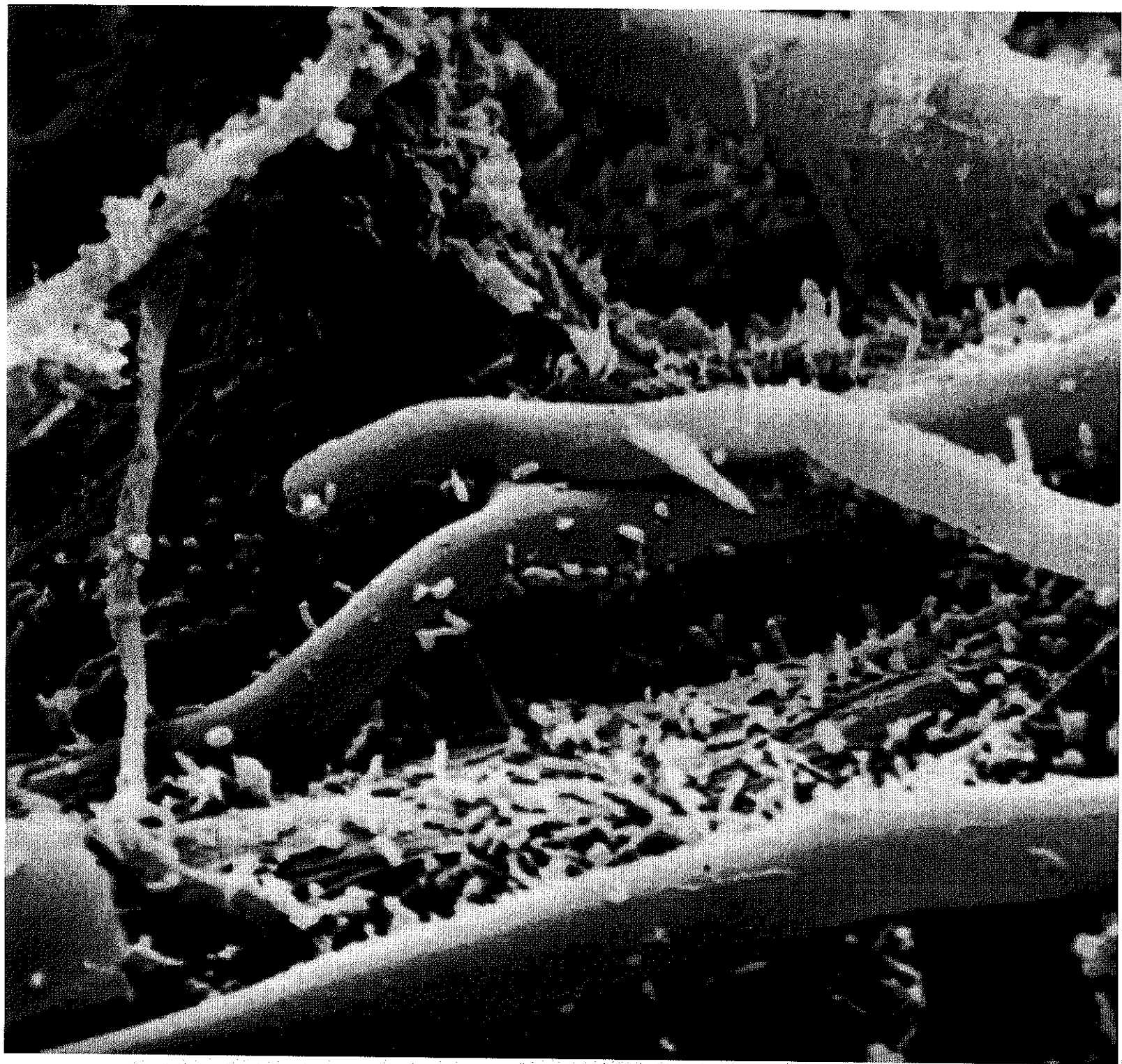
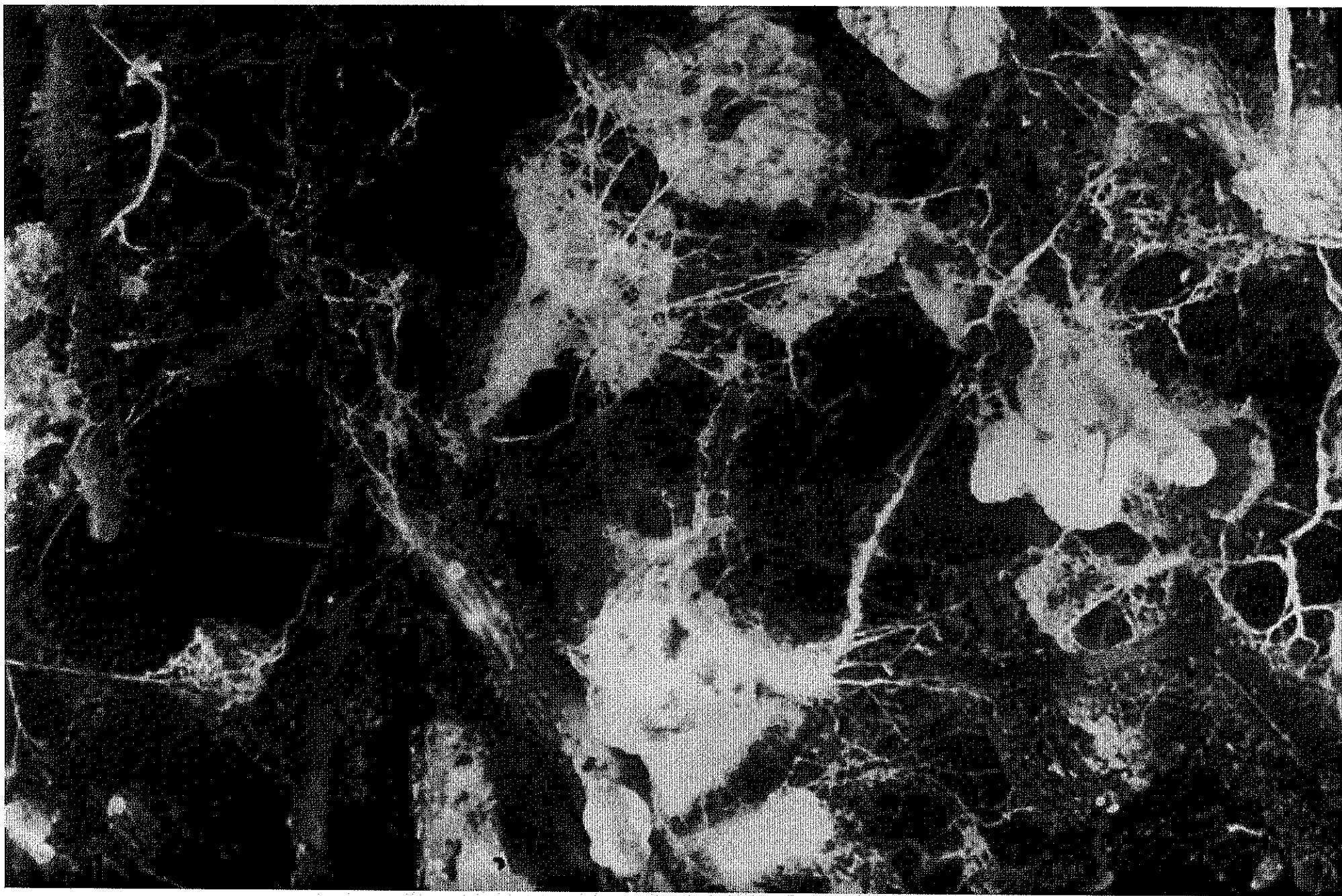


Fig. 4. Horizontal cross section (1 cm^2) of a highly structured and biologically active microsite in the short grass prairie. It depicts how the different classes of pore space and the distribution of water within pores influence the feeding and habitat relationships among the different groups of soil organisms. Illustration by S. L. Rose.







Hay más de mil
millones de
Organismos Vivos
en cada cm
cúbico de tierra
fértil y sana!!

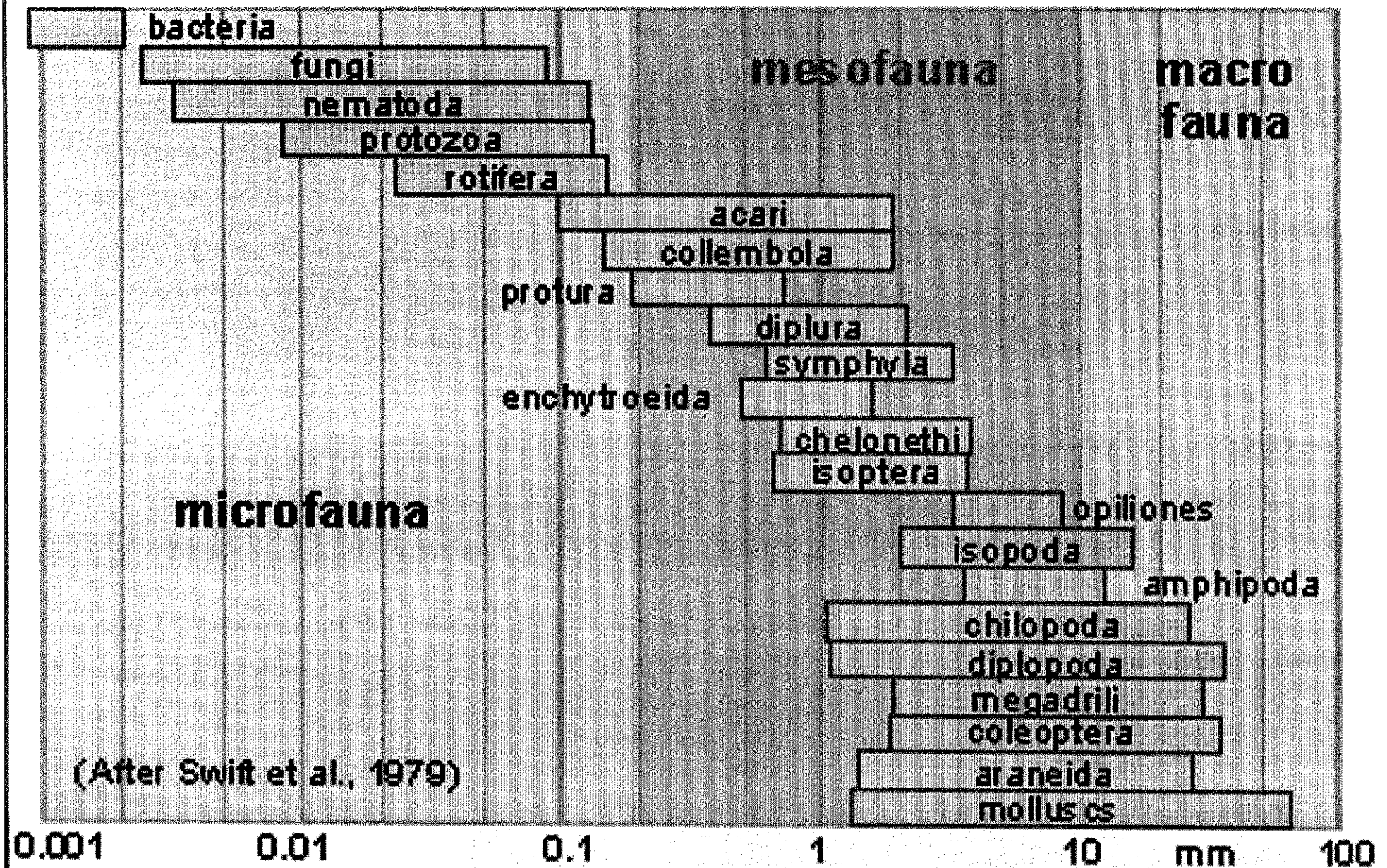
No comprendemos
el Rol ni la Vida de
la mayor parte de
esos Organismos



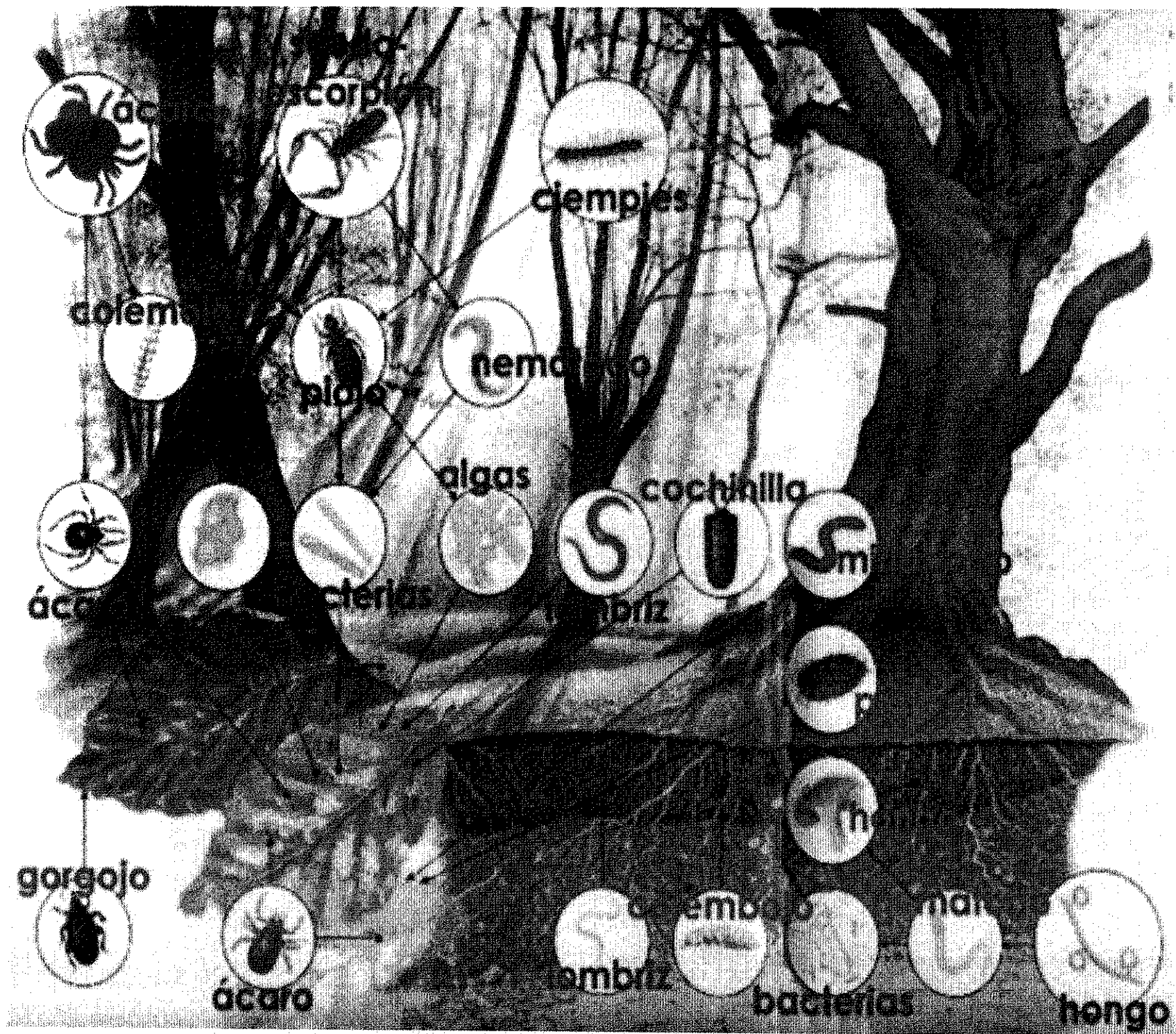
Vida en 1 m² de suelo no labrado

- 
- 1 gr de **Virus**: matan a bacterias haciendo la liberación de sus nutrientes
 - 50 gr de **Bacterias**: factorías químicas, convierten residuos en nutrientes
 - 100 gr de **Hongos**: convierten los residuos fibrosos en compuestos digeribles
 - 5 gr de **Protozoos**: depredan hongos y bacterias
 - 0,2 gr de **Nematodos**: comen protozoos y hongos, atacan a raíces
 - 0,5 gr de **Artrópodos** (arañas, ácaros, coleópteros, etc.): comen todo los anteriores
 - 1-20 gr de **Lombrices**: comen suelo y residuos, galerías, entierran residuos
 - 50 gr de **Ganado**: ovejas, vacas

decomposing soil organisms by body width



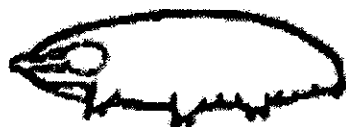
	Ciclo de nutrientes	Estructura del suelo
microflora (bacterias + hongos)	Catabolizar materia orgánica. Mineralización e inmovilización de nutrientes.	Producir compuestos orgánicos que se unen a los agregados. Las hifas enredan las partículas en agregados.
microfauna	Regular las poblaciones de bacterias y hongos. Alterar los ciclos de nutrientes	Puede afectar la estructura agregada a través de la interacción con la microflora.
mesofauna	Regular las poblaciones de hongos y microfauna. Alterar los ciclos de nutrientes. Fragmentar residuos de plantas.	Producir pellets fecales. Crear bioporos. Promover la humificación.
macrofauna	Fragmentar residuos de plantas. Estimular la actividad microbiana.	Mezclar partículas orgánicas y minerales. Redistribuir la materia orgánica y microorganismos. Crear bioporos. Promover la humificación. Producir pellets fecales



SOME COMMON NZ SOIL ANIMALS



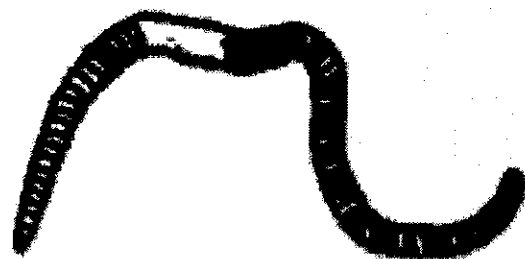
<1mm. Nematode (pale worm)
[OAB horizons]



<1mm. Tardigrade
[OA horizons]



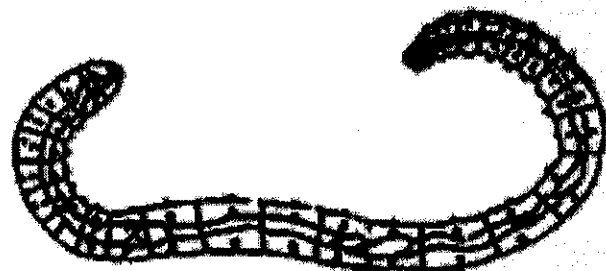
1-6mm. Collembola
(springtails)
[OA horizons]



100mm. Introduced
garden worm
[ABC horizons]



20-200mm. Native
earthworm.
[OABC horizons]

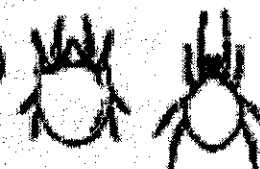


3-15mm. Potworm or
Compost worm.
[OAB horizons]

<1mm. Ostracod
[O horizon]



<1mm. Mites (Acari)
[OA horizons]



5-12mm. Woodlouse,
slater. [OA horizons]



5-20mm. Hopper
[OA horizons]



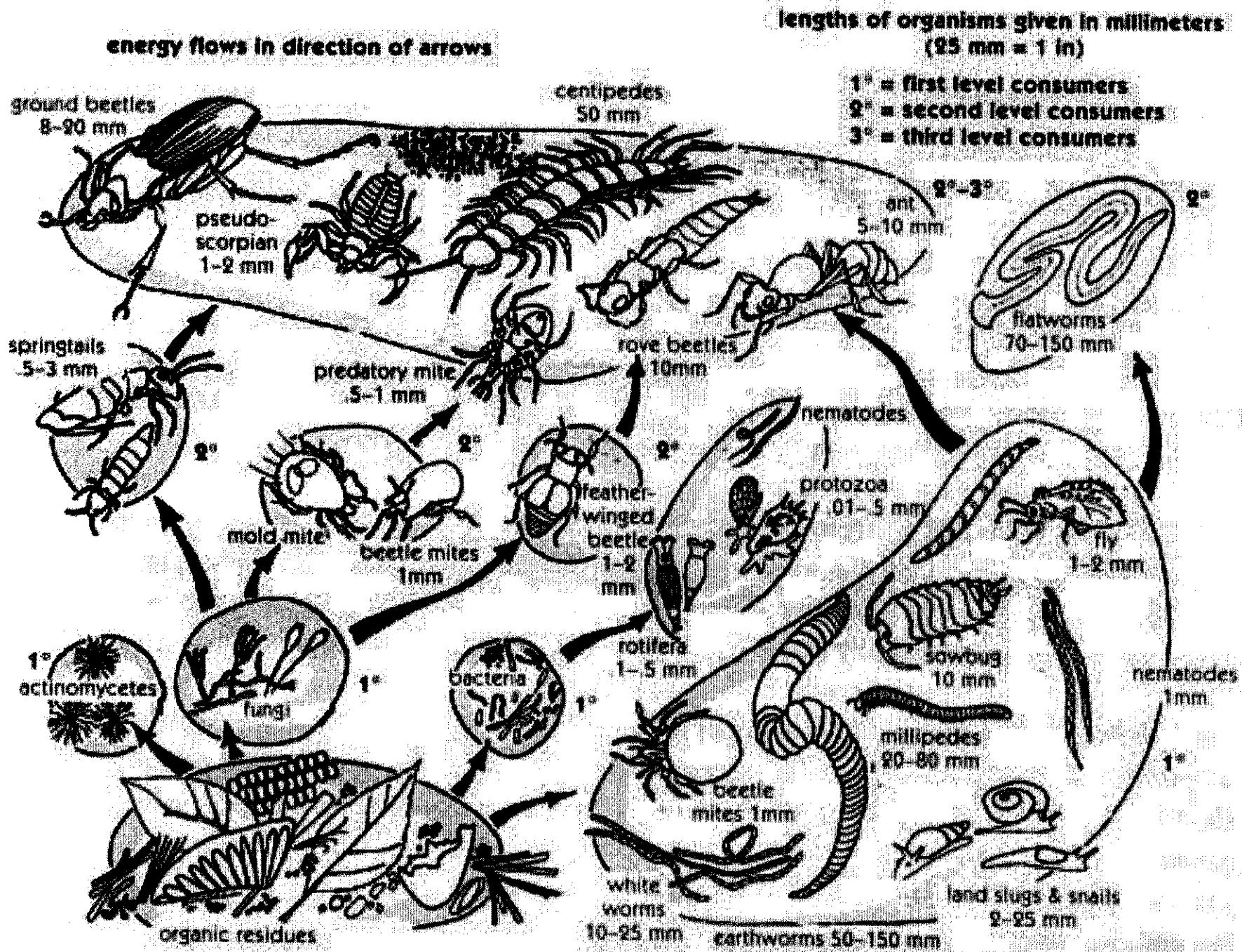
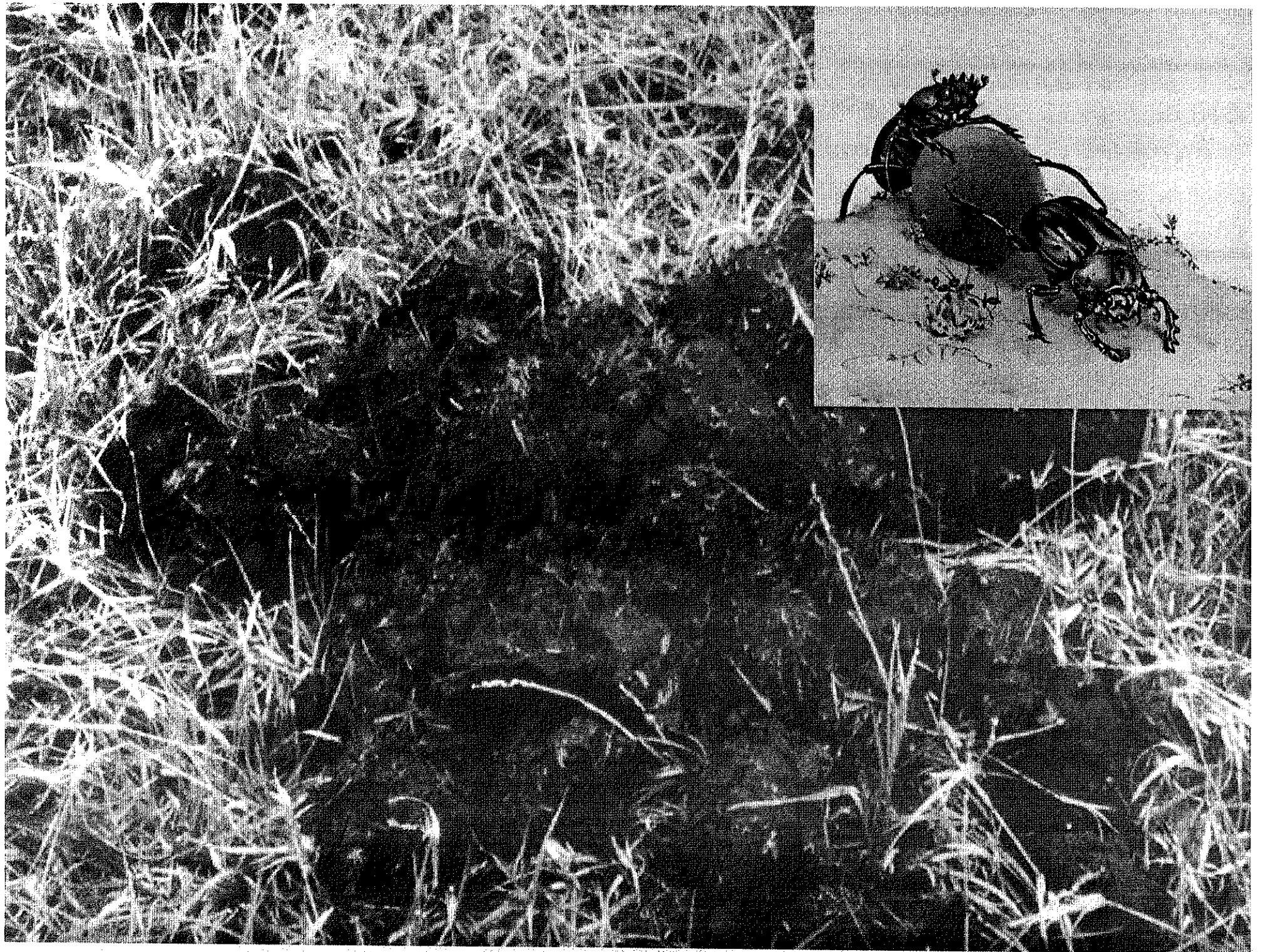
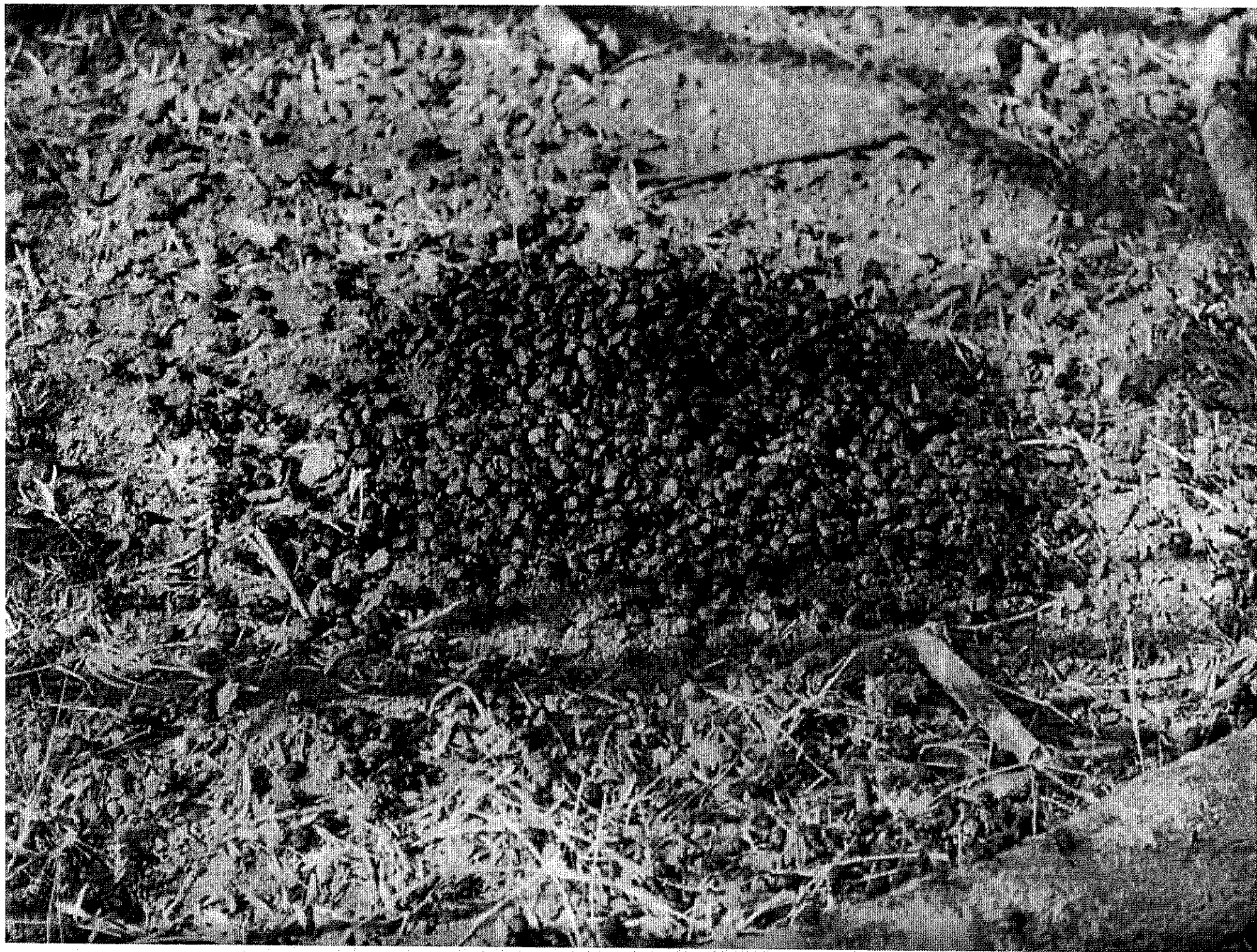
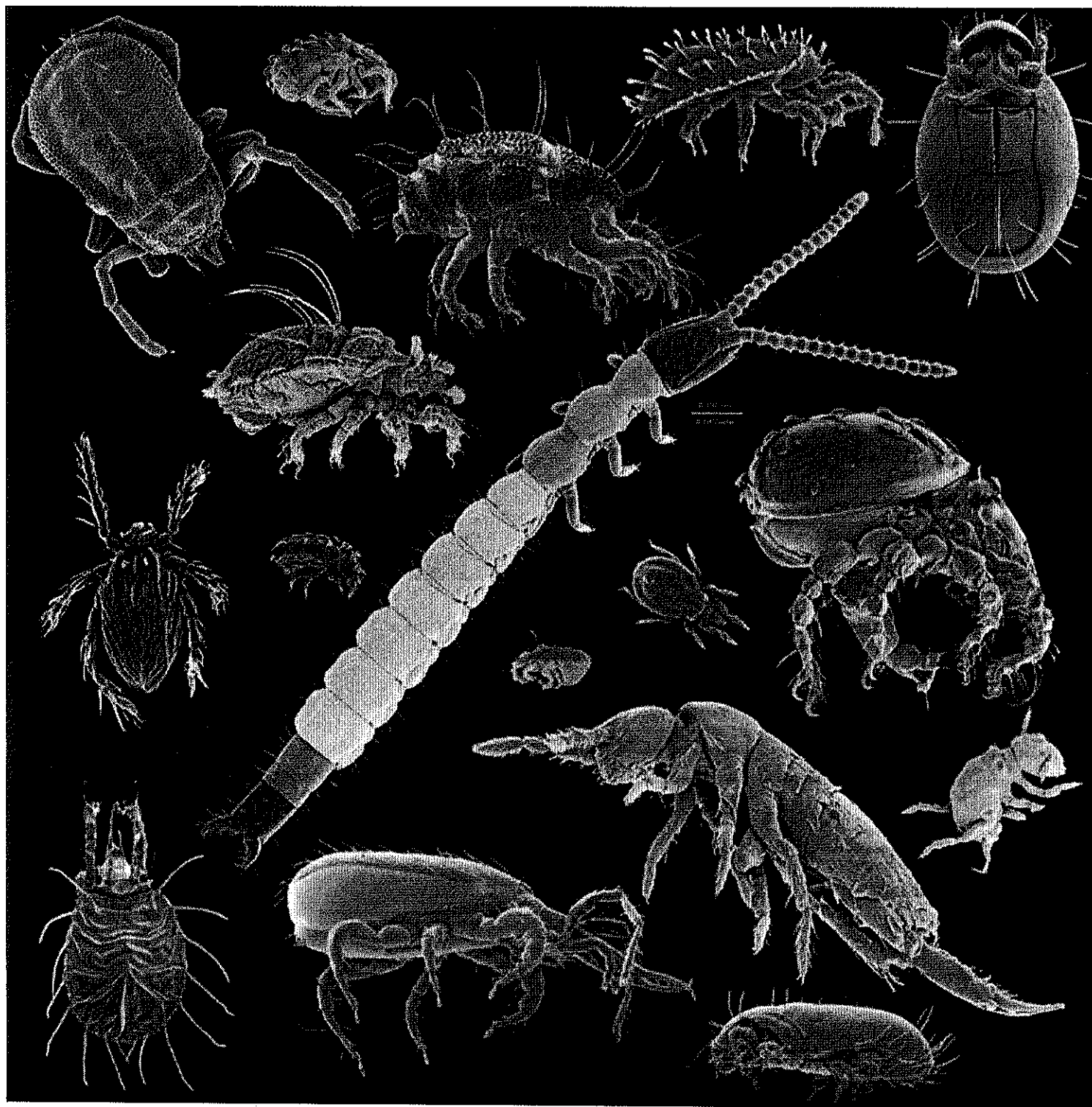


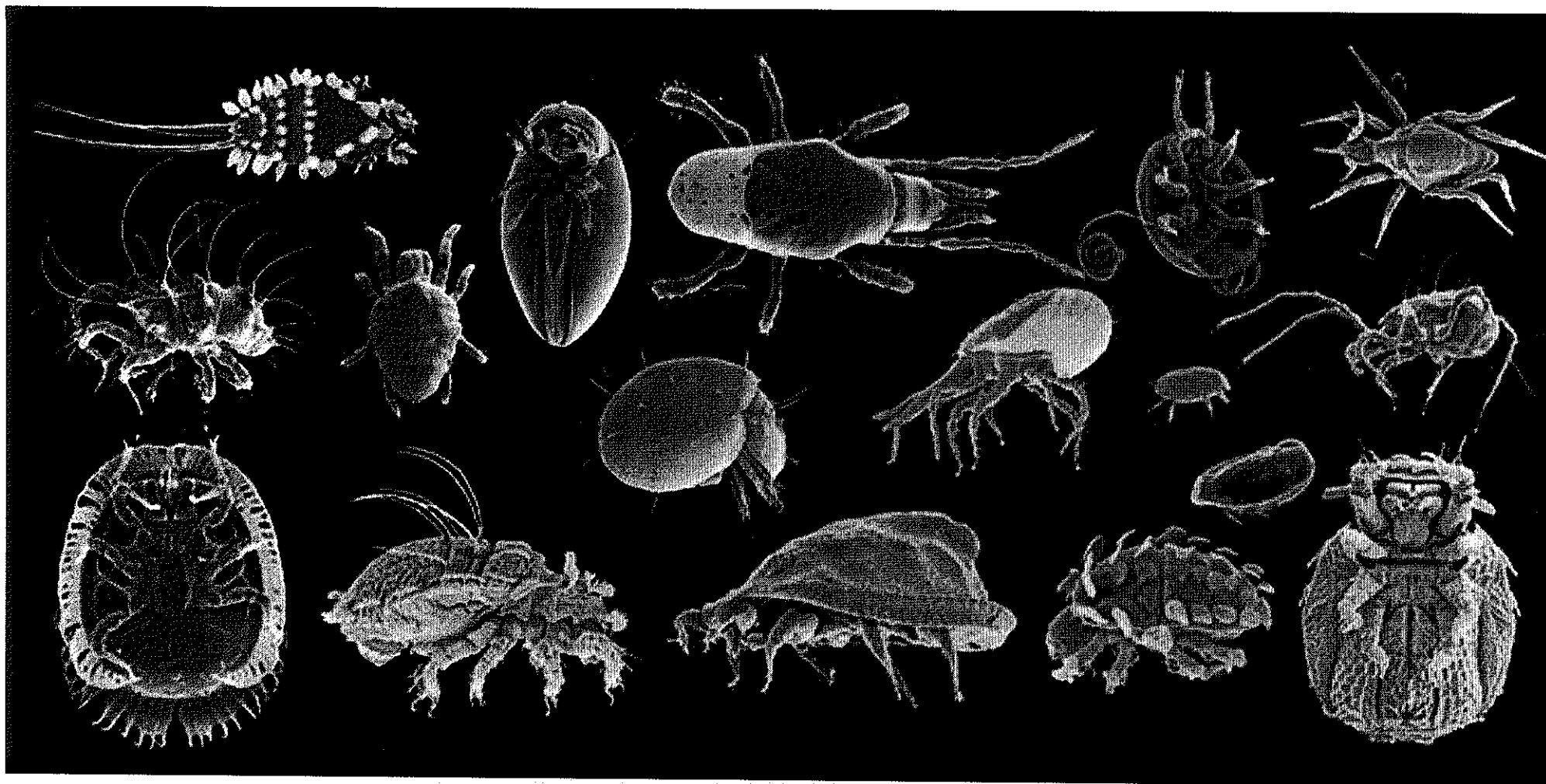
Figure 3.1 Soil organisms and their role in decomposing residues. Modified from D.L.Dindal, 1978.



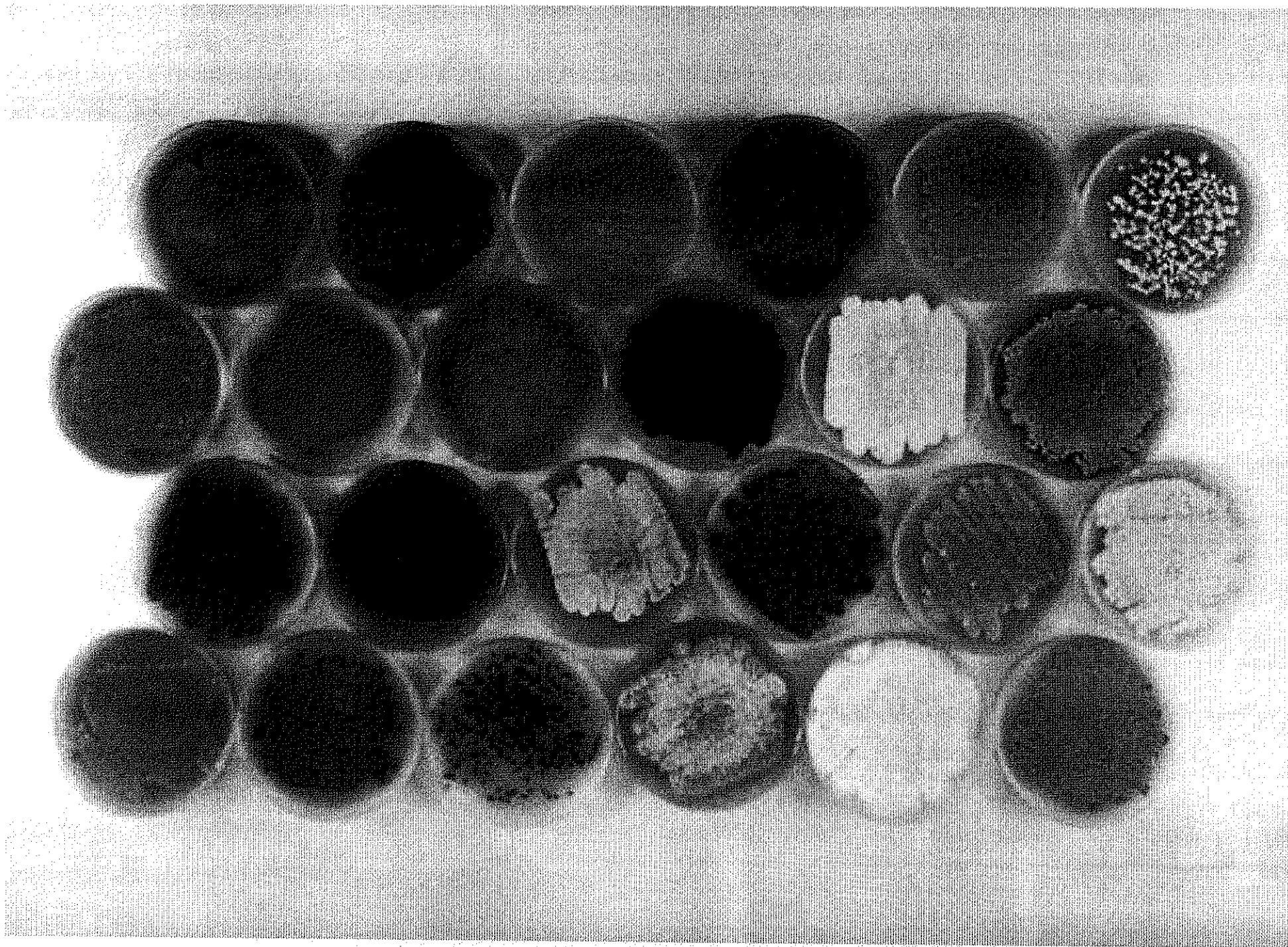




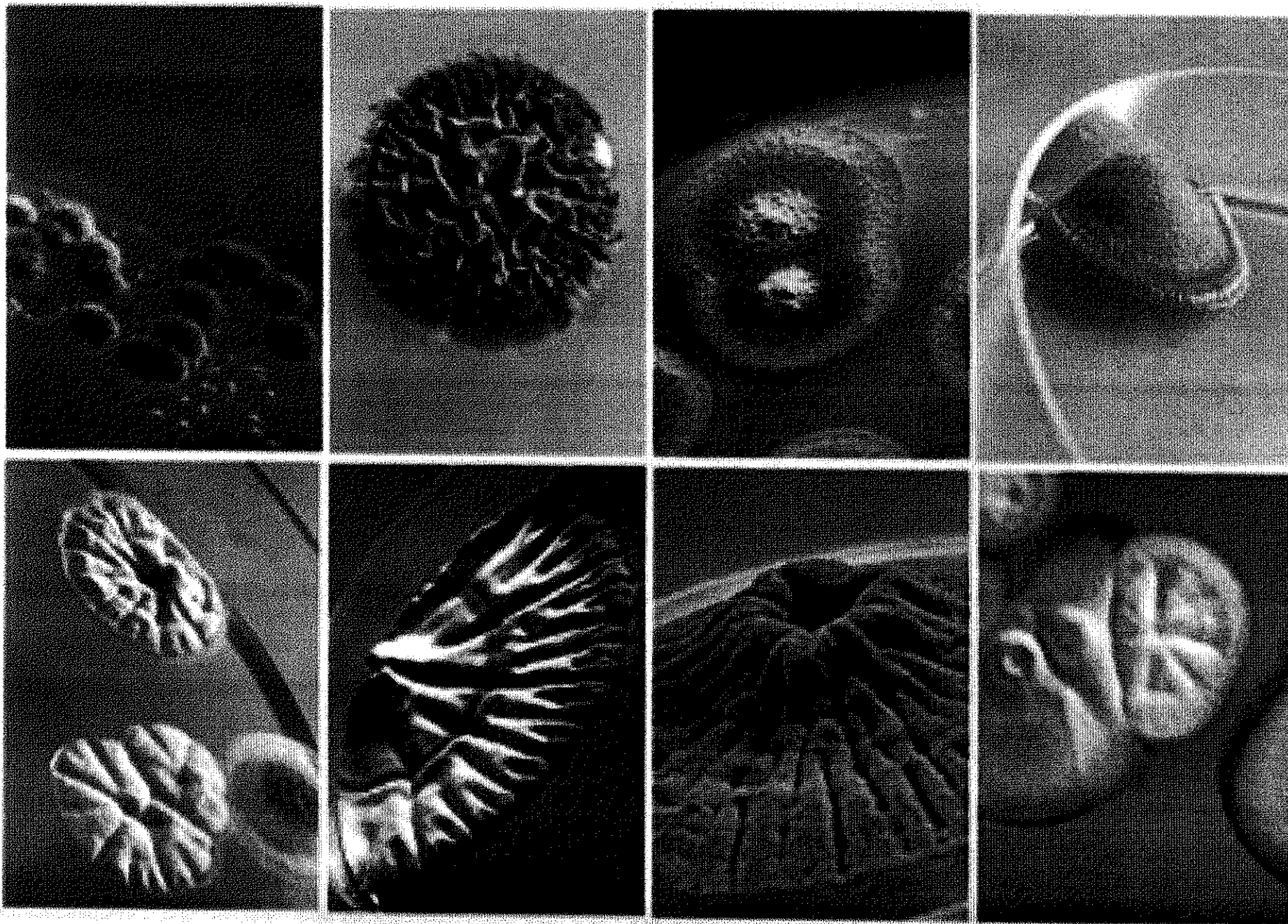




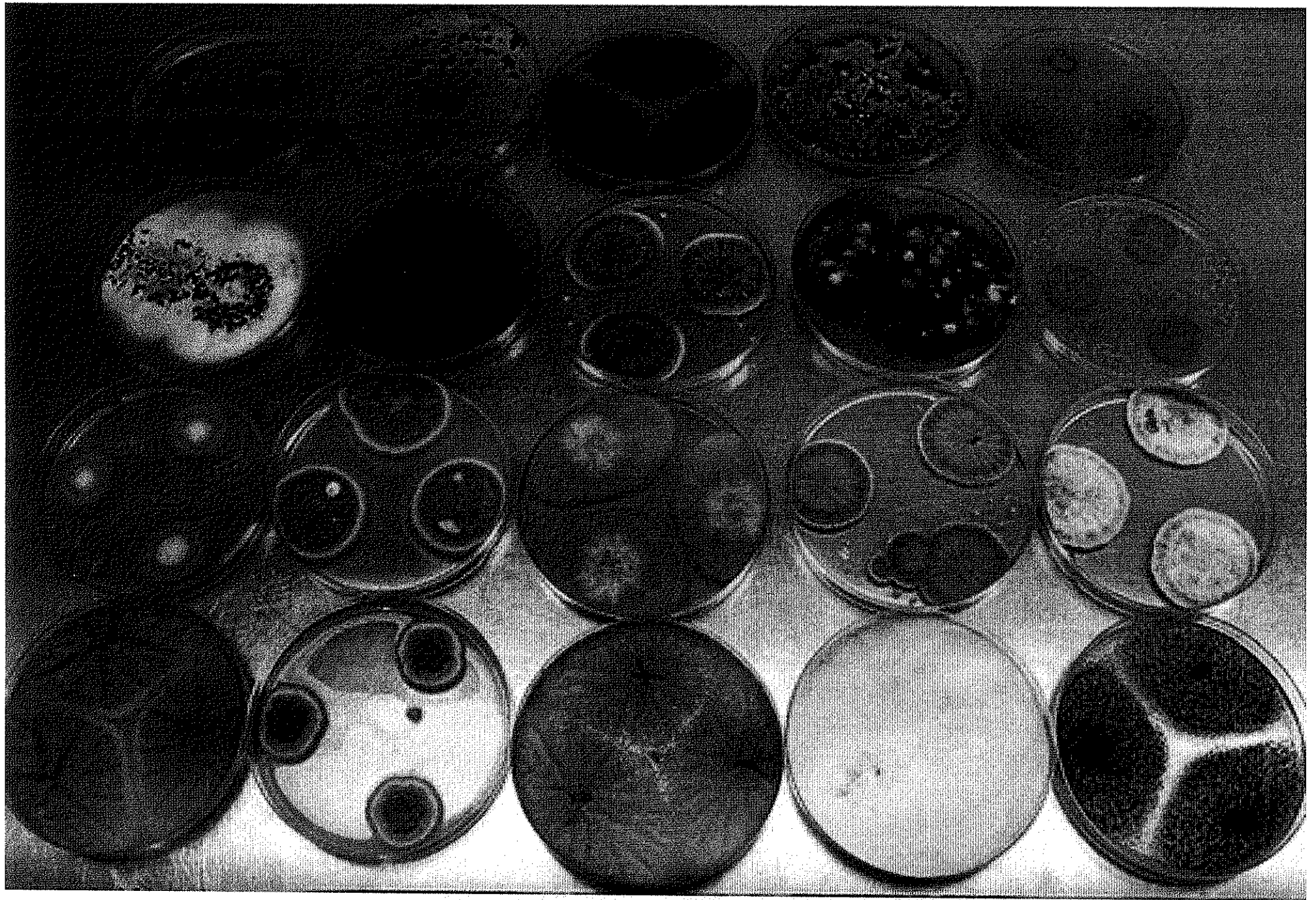
ACAROS



BACTERIAS

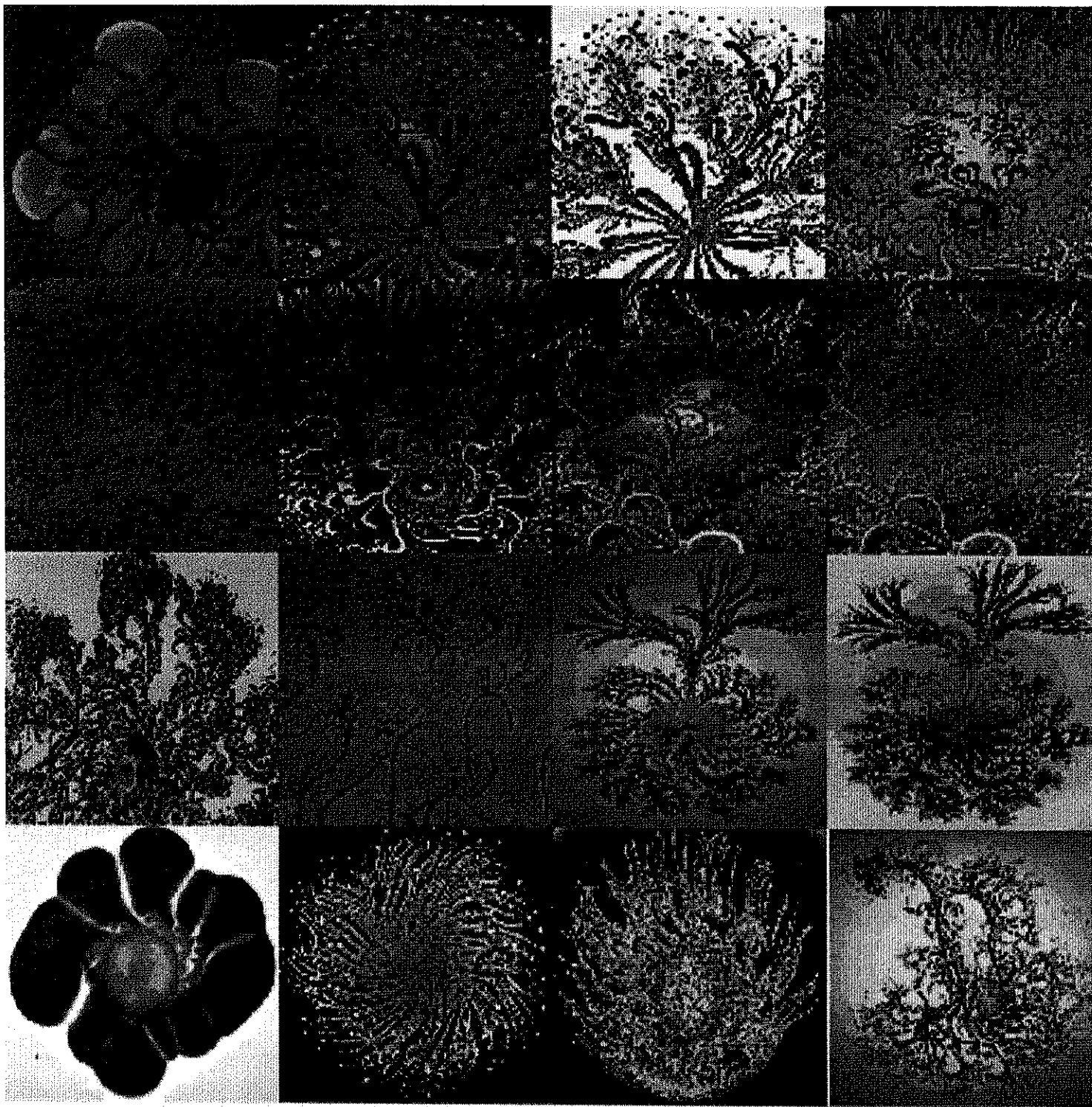


HONGOS



ACTINOMICETES







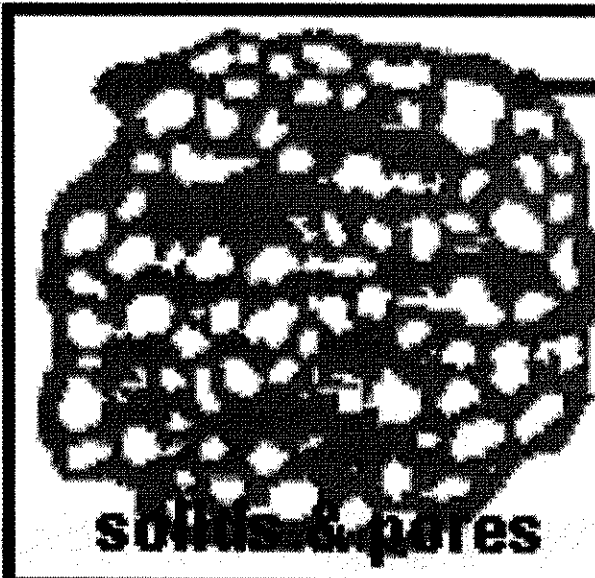
MICORRIZAS

SOIL AGGREGATION

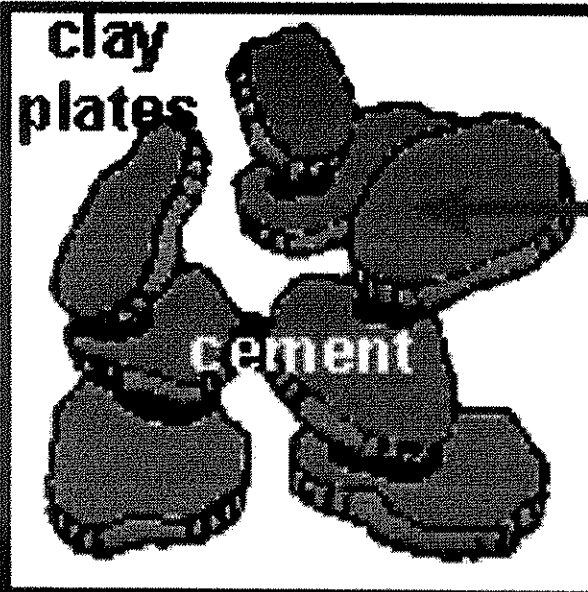
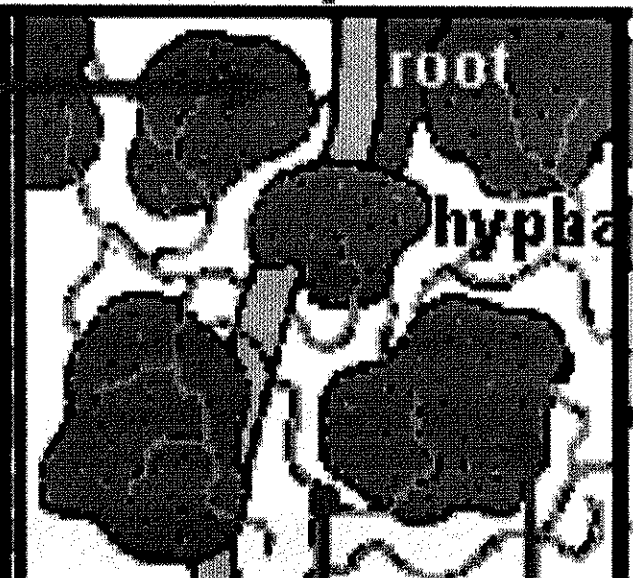
Magnification shows the ever finer structure of soil.
Five steps of 10x

(after Tisdall & Oades, 1982)

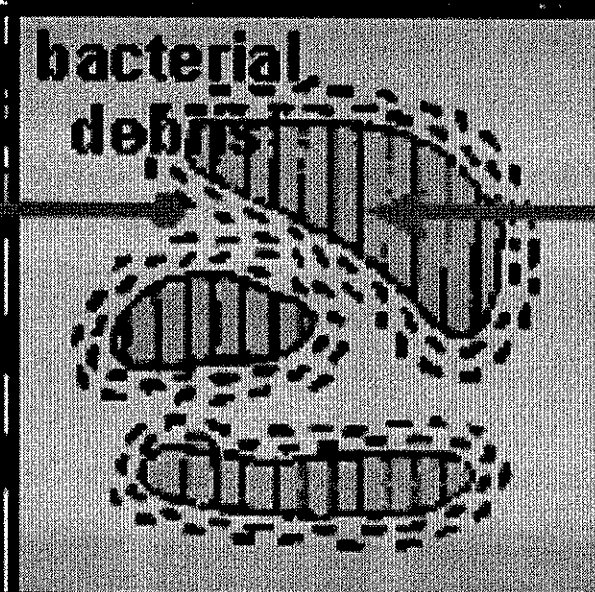
2mm crumb



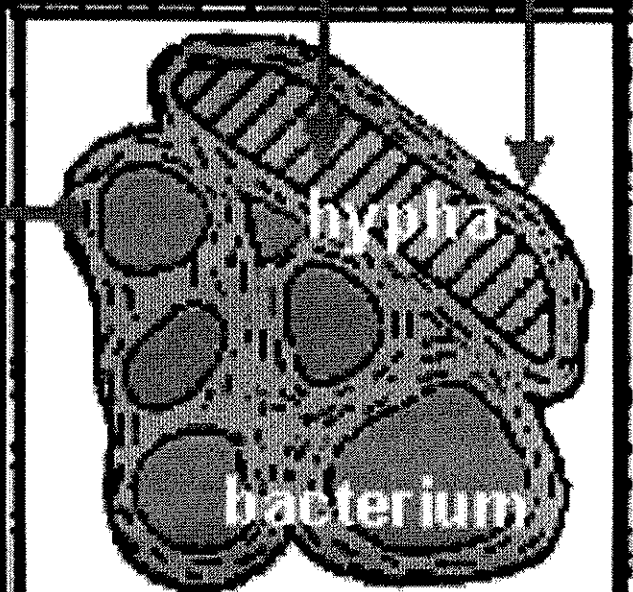
0.2mm particle



200nm clay particle



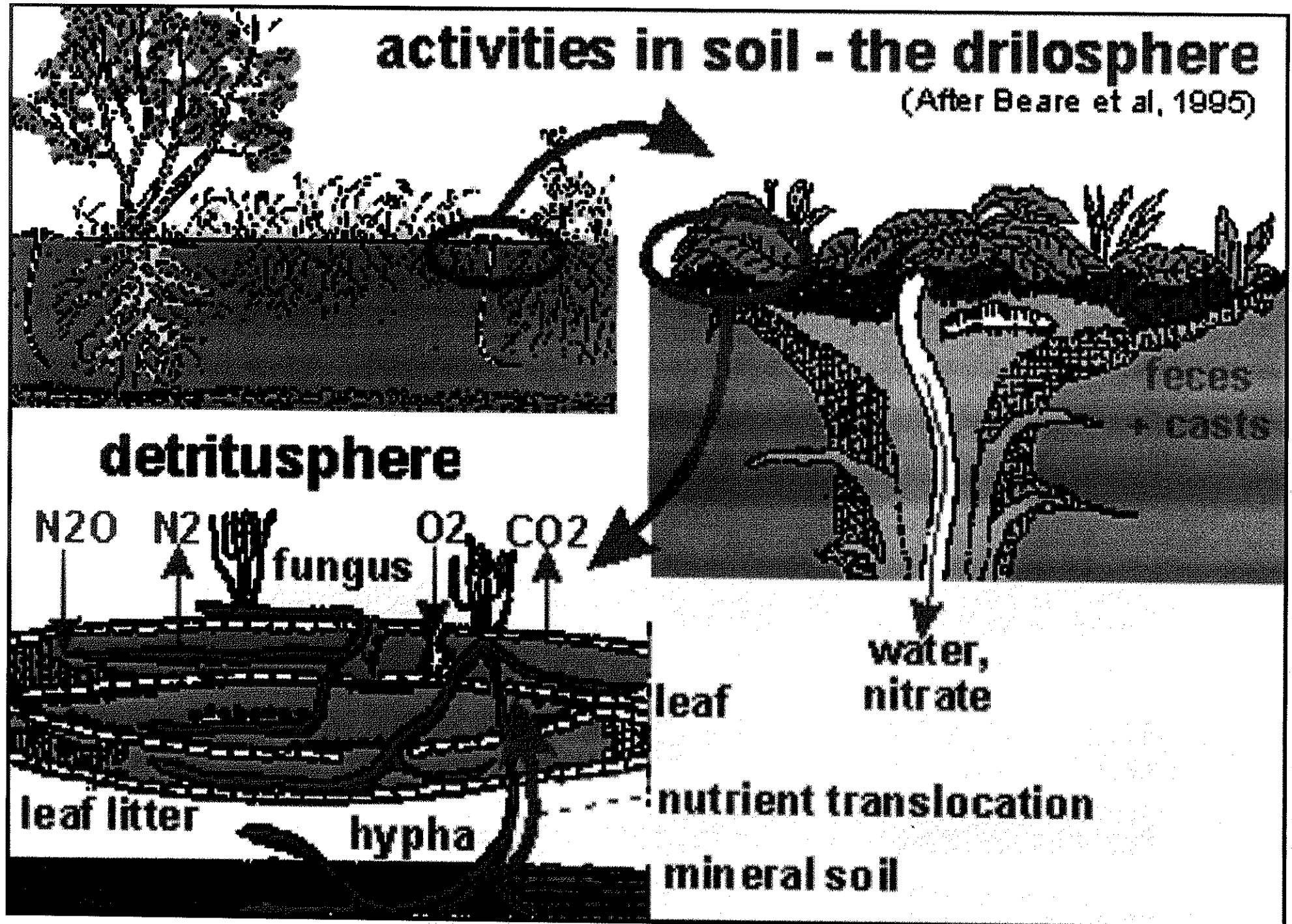
2000nm clay packet



0.02mm aggregate

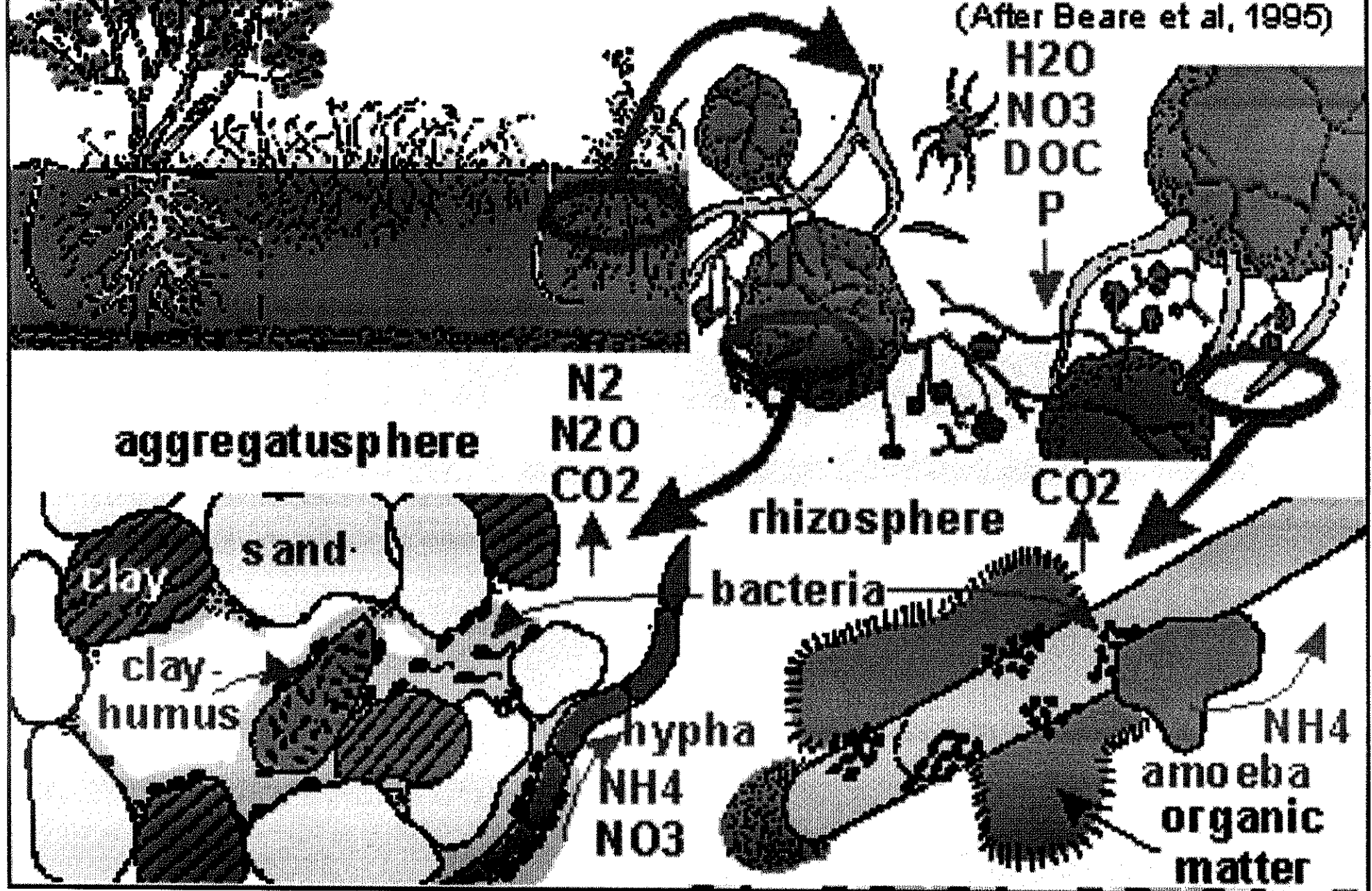
activities in soil - the drilosphere

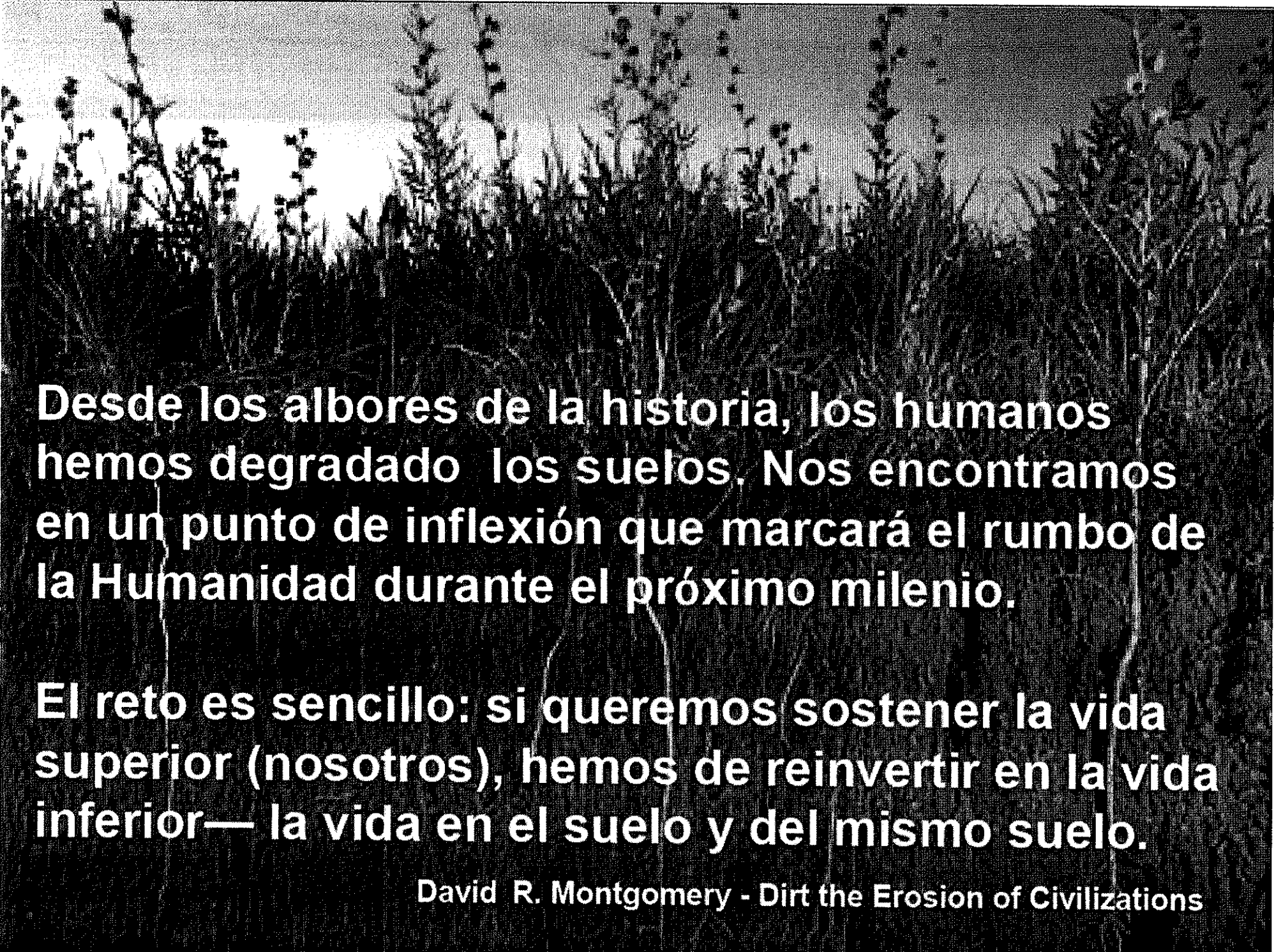
(After Beare et al, 1995)



activities in soil - the porosphere

(After Beare et al, 1995)



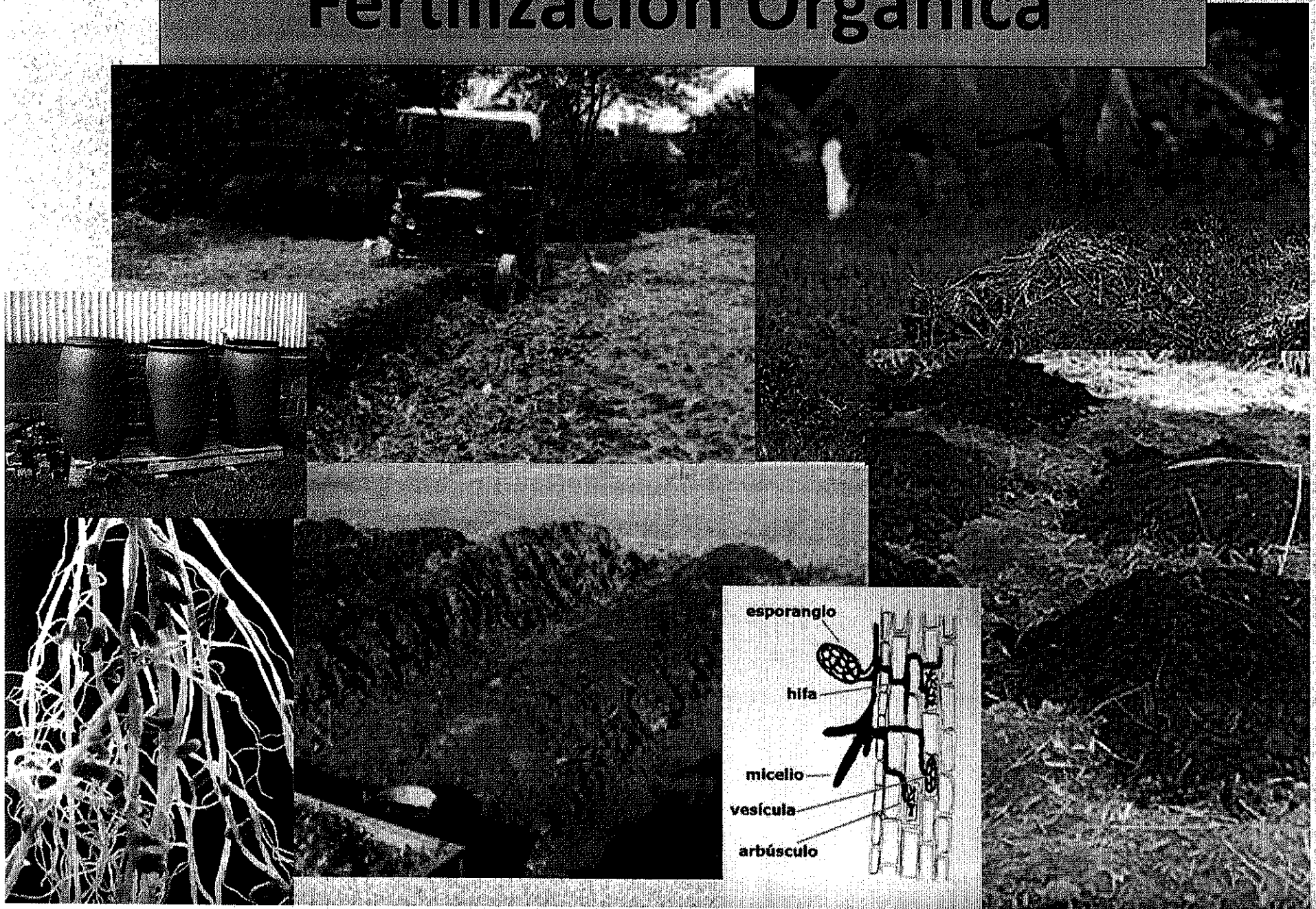


Desde los albores de la historia, los humanos hemos degradado los suelos. Nos encontramos en un punto de inflexión que marcará el rumbo de la Humanidad durante el próximo milenio.

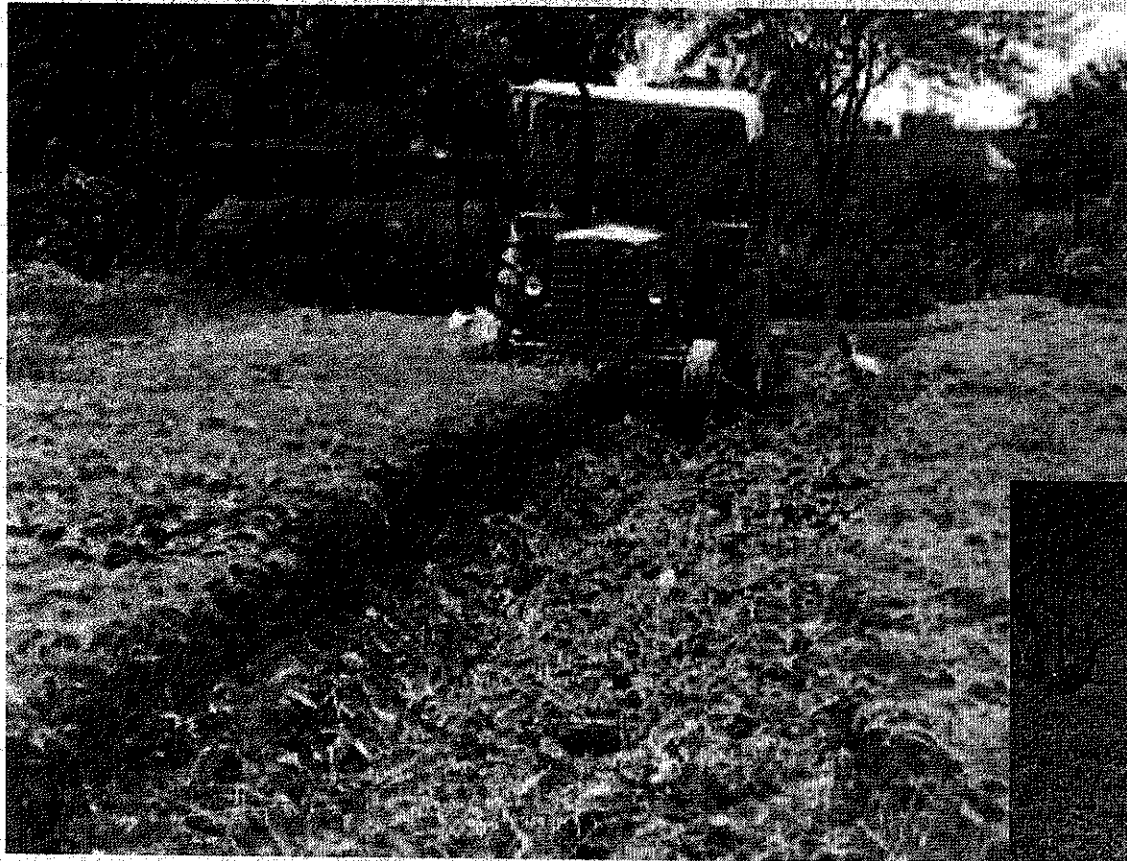
El reto es sencillo: si queremos sostener la vida superior (nosotros), hemos de reinvertir en la vida inferior— la vida en el suelo y del mismo suelo.

David R. Montgomery - Dirt the Erosion of Civilizations

Fertilización Orgánica



ABONOS VERDES



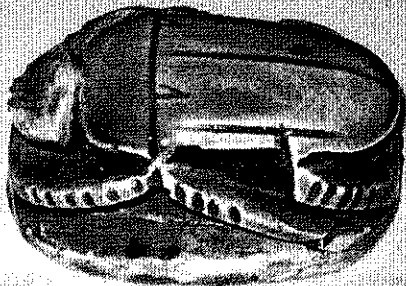
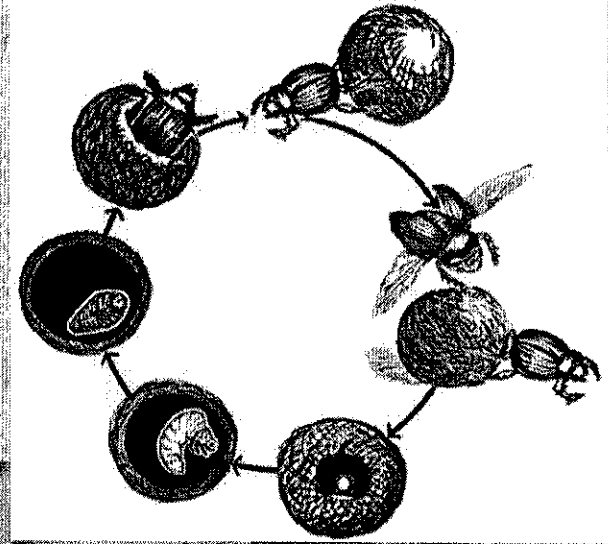
Cultivo destinado a ser incorporado al suelo con una labranza superficial o a cubrir el mismo tras ser cortado antes de plena floración (máxima biomasa)



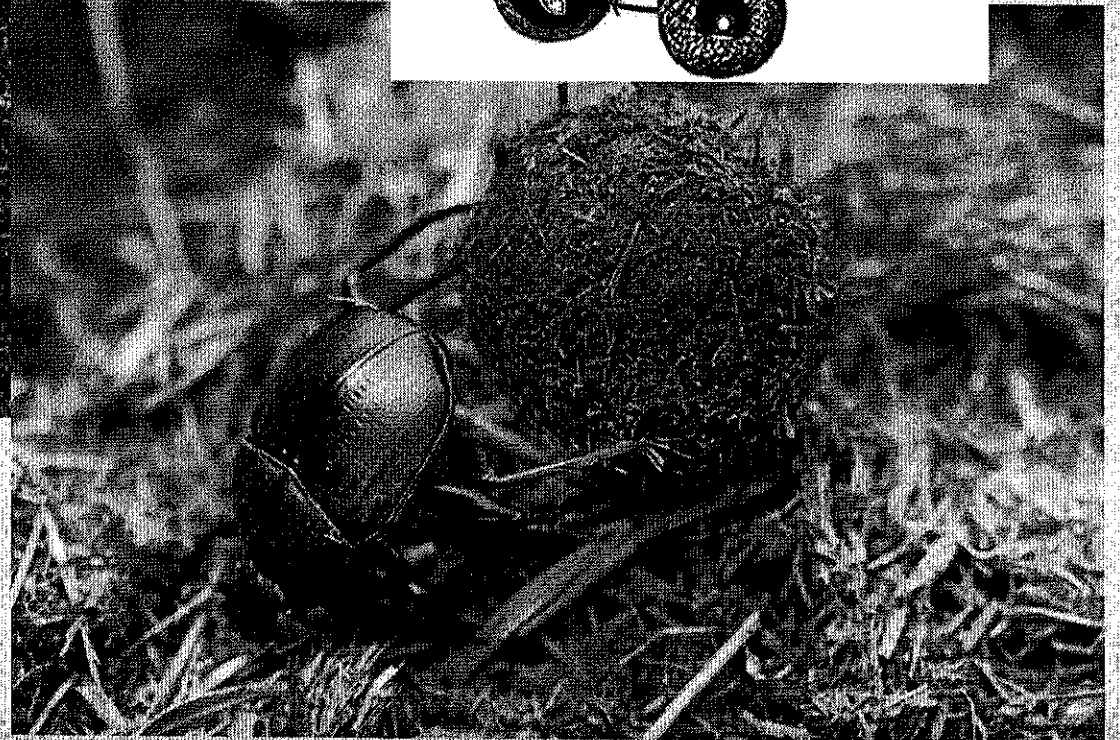
Mezcla de especies de plantas

- Leguminosas: fijan Nitrógeno atmosférico
- Gramíneas: aportan Carbono
- Crucíferas: "bombeo" de Potasio
- Otras

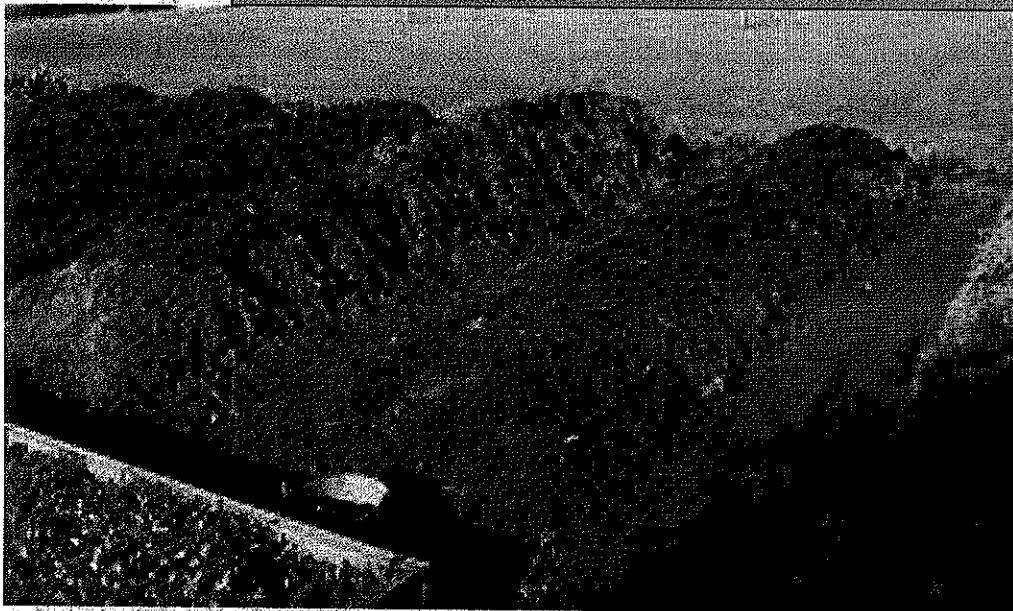
ESTIÉRCOL ANIMAL



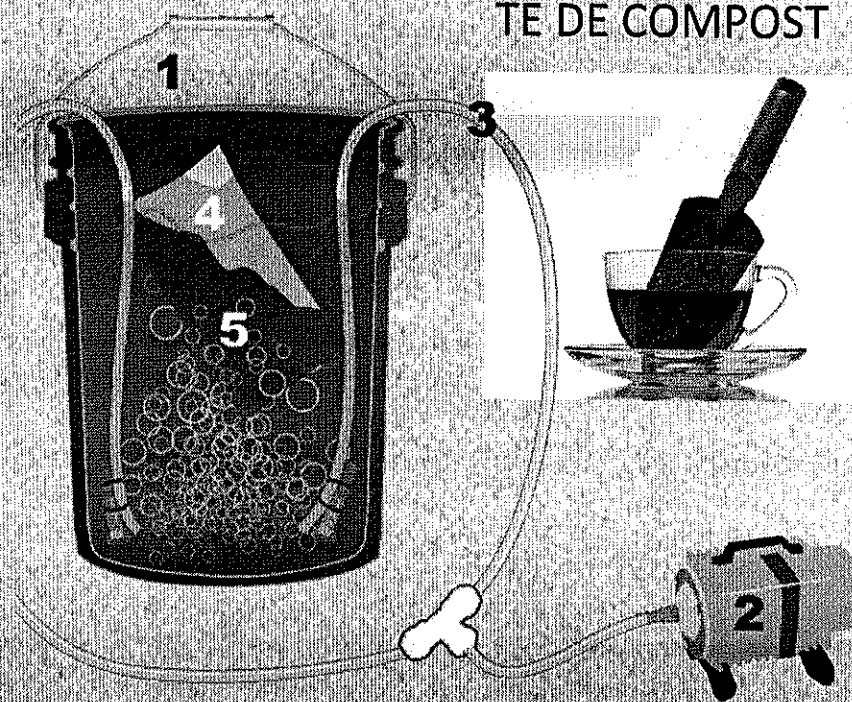
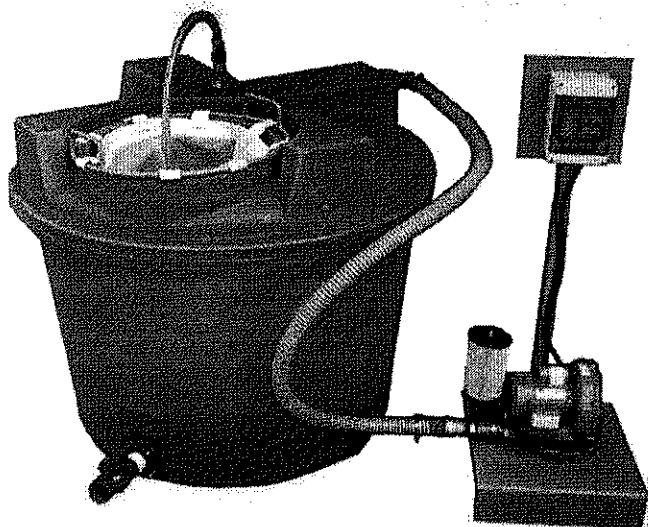
Escarabajo sagrado
(limpia y fertiliza en
profundidad)



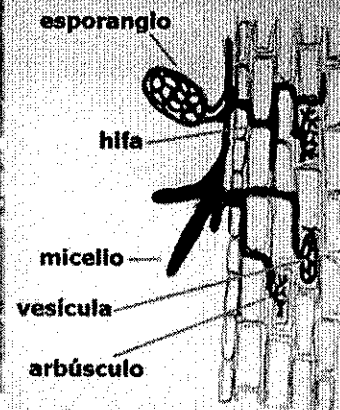
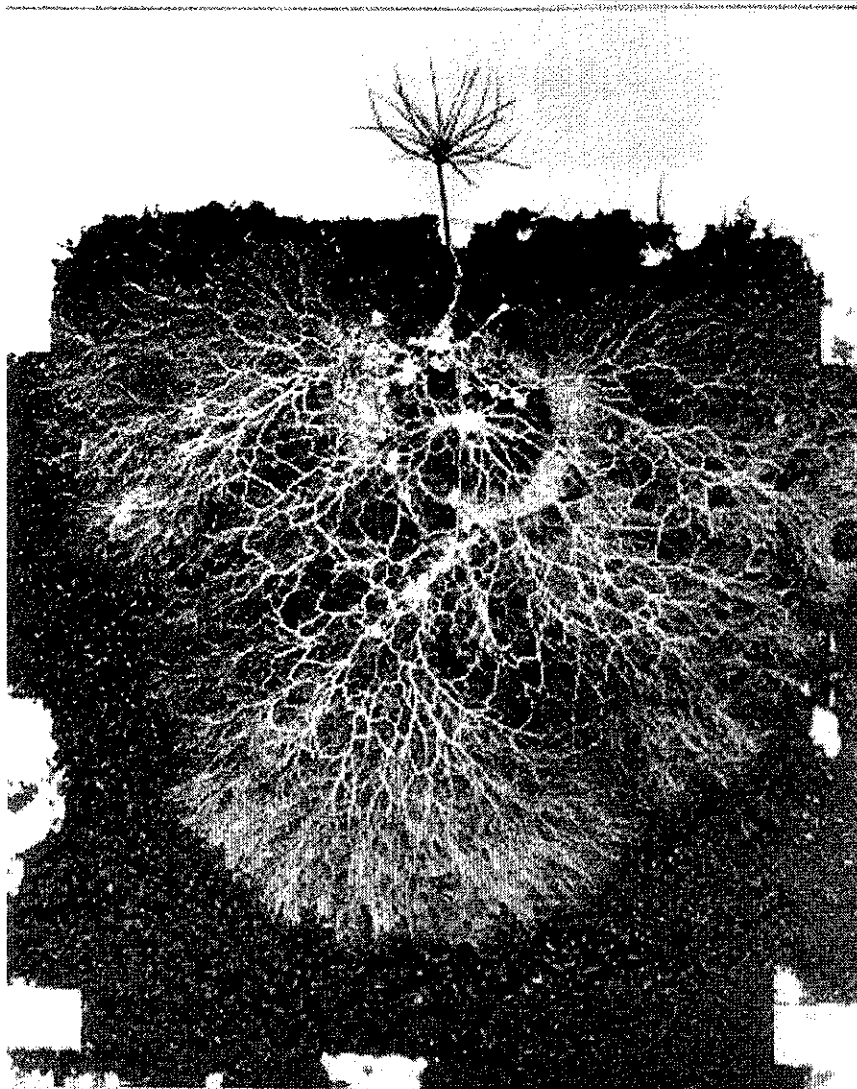
COMPOST y PURINES



TE DE COMPOST

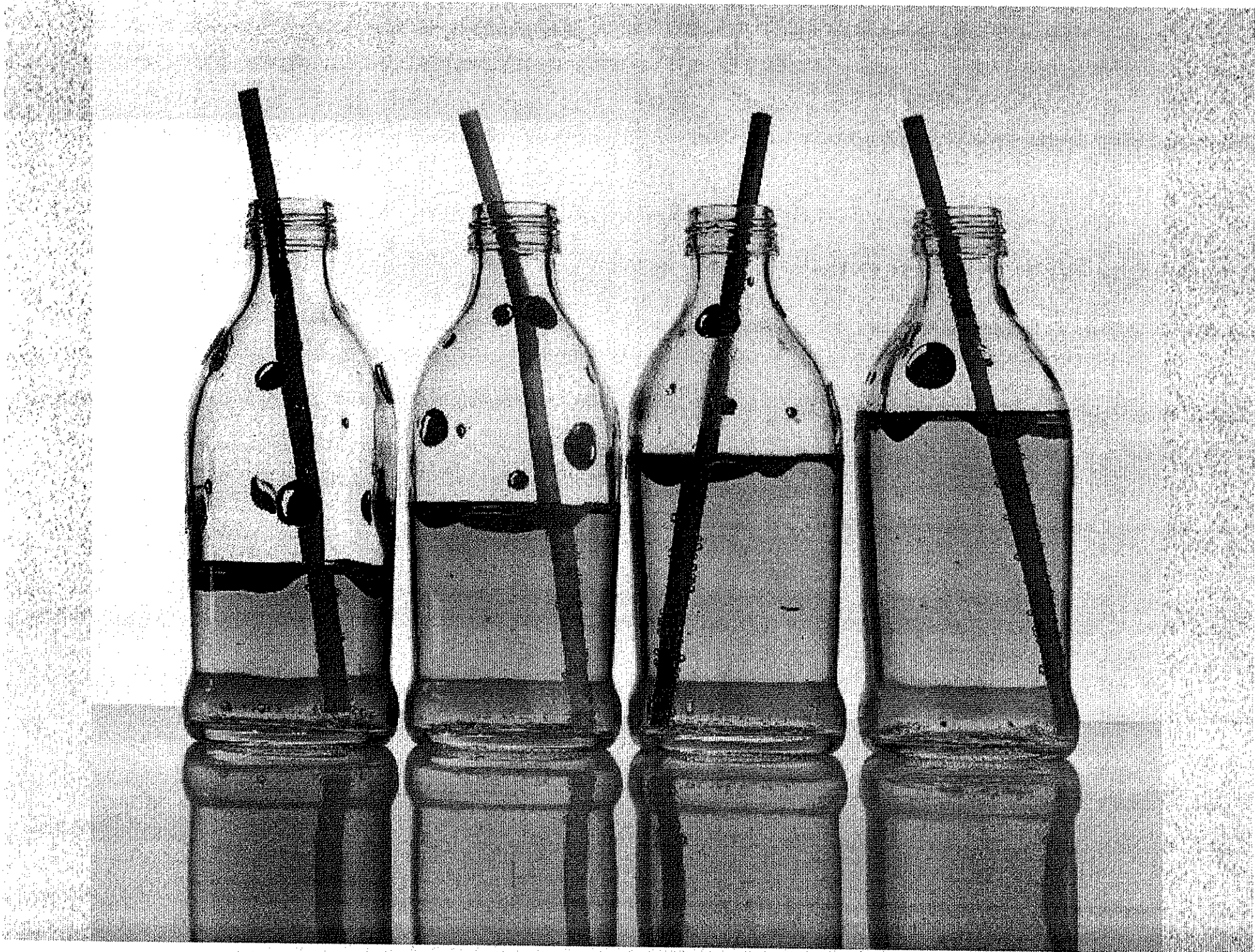


MYCORRIZAS



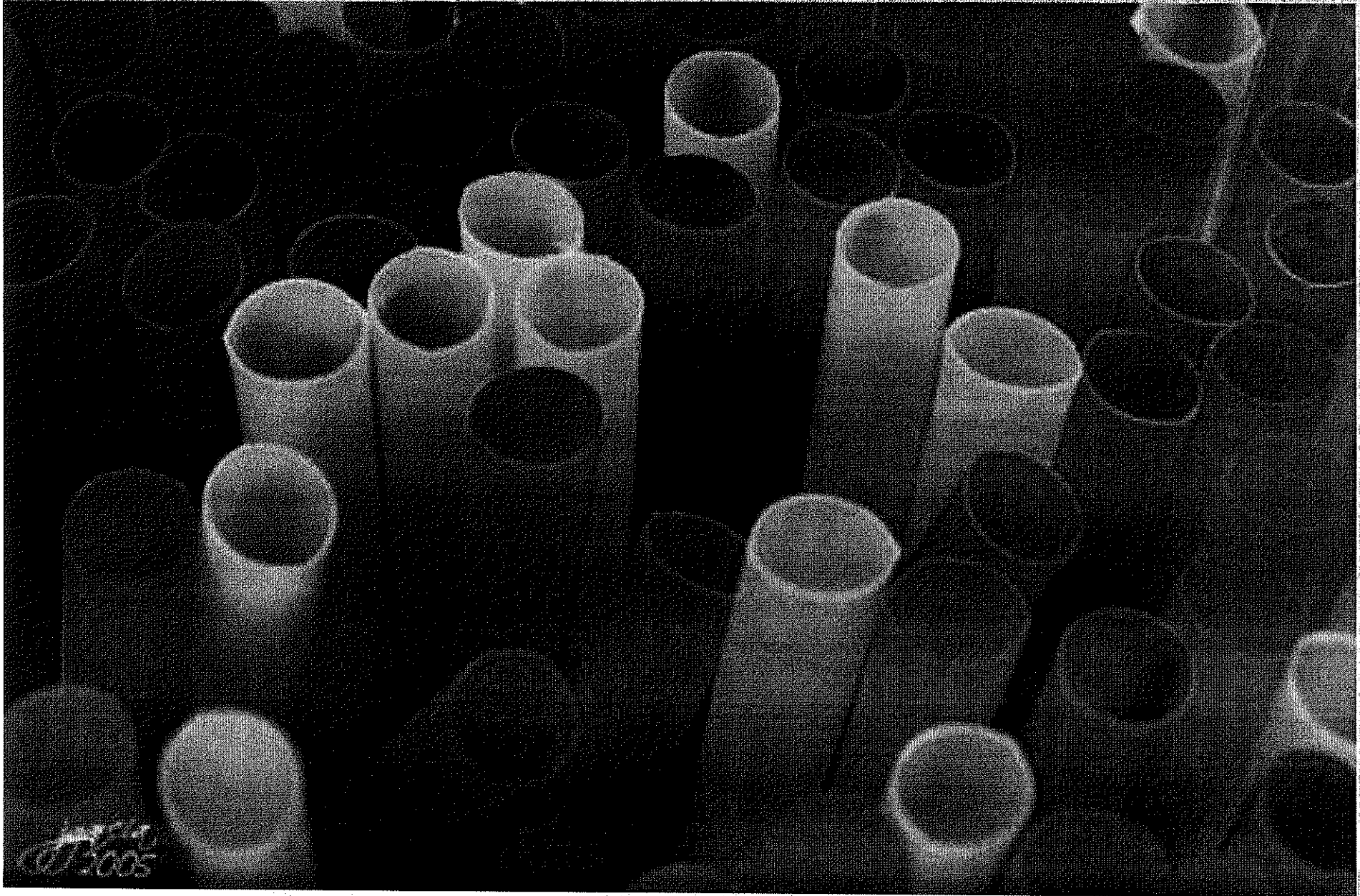
Hongos simbióticos
del sistema radicular

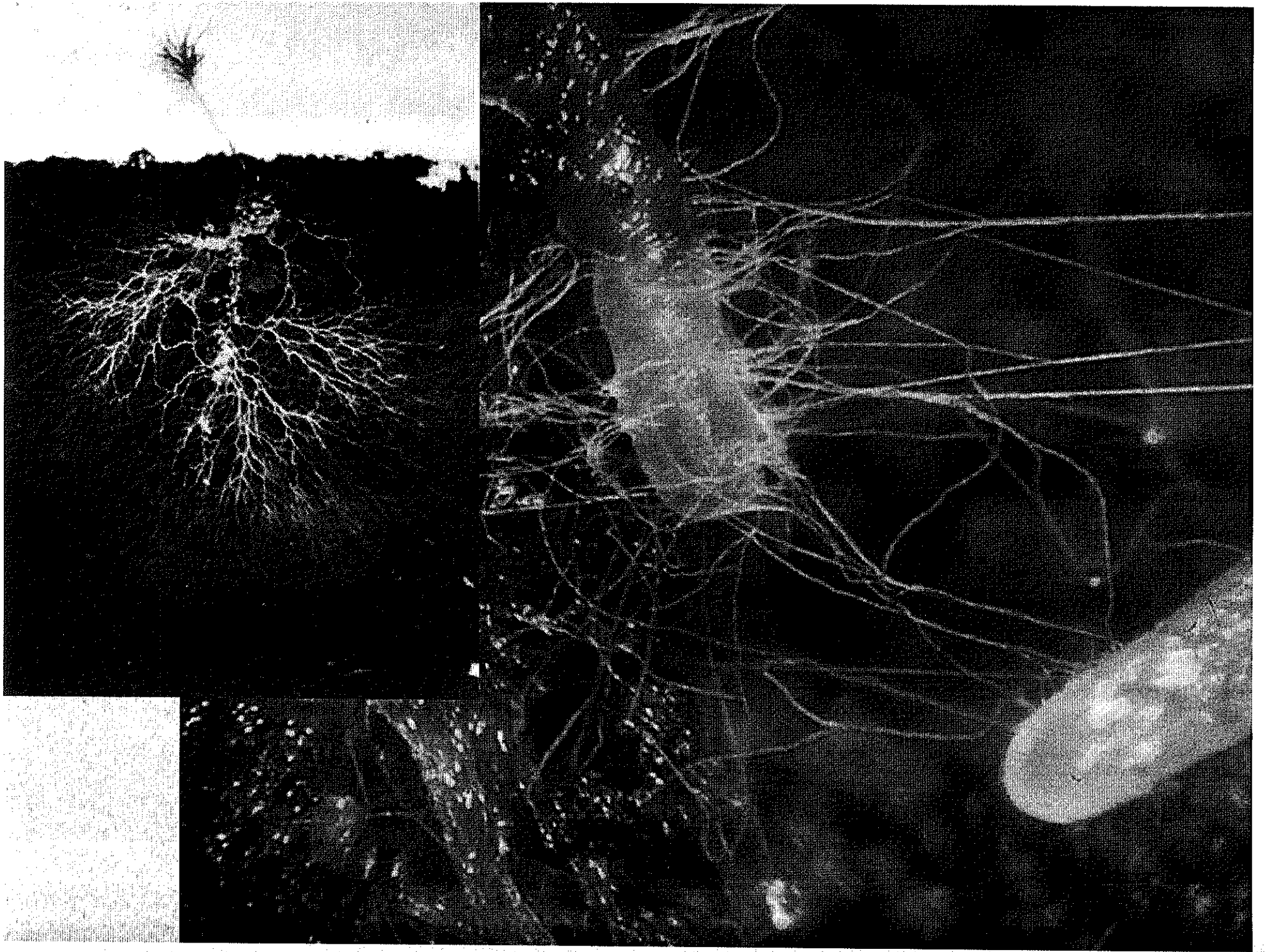
- Absorción de Fósforo
- Resistencia a sequía
- Alelopatía frente a bacterias
hongos patógenos y nemátodos



Micorrizas

Mayor resistencia a sequía y
mayor capacidad de absorción de nutrientes (P)

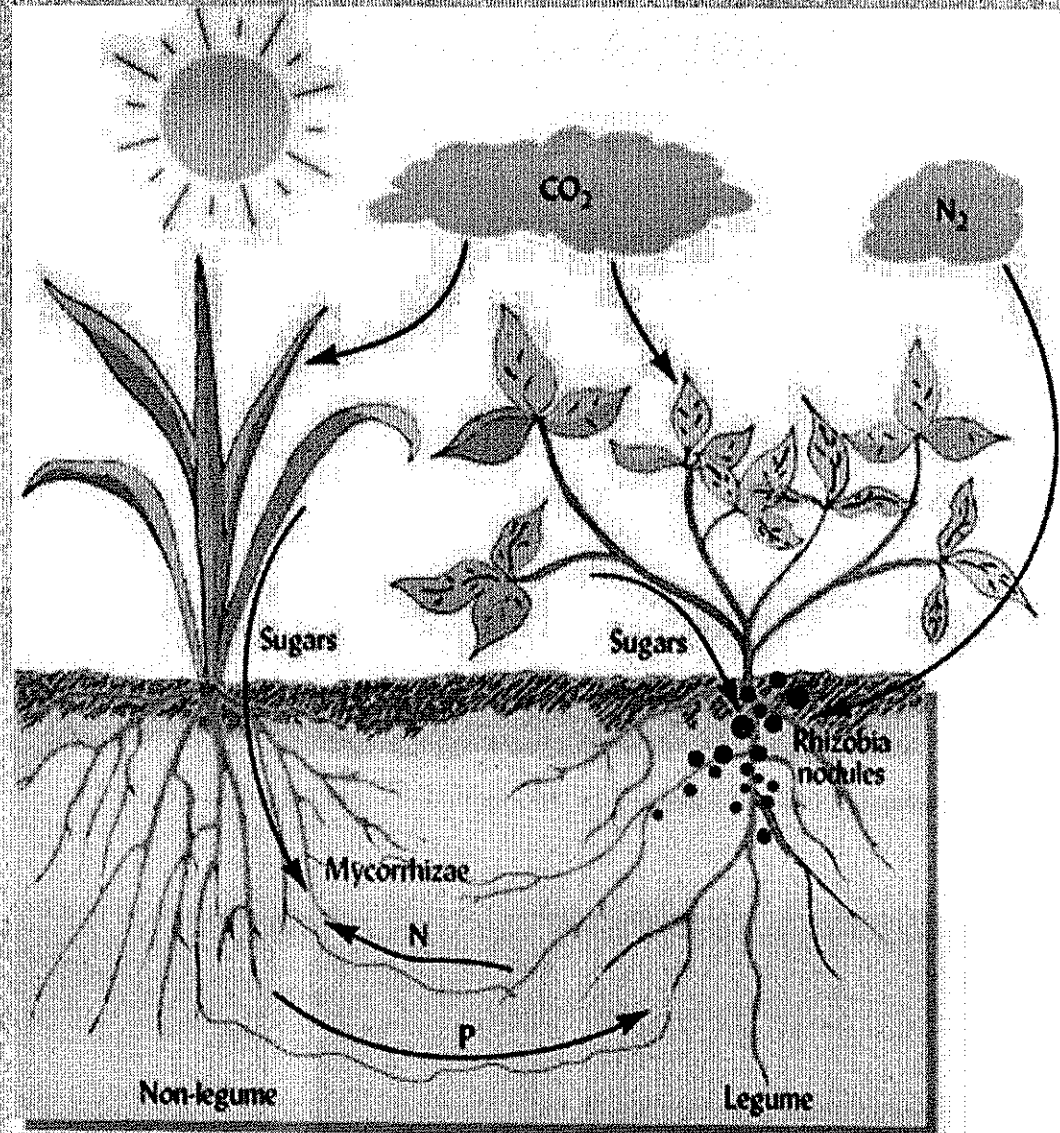




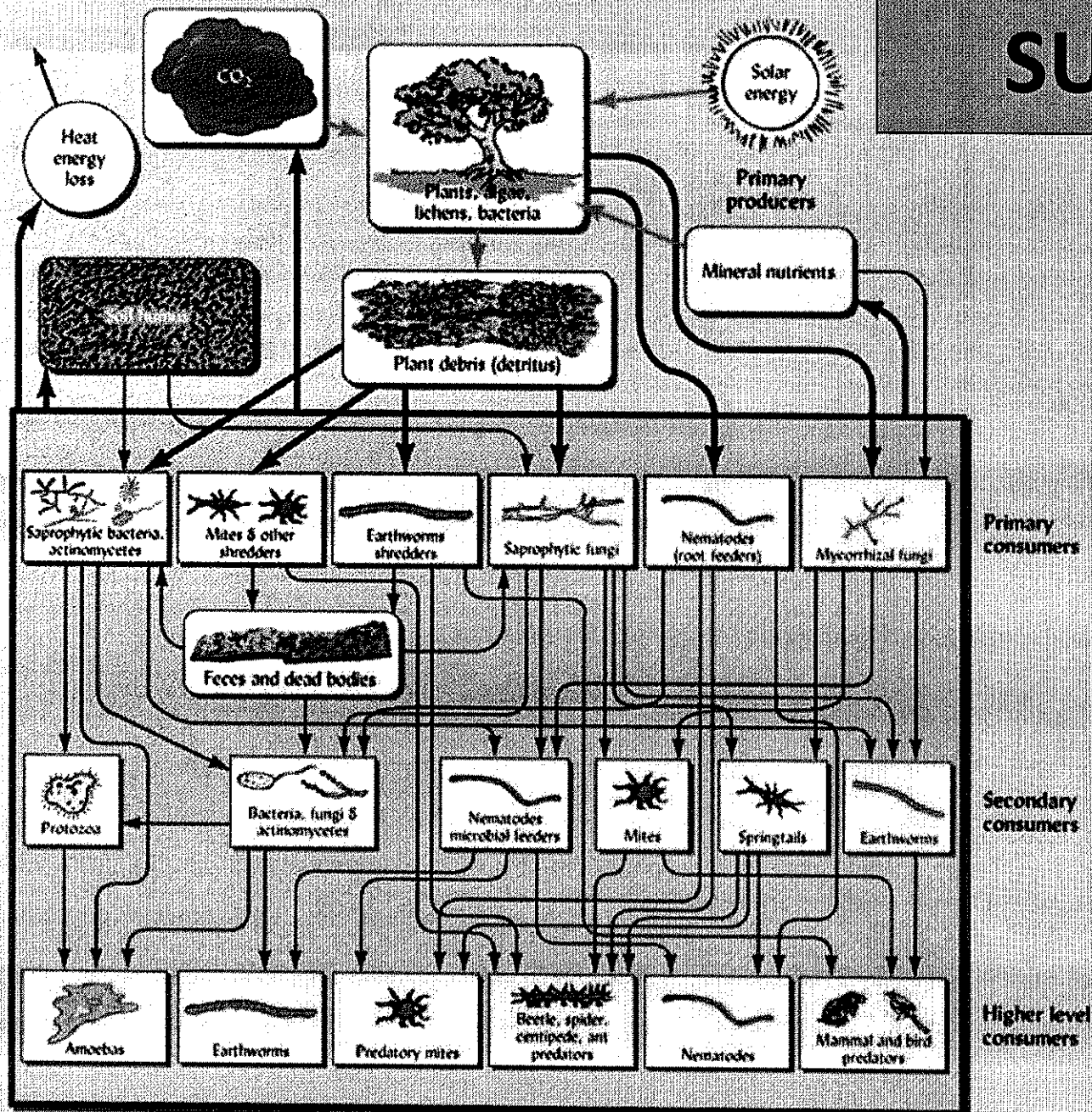
LEGUMINOSAS



Fijan **Nitrógeno** atmosférico



SUELO VIVO



La **FERTILIDAD** es la cualidad de los suelos que están vivos (>5% Mat.Org.)

Hay que devolver la vida a los suelos: bacterias, hongos, actinomicetos, nemátodos, ácaros, lombrices ... con la aplicación de materia orgánica diversa

A mayor **complejidad** mayor estabilidad (menos problemas)

“SUELO VIVO”

**SUELO FÉRTIL
CON MUCHA
MATERIA
ORGÁNICA**

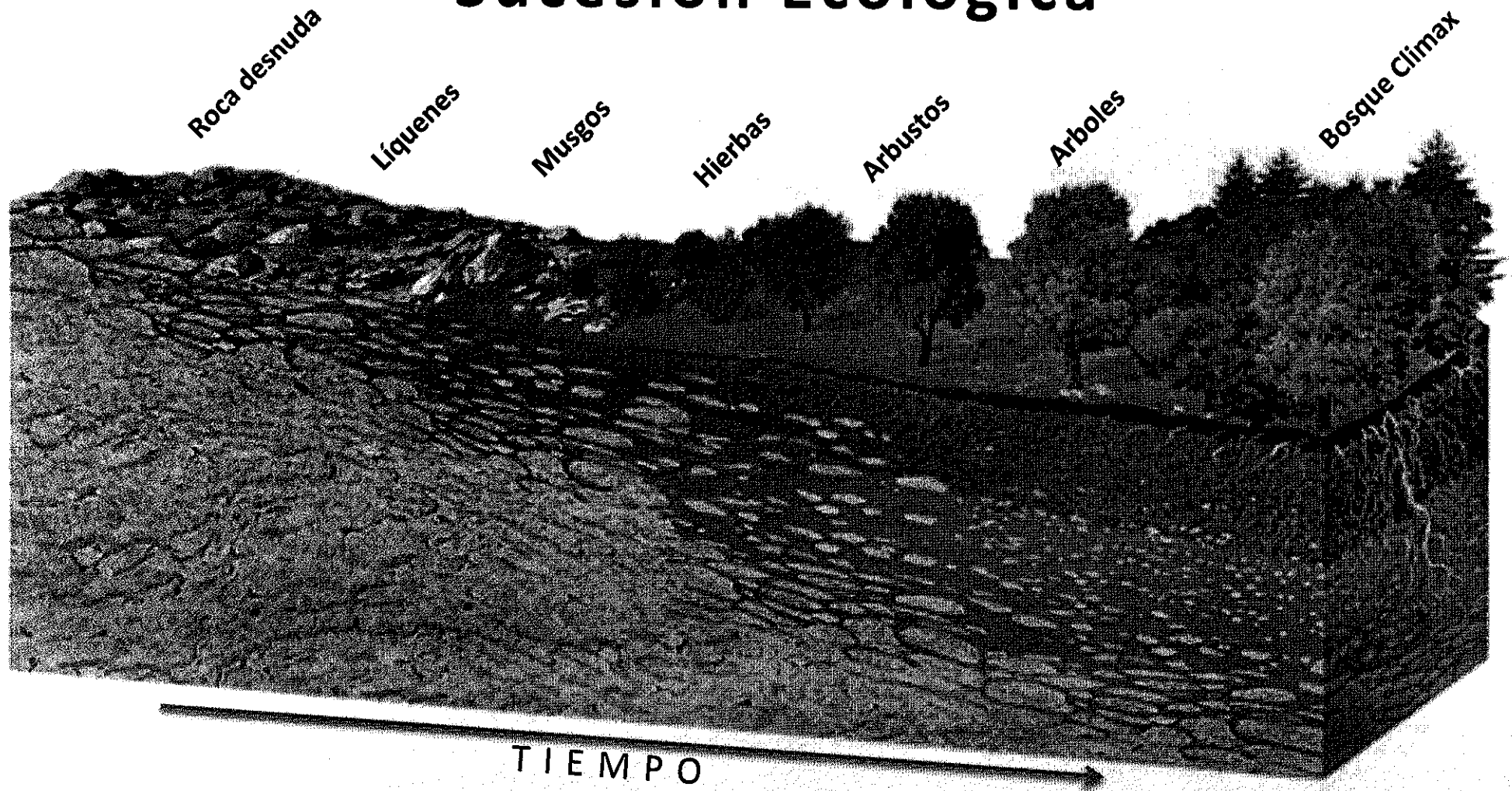




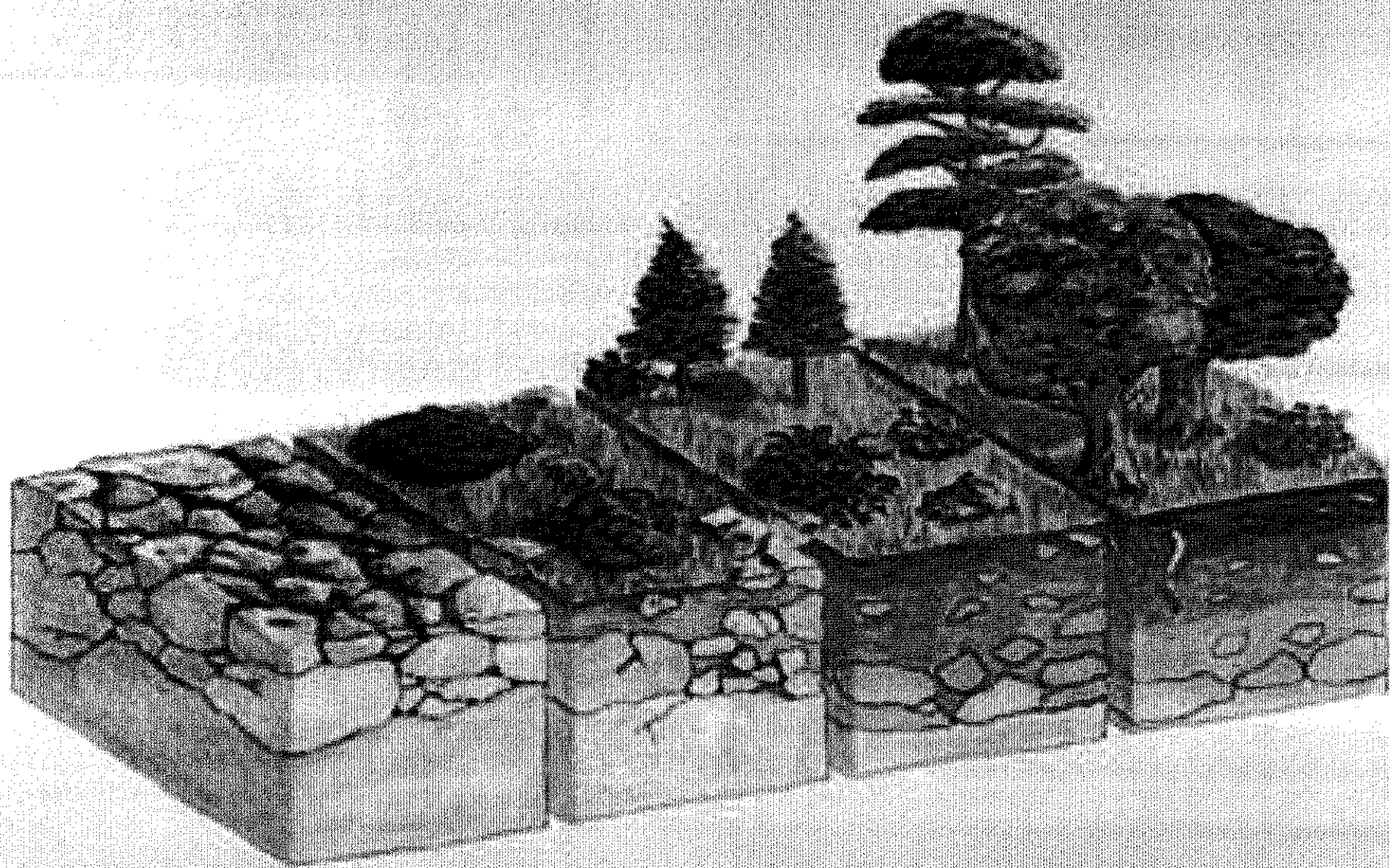


**¿CÓMO SE FORMA UN
SUELO VIVO?**

Sucesión Ecológica



Formación del Suelo





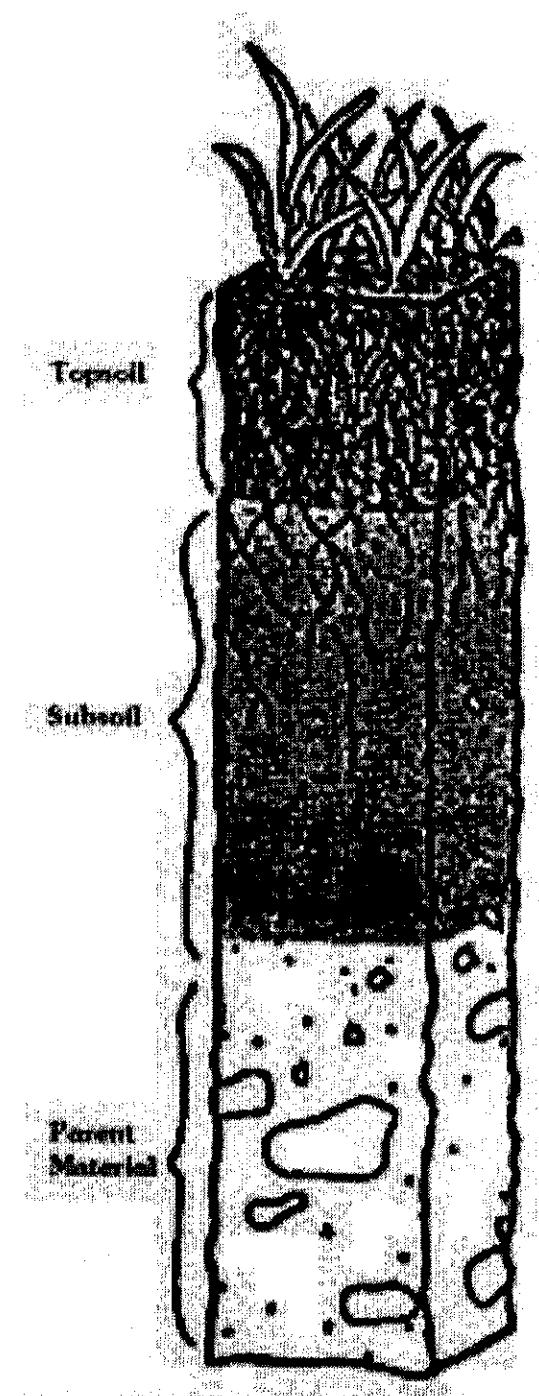
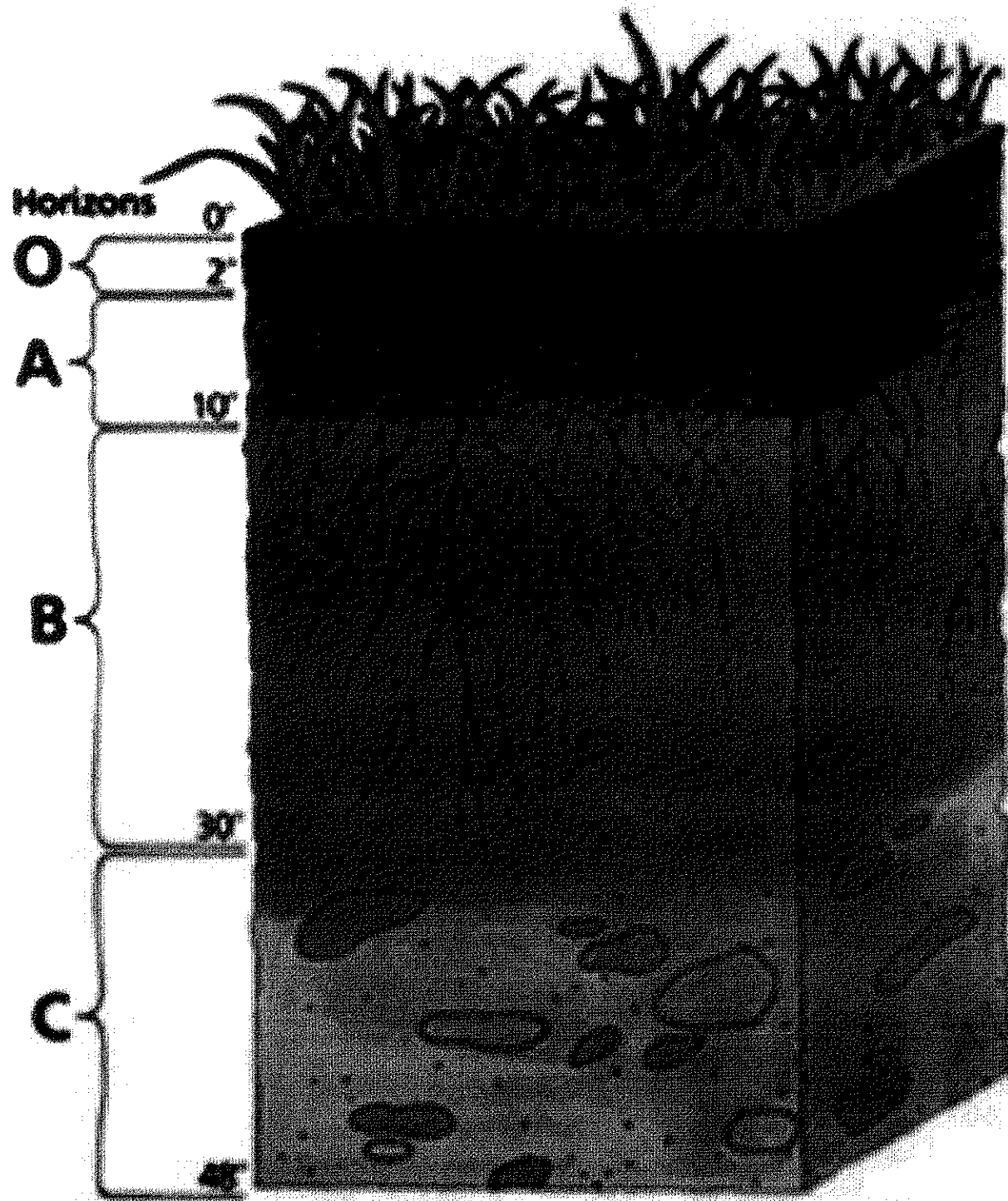
Materia orgánica
o humus

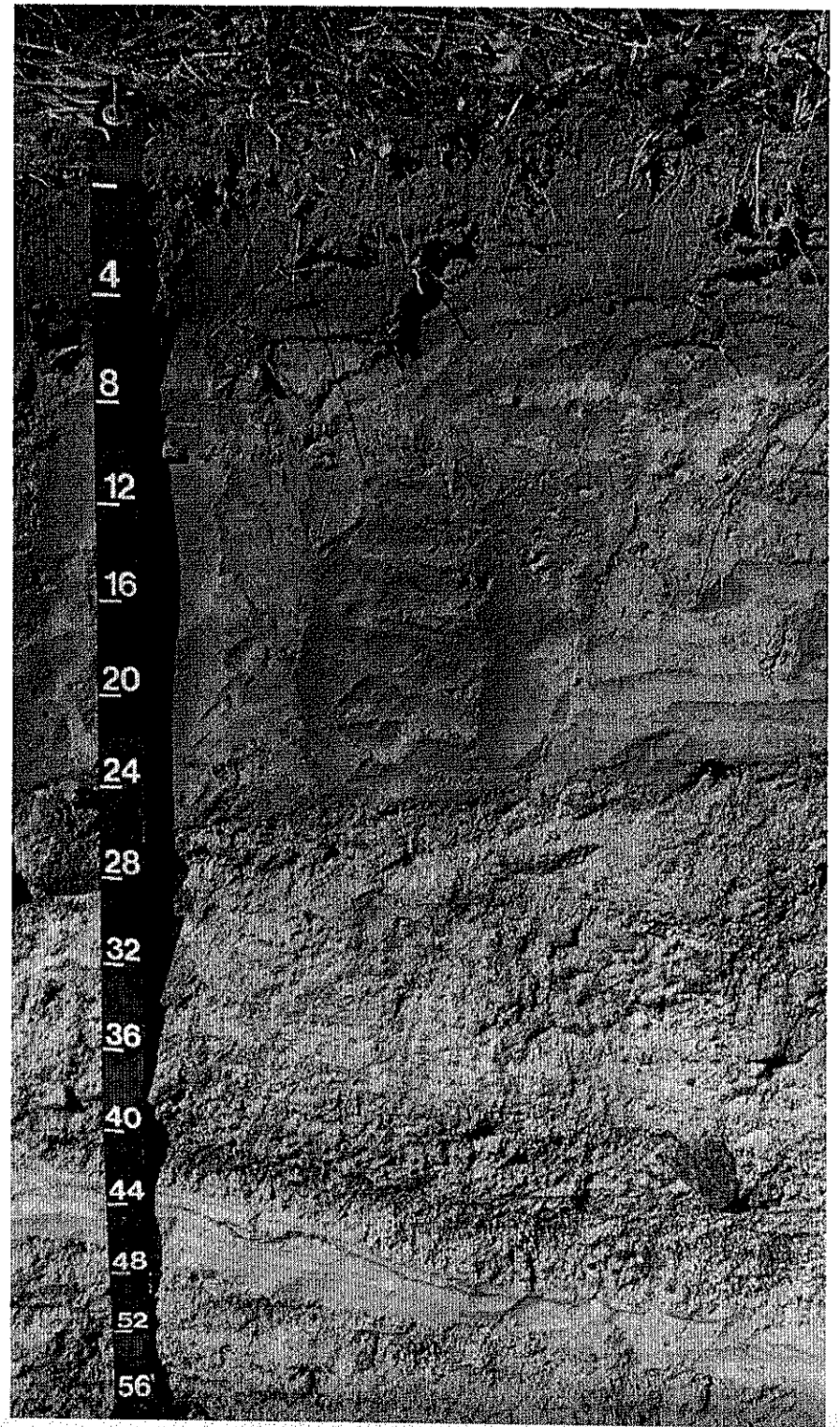
Mantillo

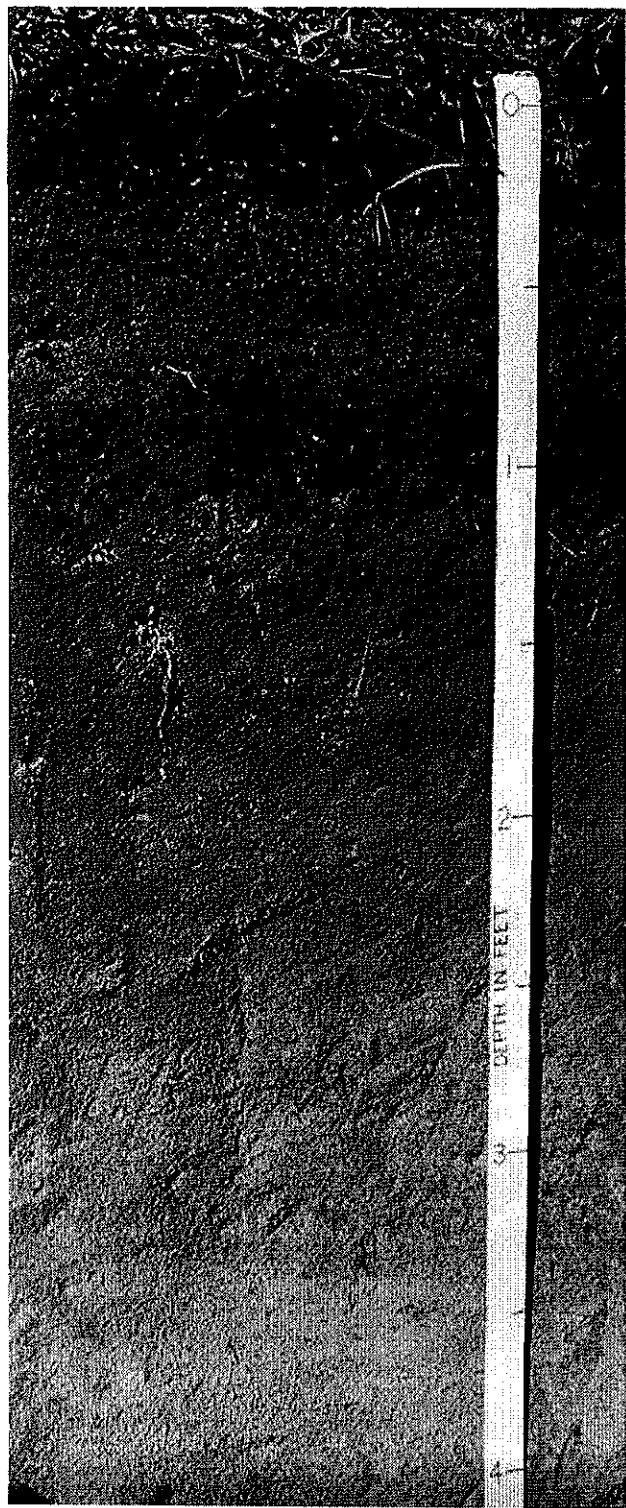
Capa
intermedia

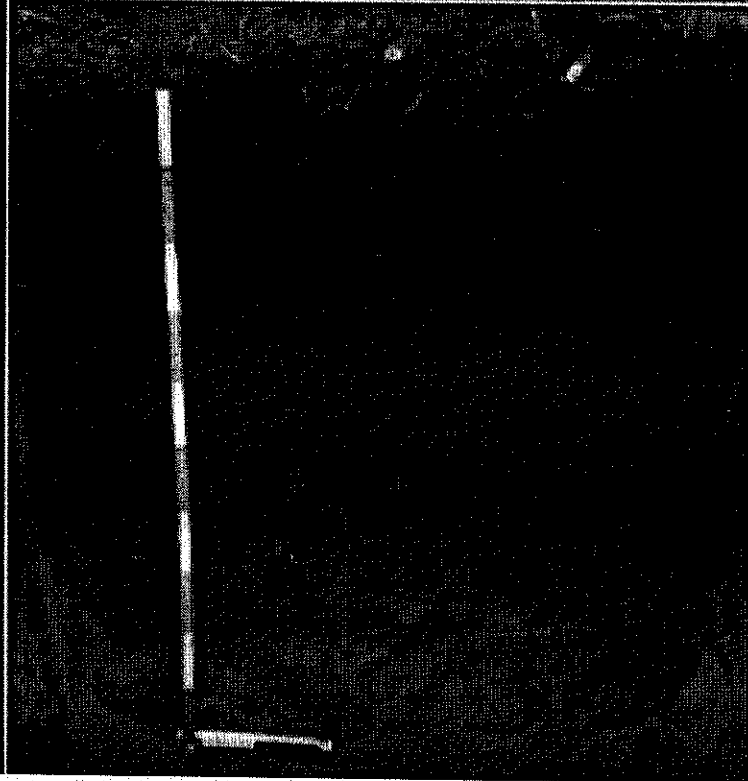
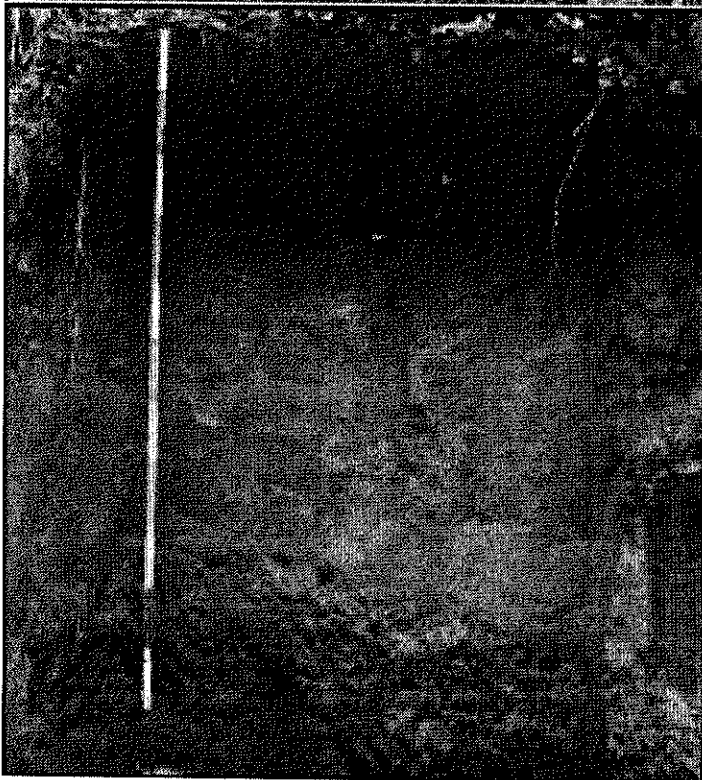
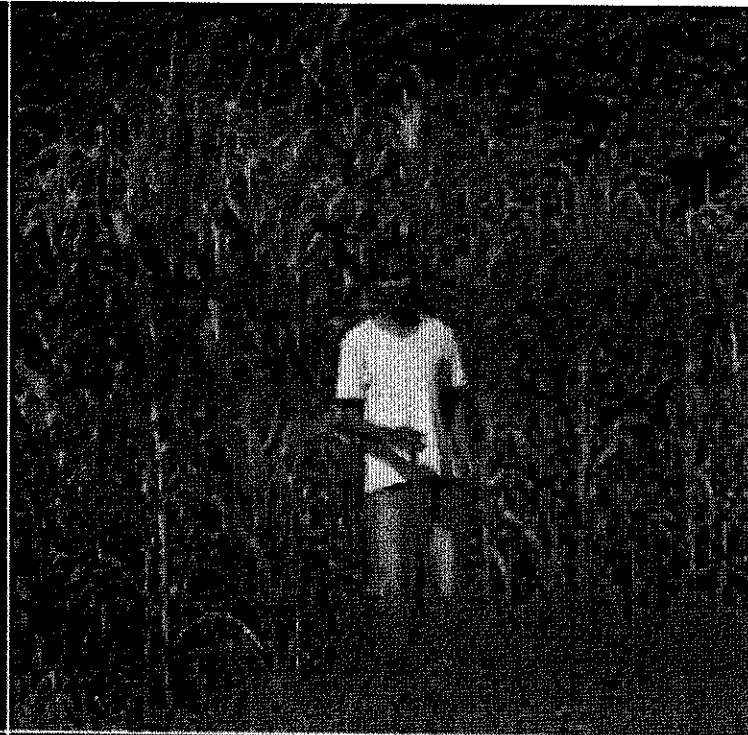
Roca madre

Lecho rocoso

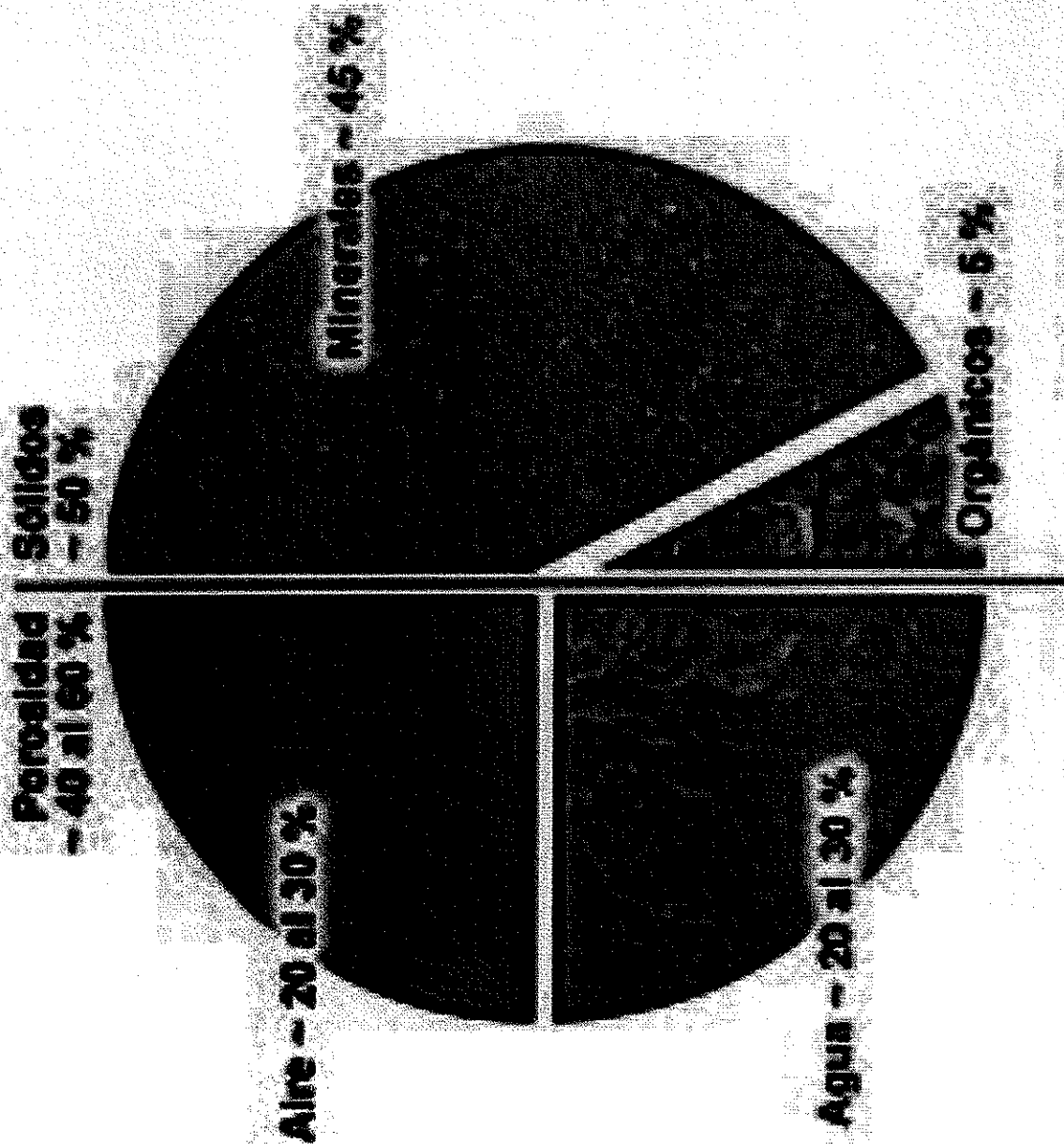




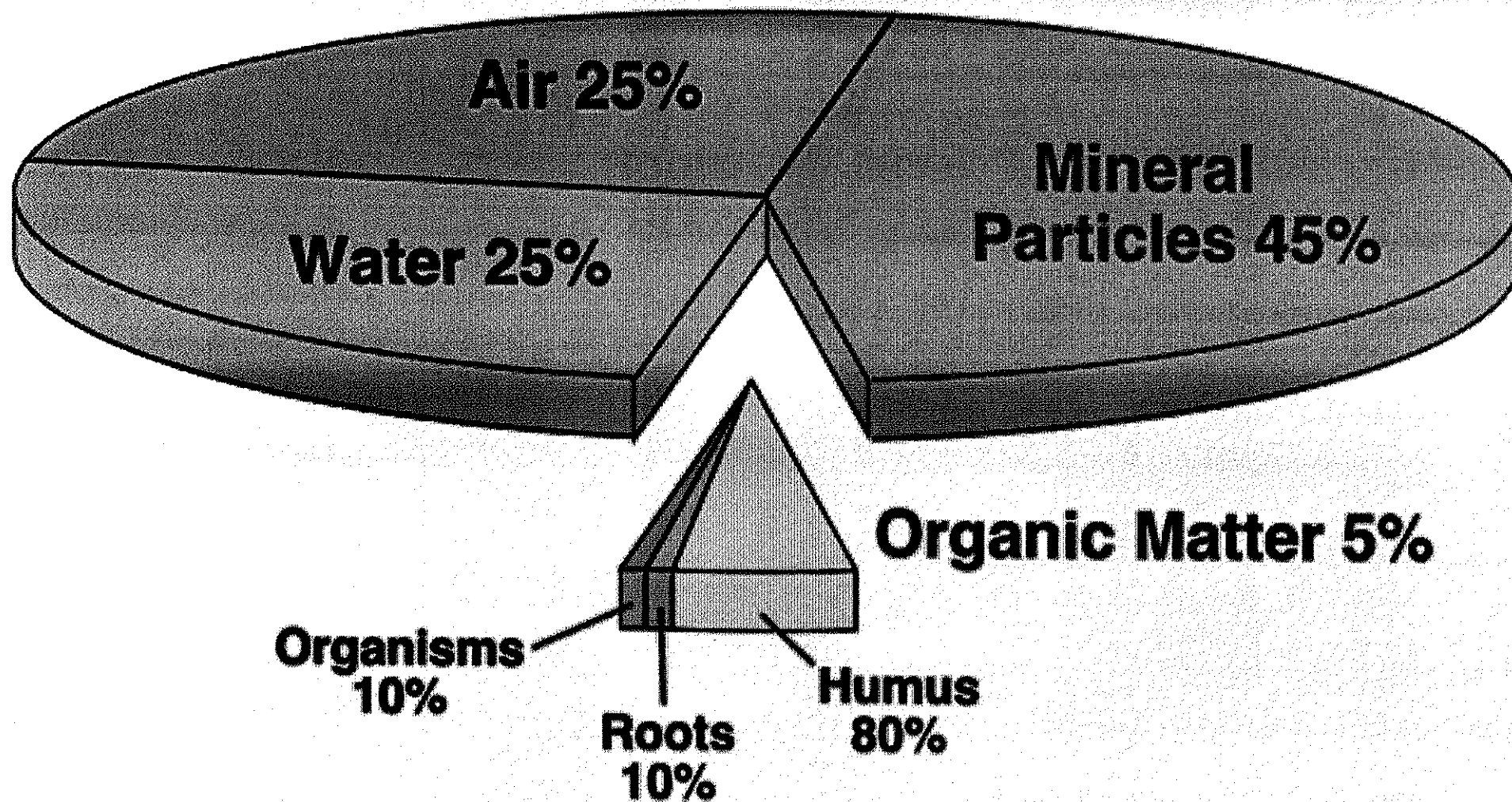




Componentes del suelo y promedios normales



SUELO VIVO



PAN VIVO

**HARINA
FLOUR**

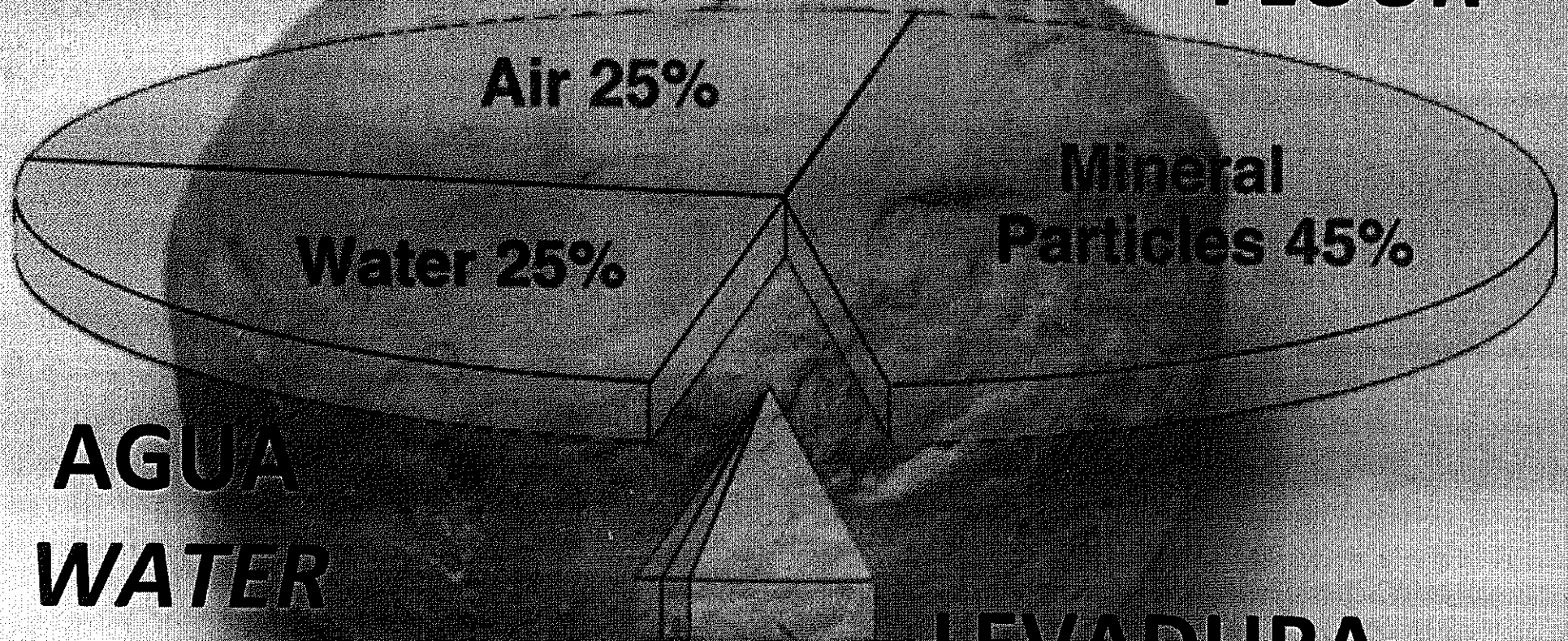
Air 25%

Water 25%

**Mineral
Particles 45%**

**AGUA
WATER**

**LEVADURA
YEAST**





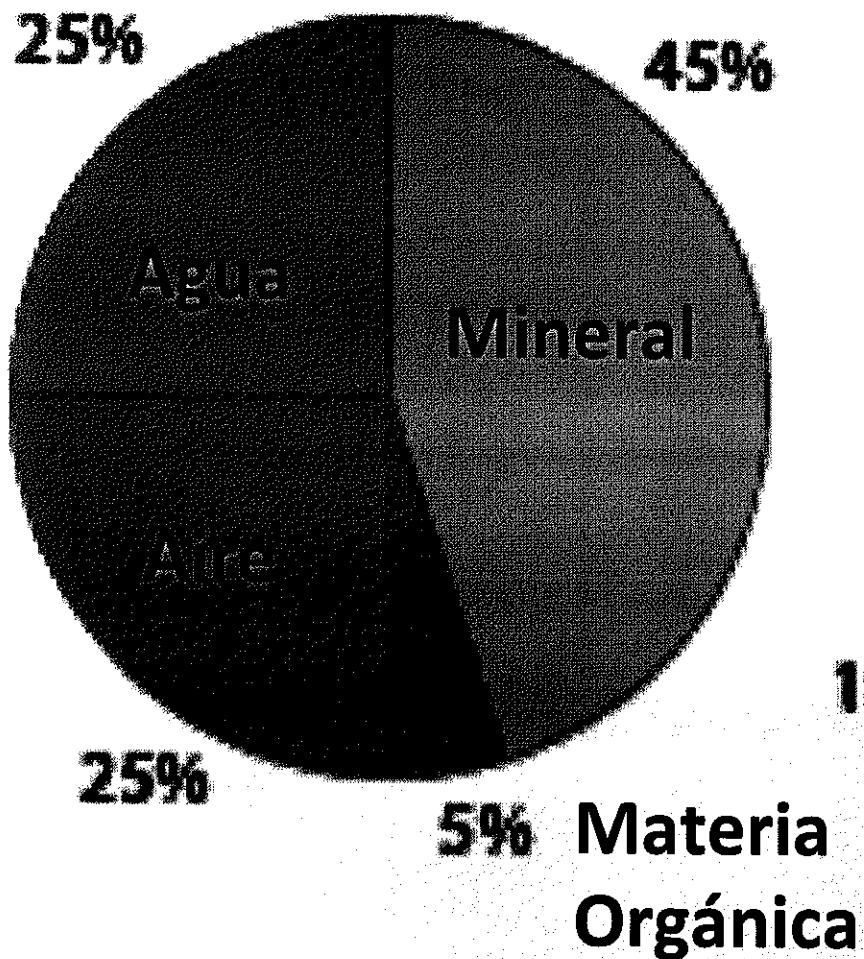




TIEMPO de FERMENTACIÓN

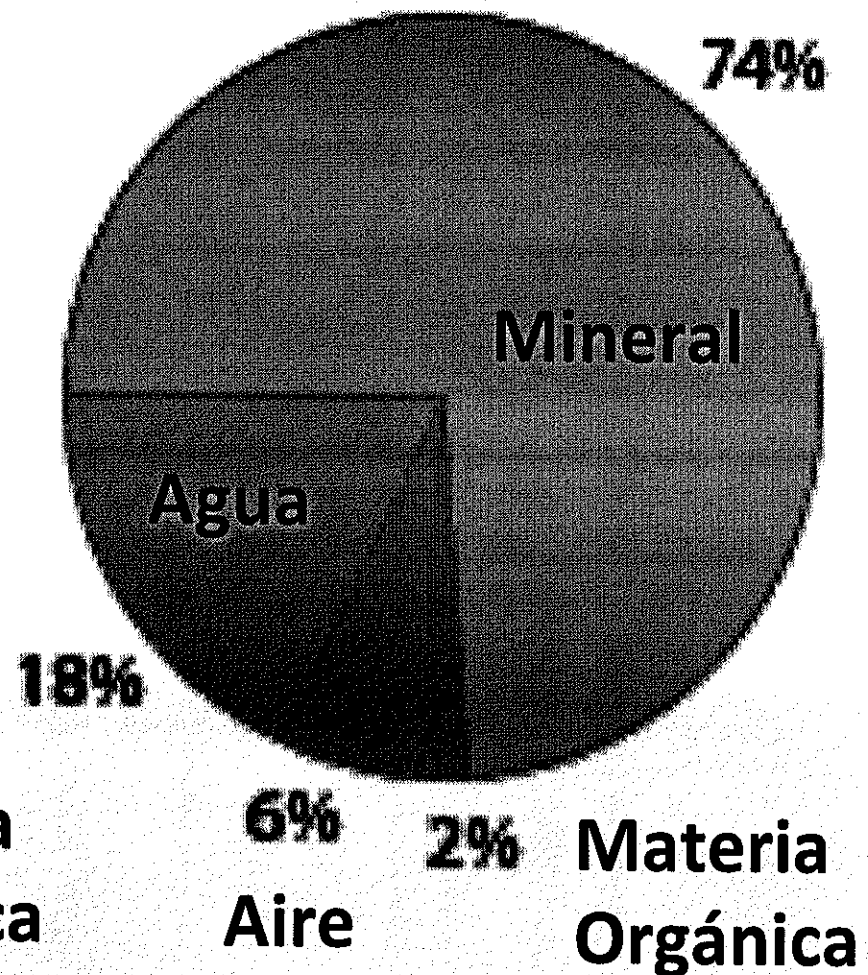


Suelo Inalterado Undisturbed Soil



Mineral Matter
Soil Air

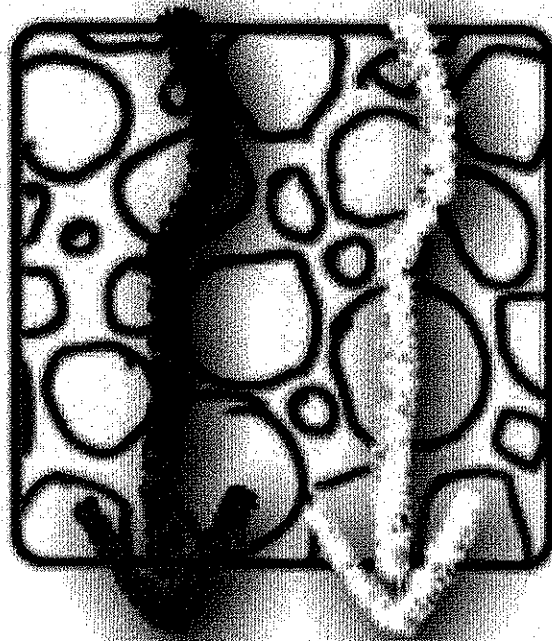
Suelo Compactado Compacted Soil



Soil Water
Organic Matter

SUELO NORMAL

**NORMAL
SOIL**



WATER

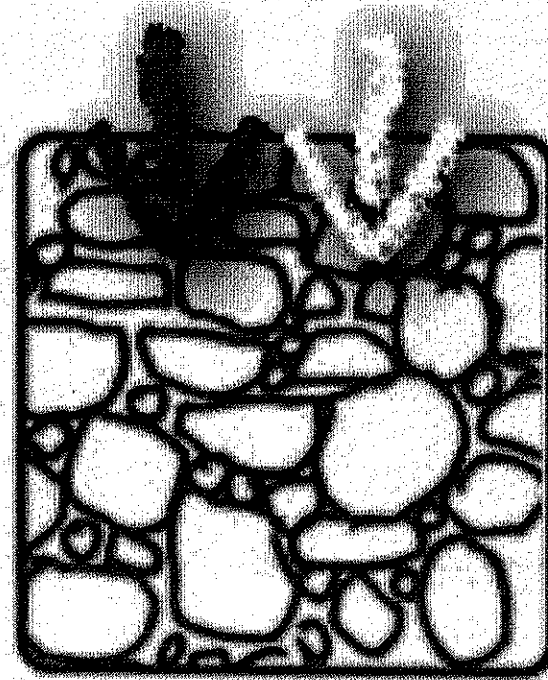
AIR

AGUA

AIRE

SUELO COMPACTADO

**COMPACTED
SOIL**



NO MOISTURE

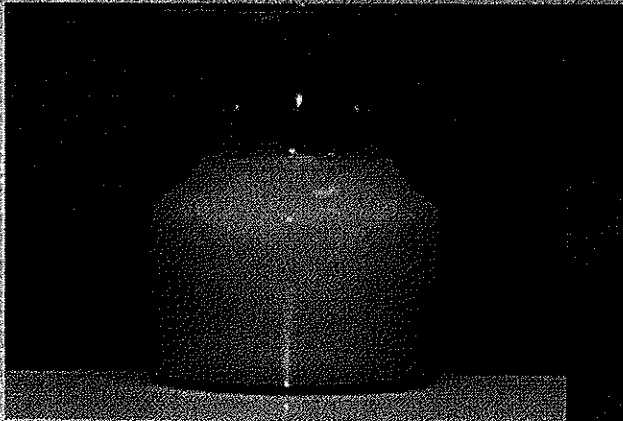
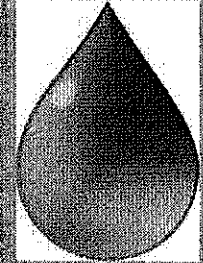
NO AIR

NO HUMEDAD

NO AIRE

Preparación de biofertilizantes

Agua sin cloro
(de lluvia, manantial o pozo)



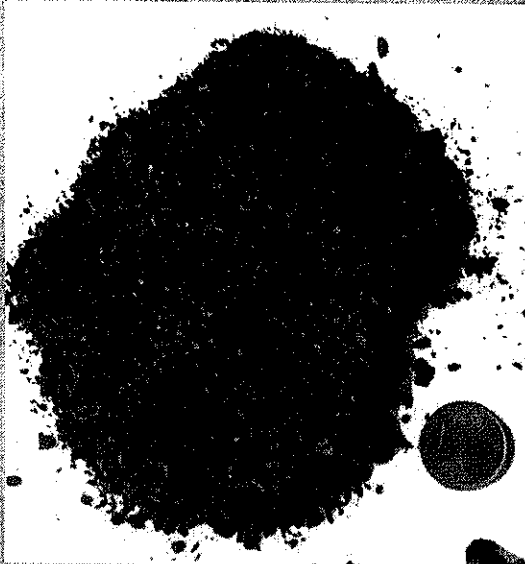
Suero de leche



Mierda fresca de Vaca o rumen



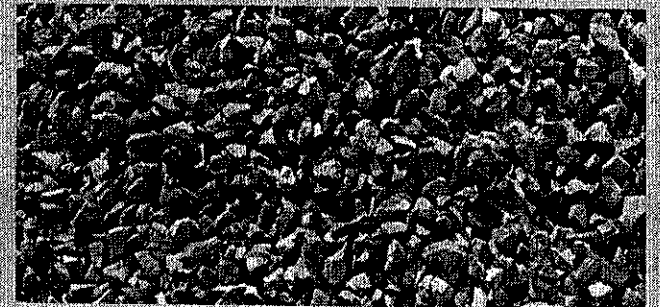
Melaza



Carbón activado



Cenizas



Polvo de roca
(basáltica)

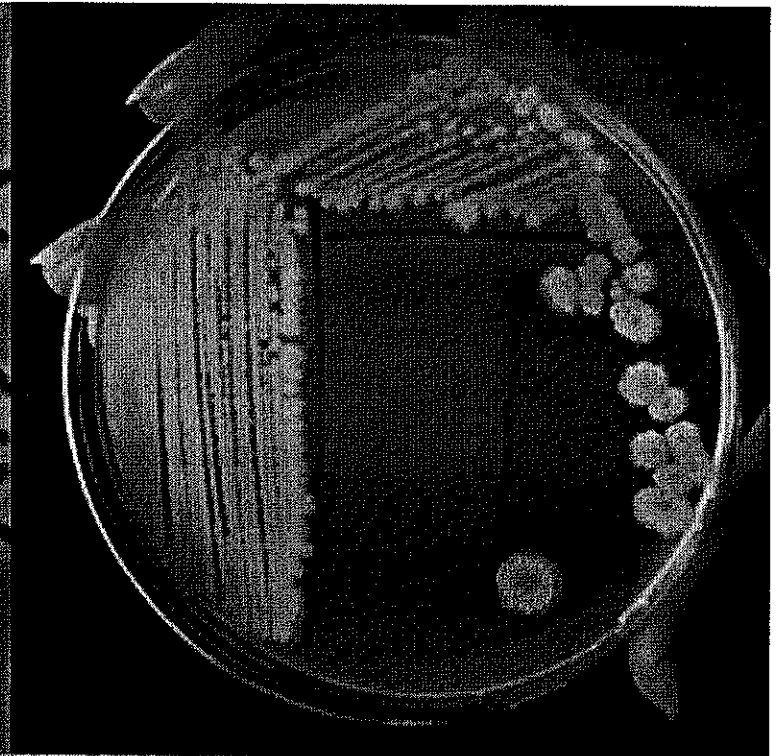
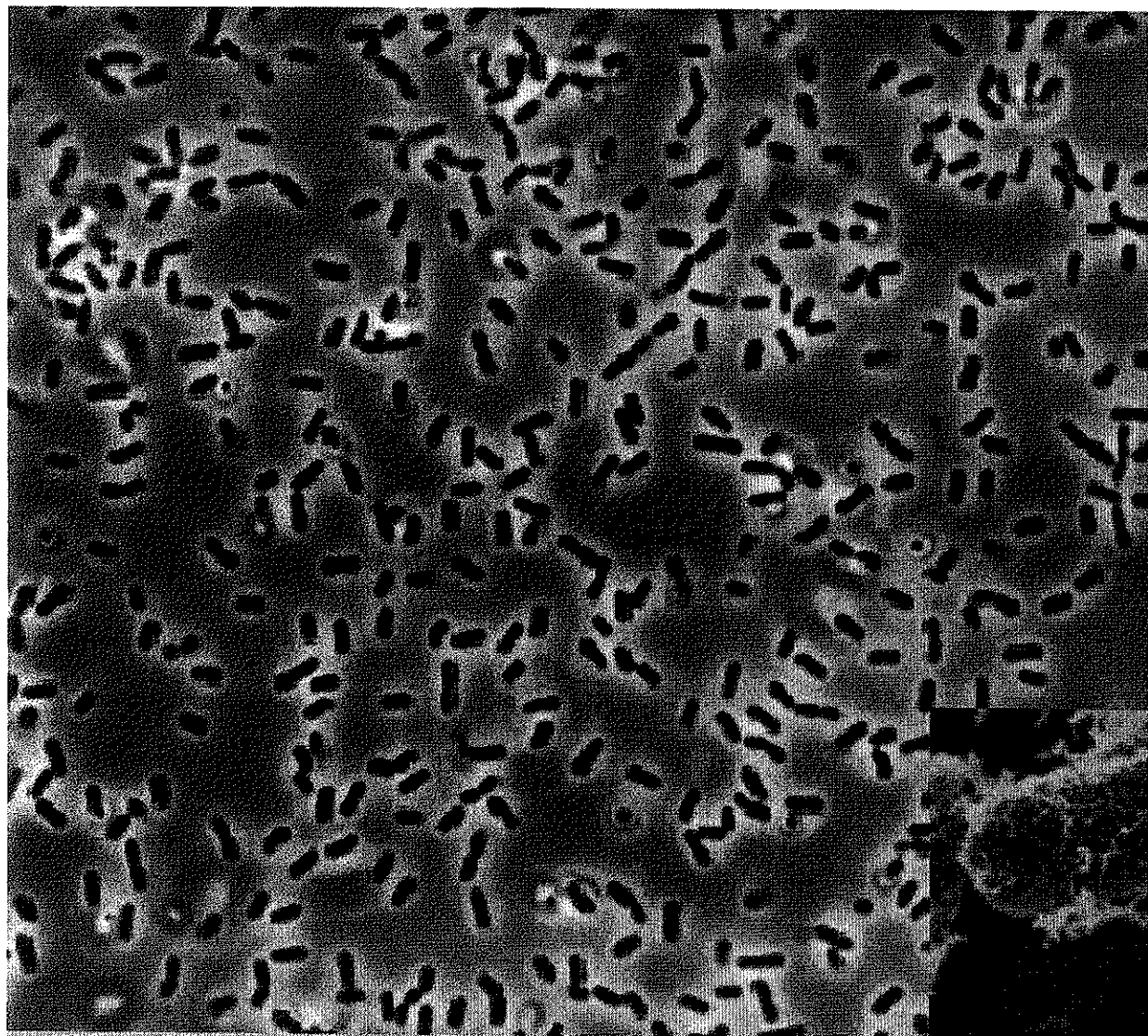
Huesos
quemados y molidos



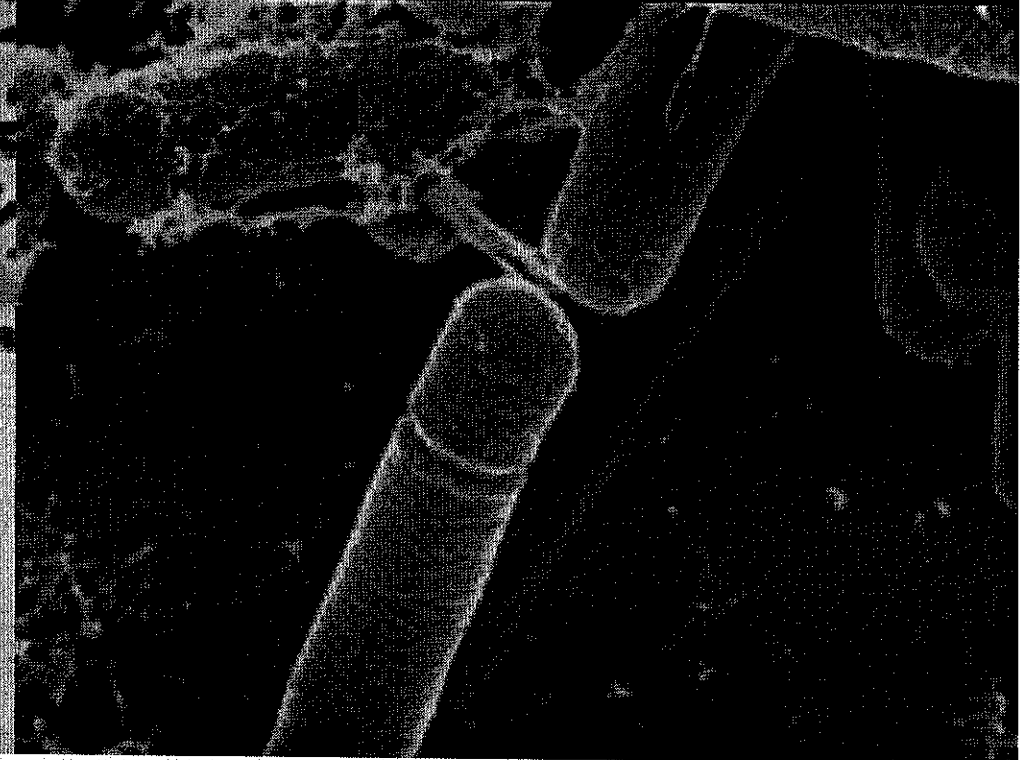


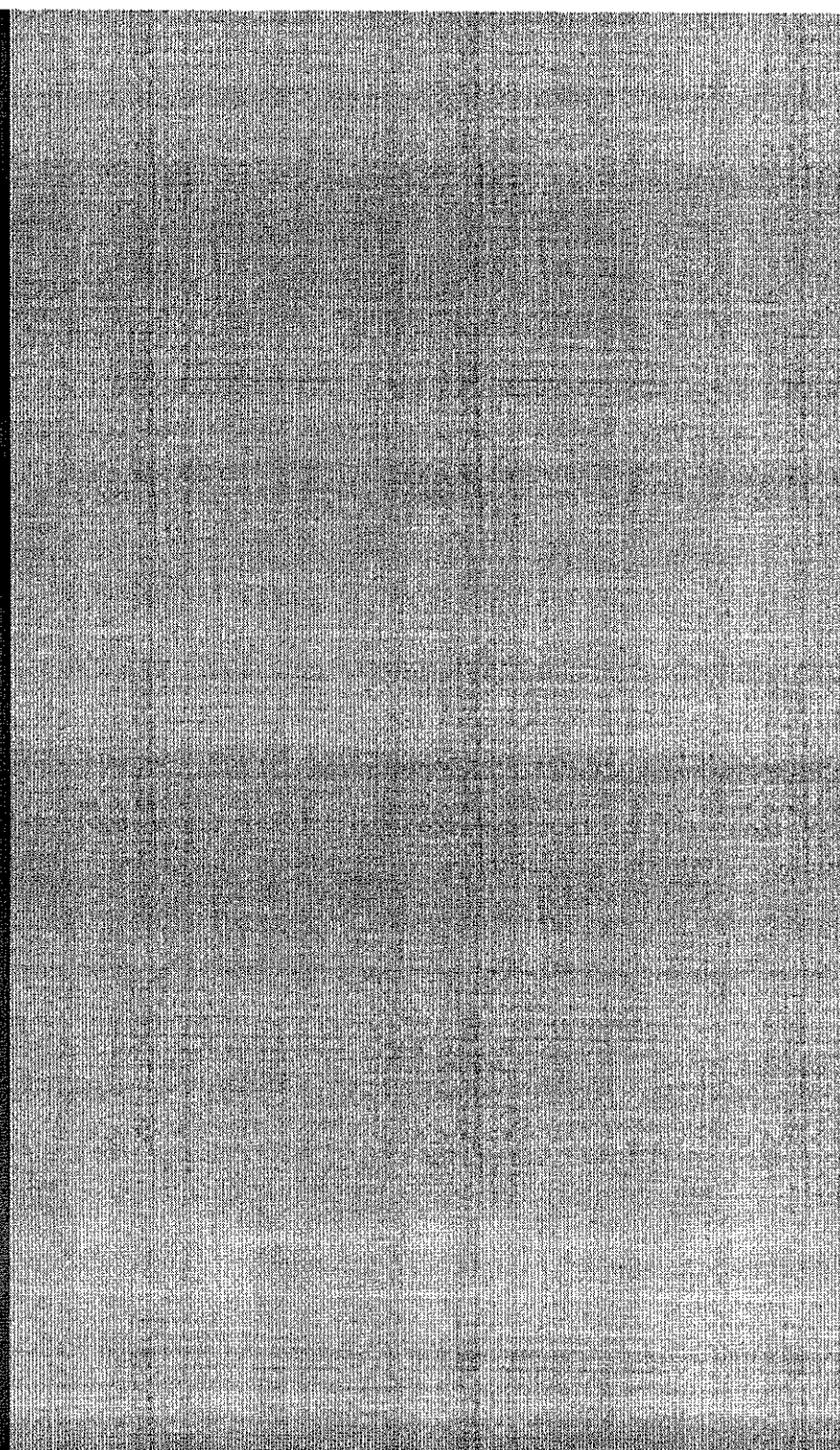
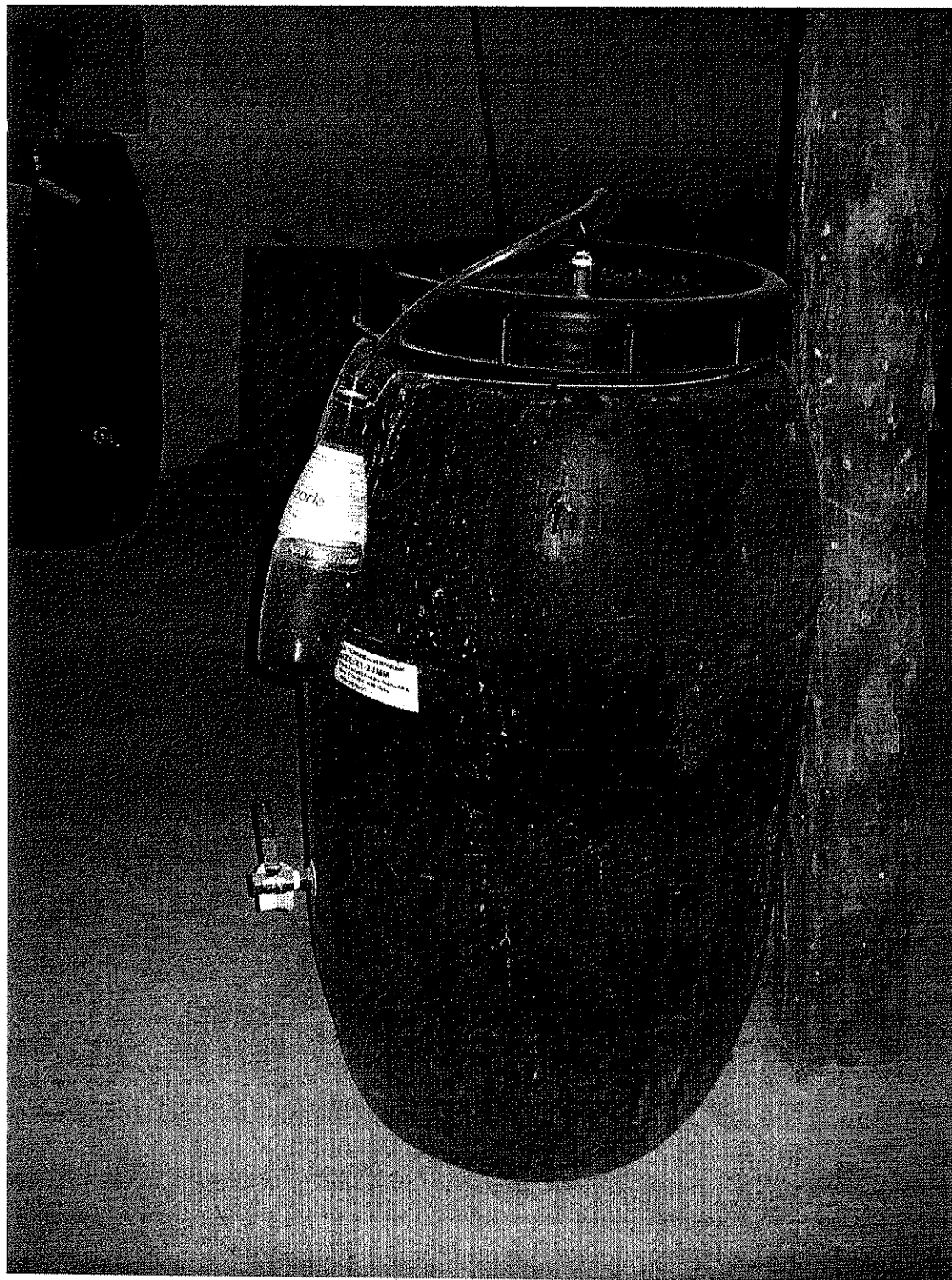
RUMEN de vaca

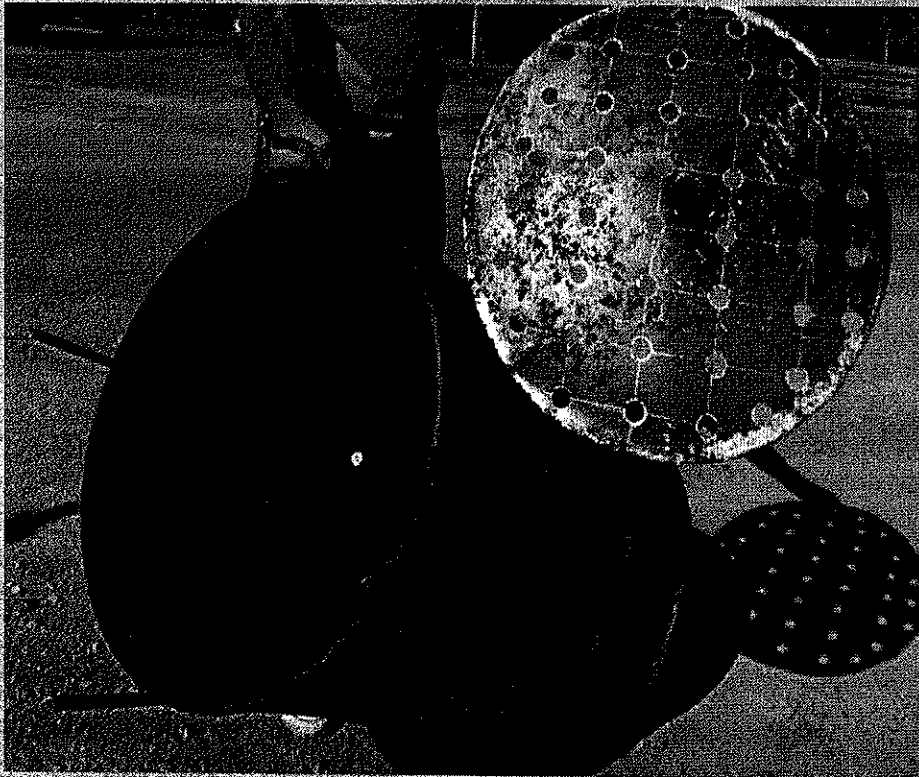




Bacillus subtilis



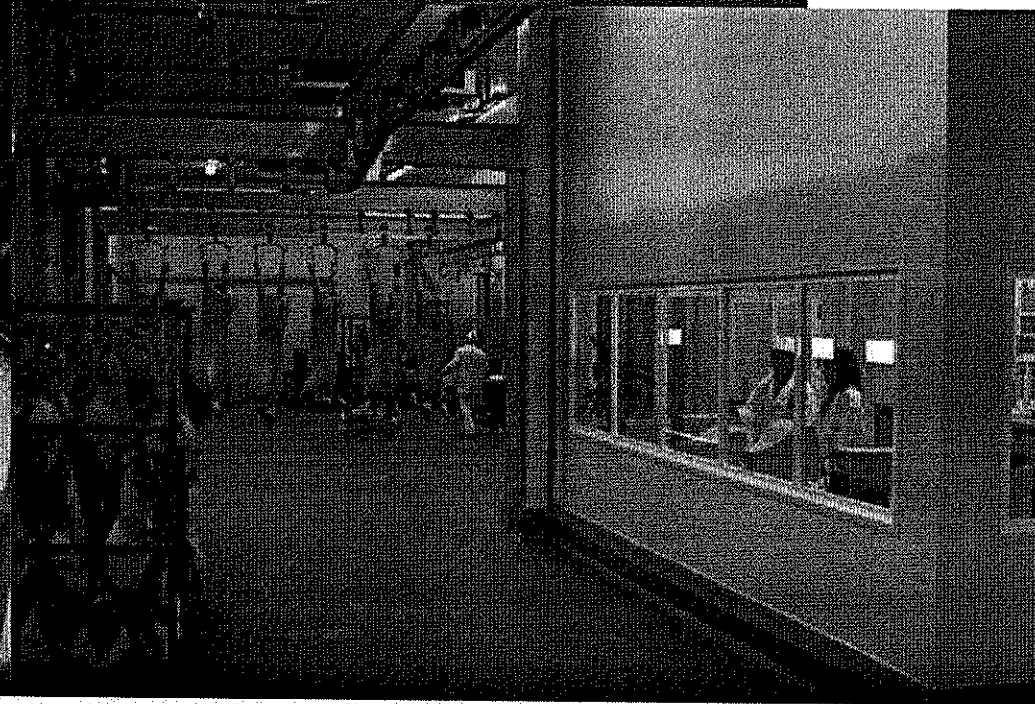
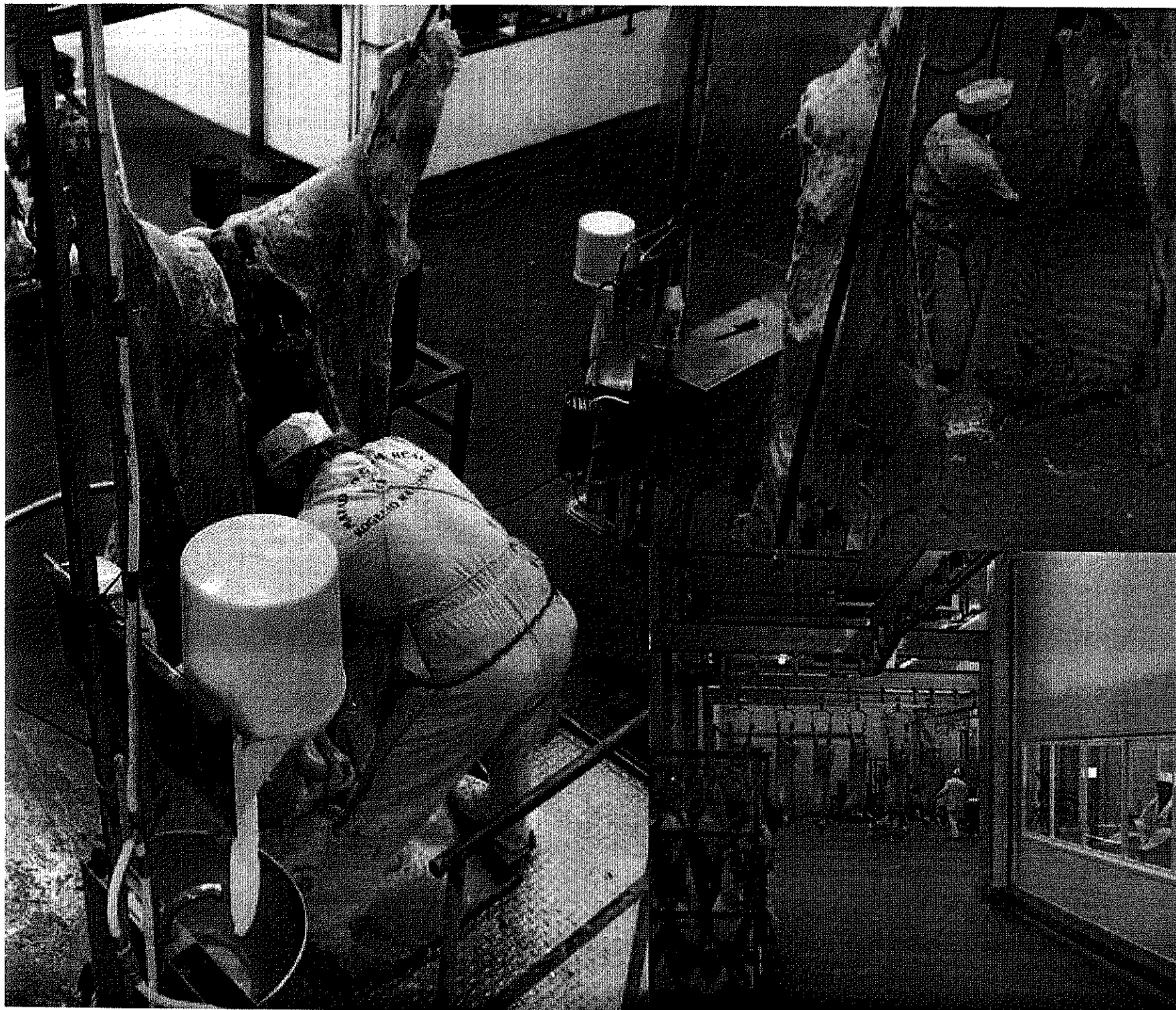




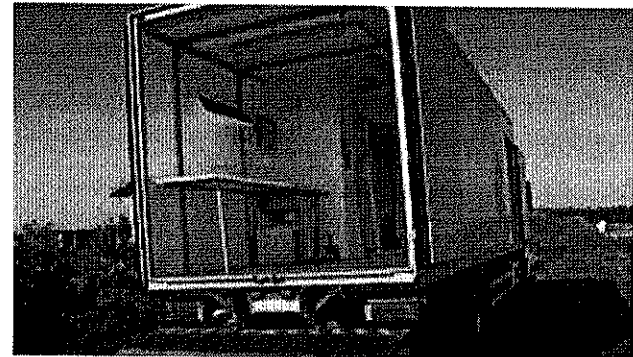
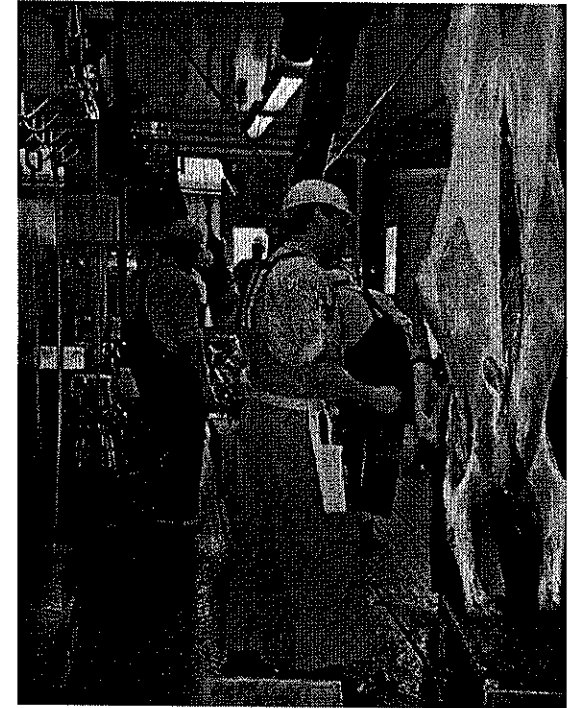
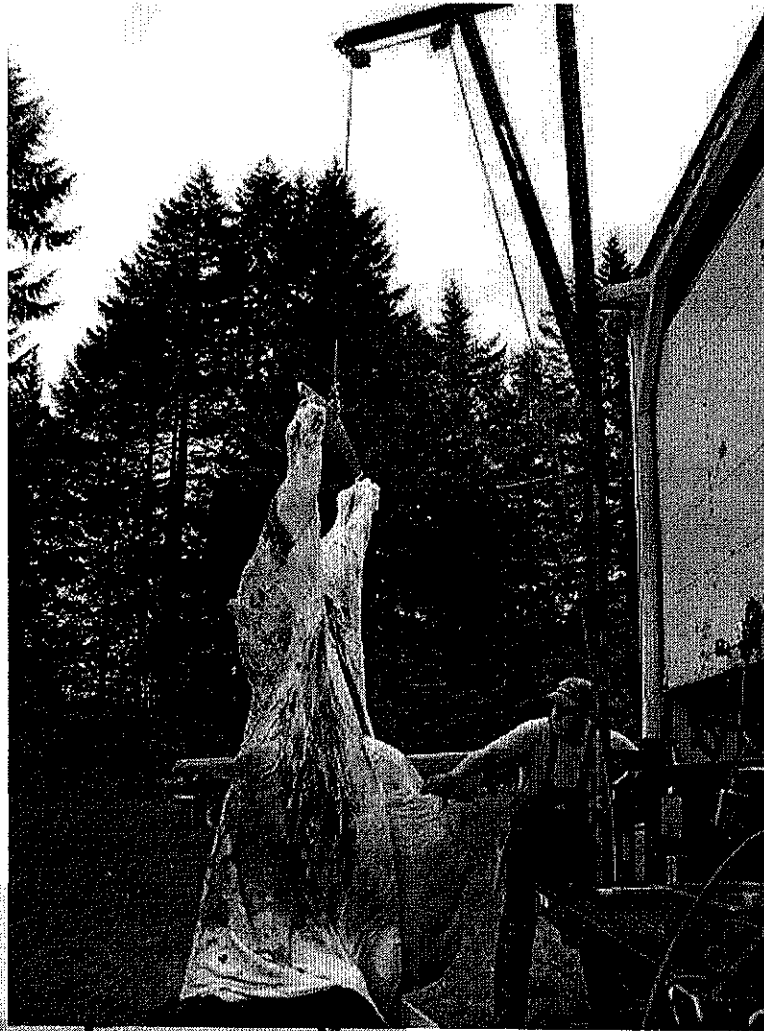
**Fósforo soluble
(aplicación foliar)
a partir
de huesos**







Matadero móvil

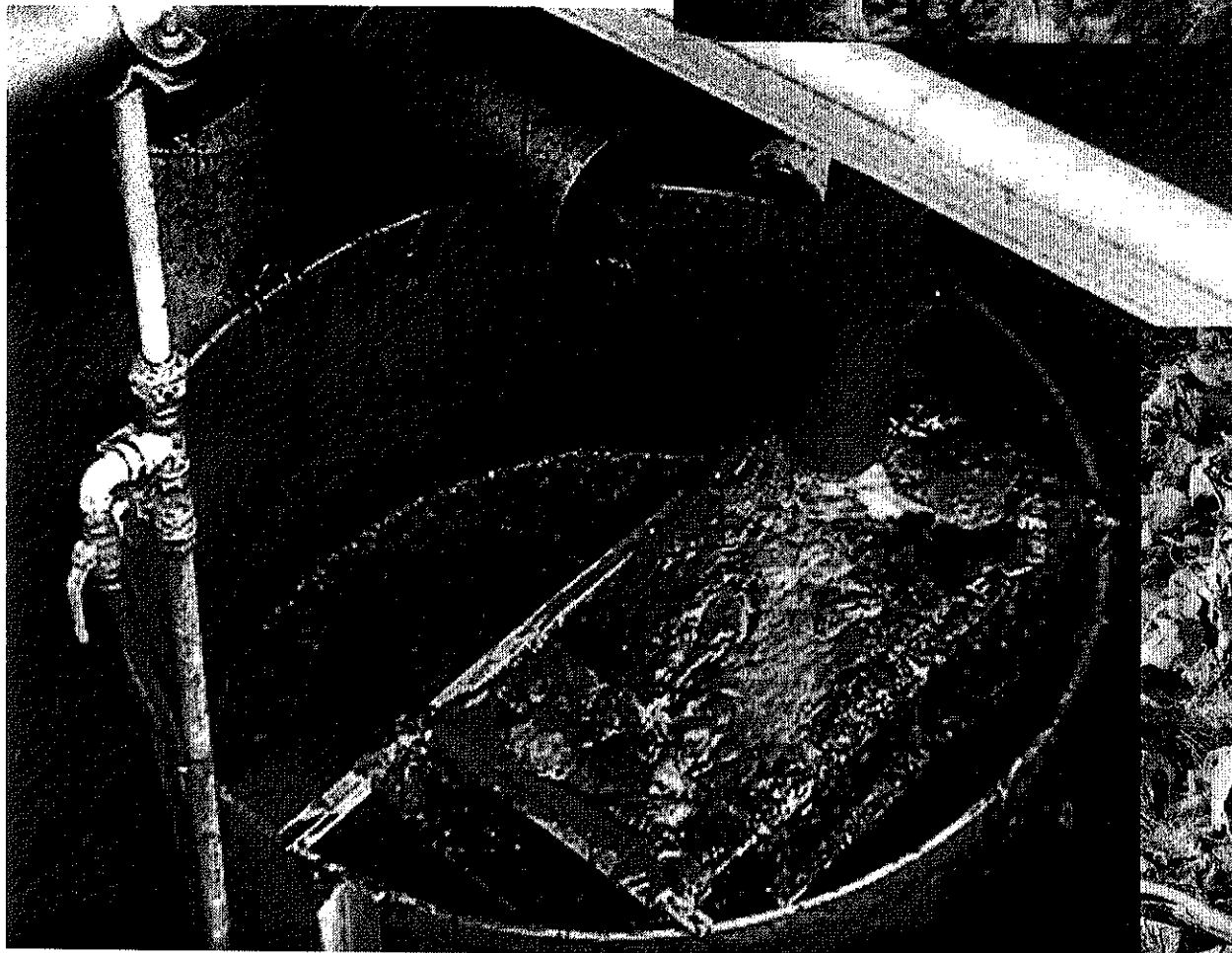
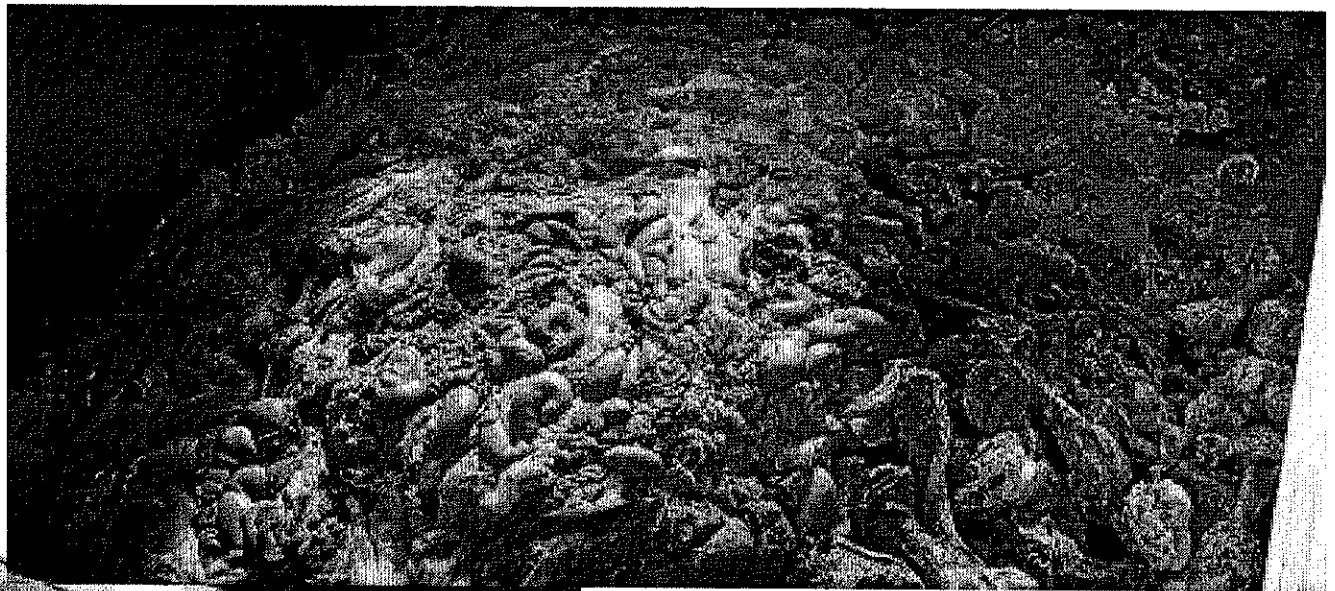


SANDACH

Subproductos **A**nimales

No **D**estinados

Al **C**onsumo **H**umano

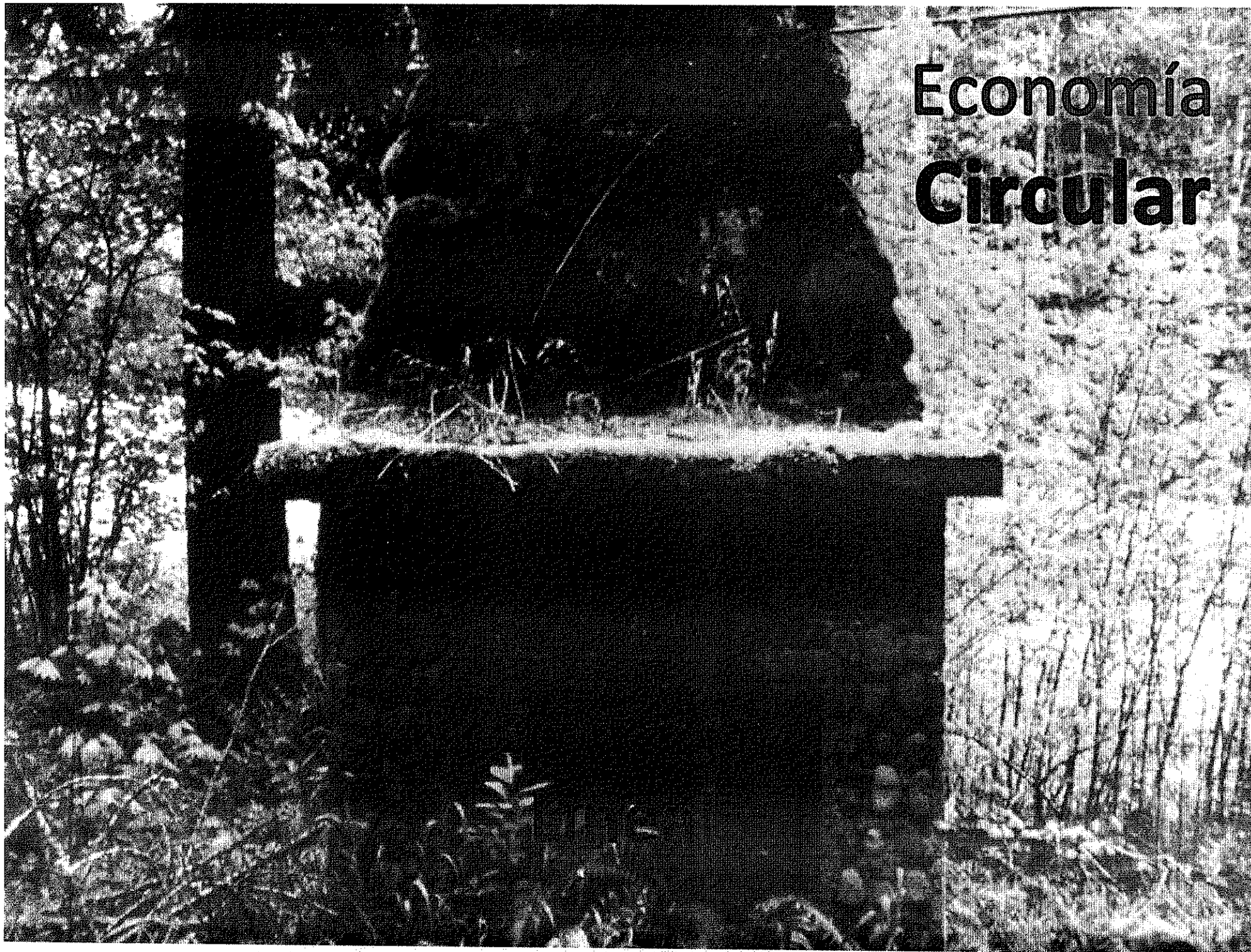




Gestión de cadáveres

**TODO RESIDUO
ES
UN RECURSO
DESAPROVECHADO**

Economía Circular



La industria de fertilizantes químicos
solo vende solubilidad
y aire en forma de nitrógeno

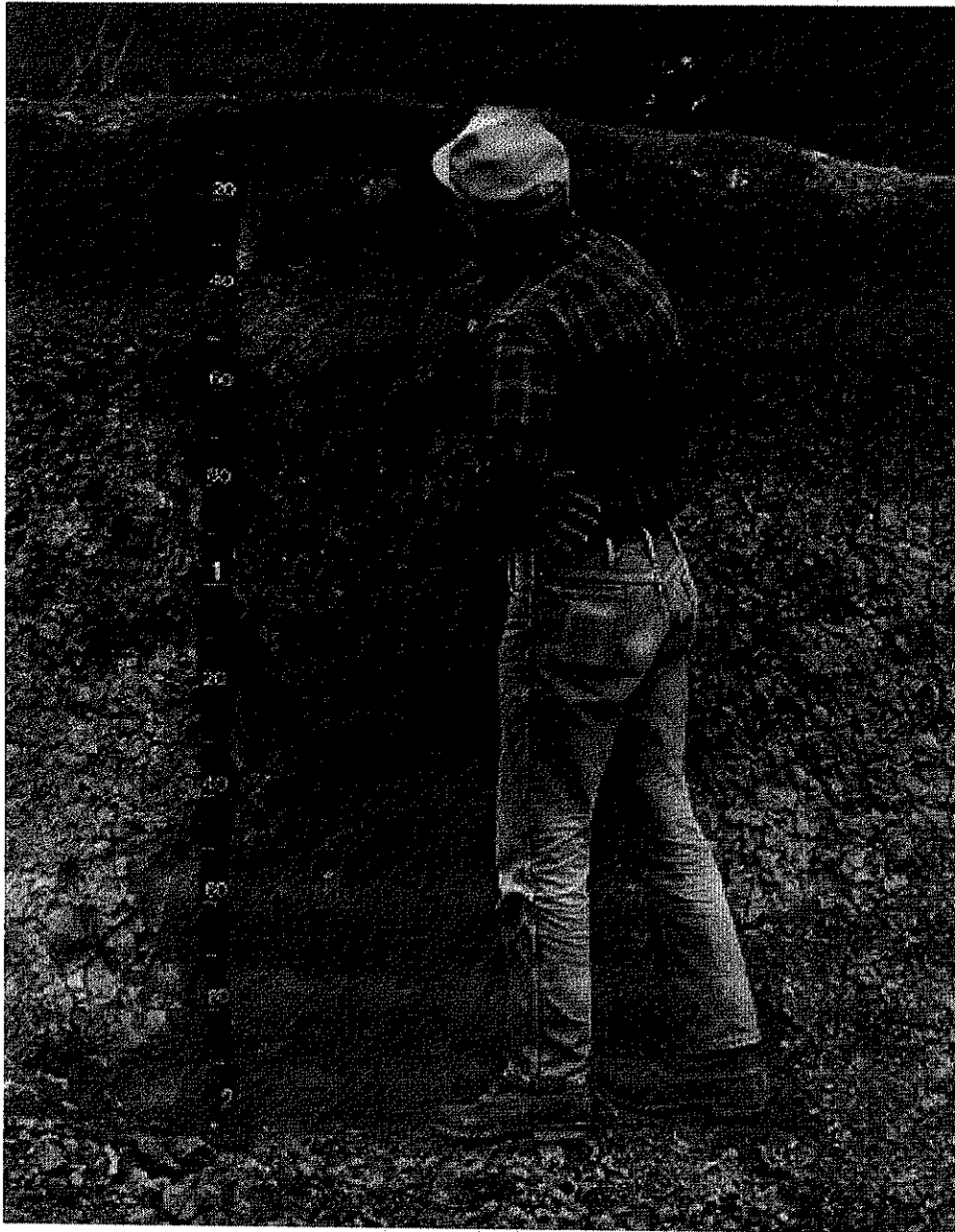
Ambas cuestiones nos la aportan
los microorganismos del suelo
de forma gratuita y eterna

MINERAL		Tomado por el cultivo (Kg / Ha)	Disponible en el suelo (Kg / Ha)	Existente en el suelo (Total) (Kg / Ha)
N	Nitrógeno	100	20-200	1.000-10.000
P	Fósforo	100	40-200	5.000-50.000
K	Potasio	20	20-100	1.000-10.000
Ca	Calcio	40	100-5.000	10.000-100.000
Mg	Magnesio	20	100-1.000	2.000-100.000

RIQUEZA MINERAL EN SUELOS: La tierra vegetal contiene **grandes reservas de minerales**, mucho más que la que pueden sacar cada año con un cultivo (comparar con la 2ª columna con la 4ª columna).

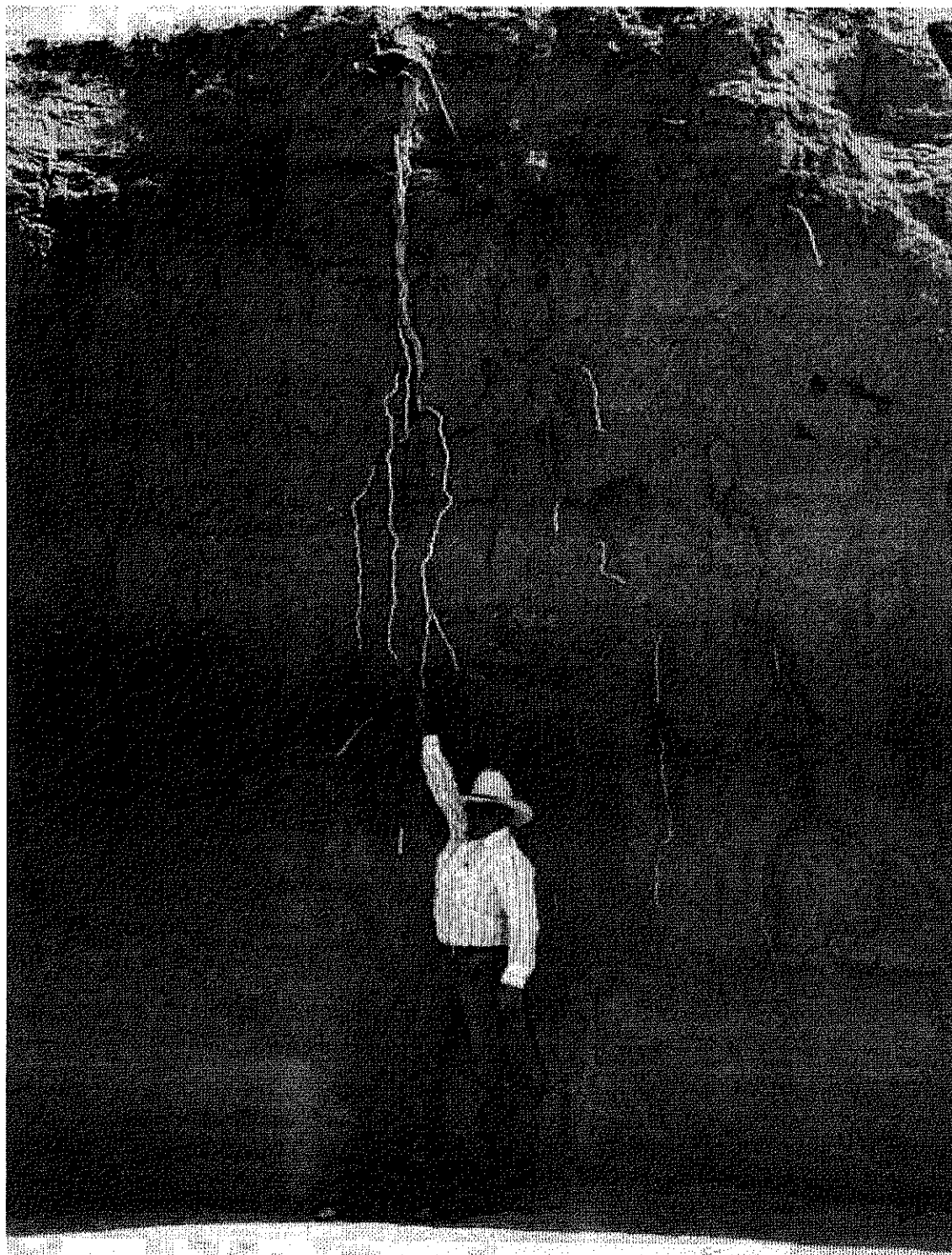
Sin embargo, no todo el mineral en la parte superior del suelo está libremente disponible, a veces más del **98%** del mineral está en **forma insoluble**, unida firmemente a las partículas del suelo (ver 3ª columna).

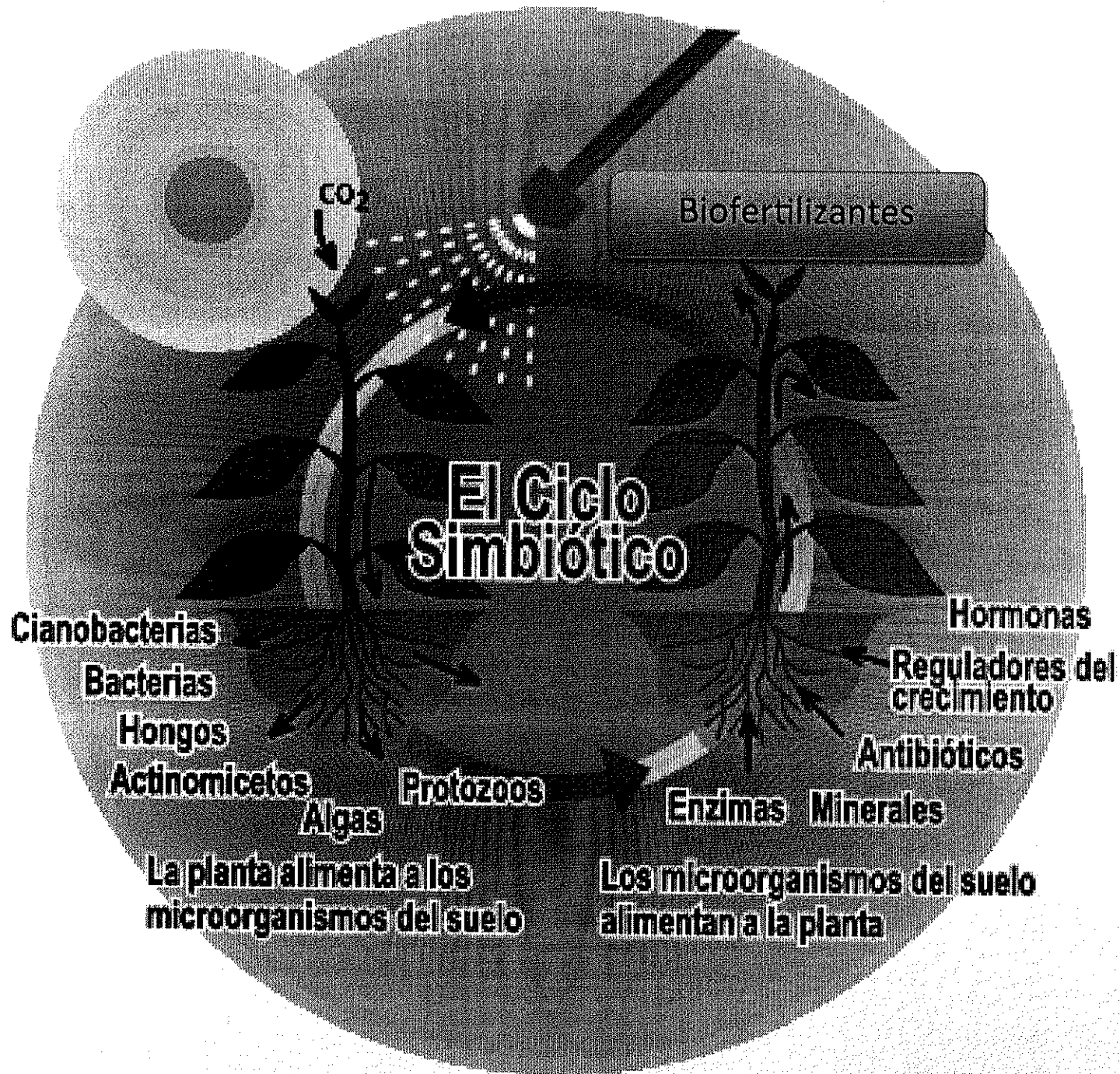
Estos nutrientes insolubles son puestos a disposición por la **descomposición de la materia orgánica** por las bacterias, los hongos, las micorrizas, la intemperie y el **reciclaje de los minerales** por los árboles y otras plantas perennes.



**En los suelos
no faltan minerales**

**Lo que faltan
son microorganismos
que pongan esos minerales
en forma asequible
para las plantas**





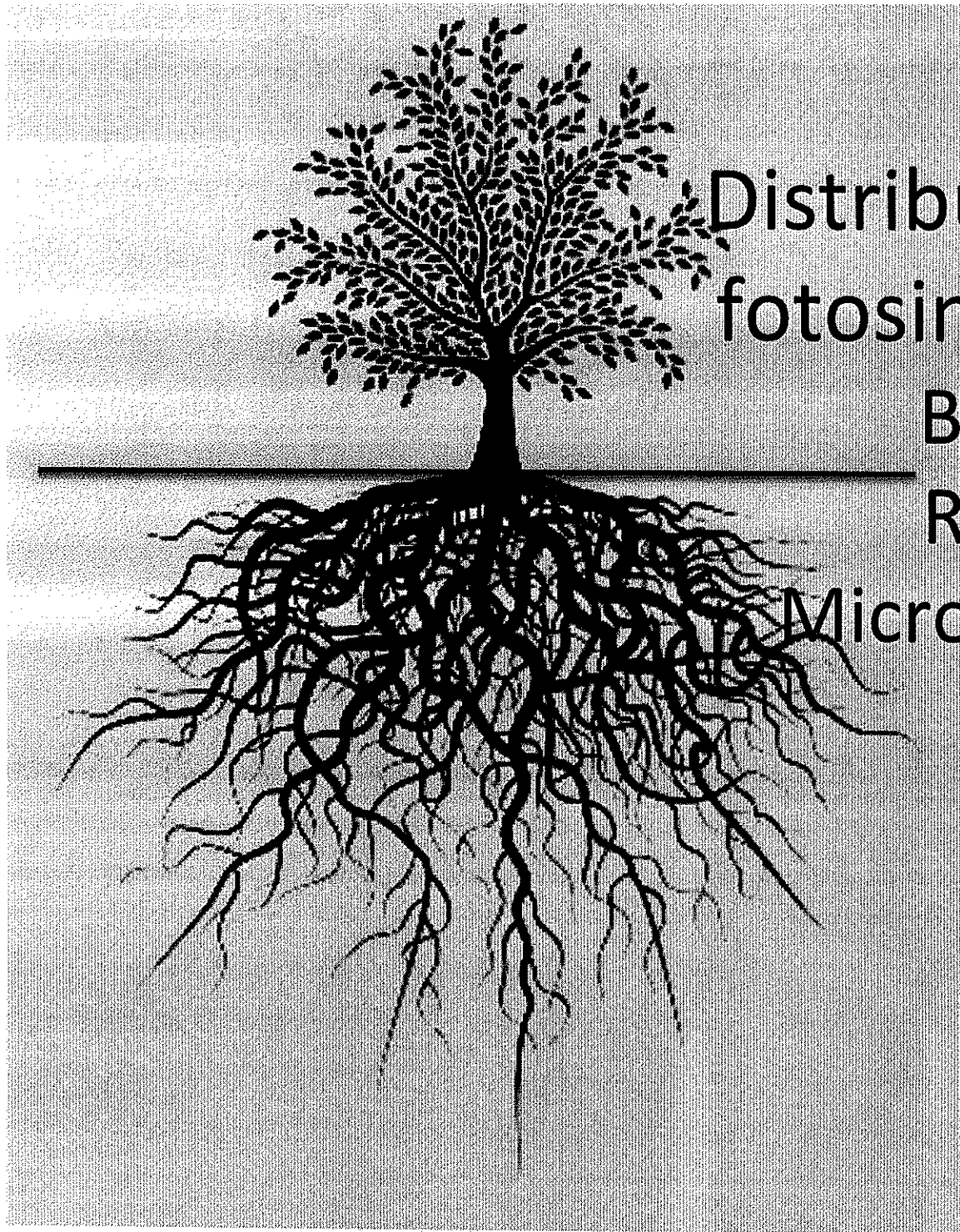


Exudación

30-40% del Carbono fijado por las plantas es exudado por las raíces para alimentar la vida de la rizosfera

A más vida en el suelo, más nutrientes esenciales del suelo se ponen a disposición de las plantas

El volumen de Carbono liberado al suelo es directamente proporcional a la masa de raíces y a la velocidad de crecimiento



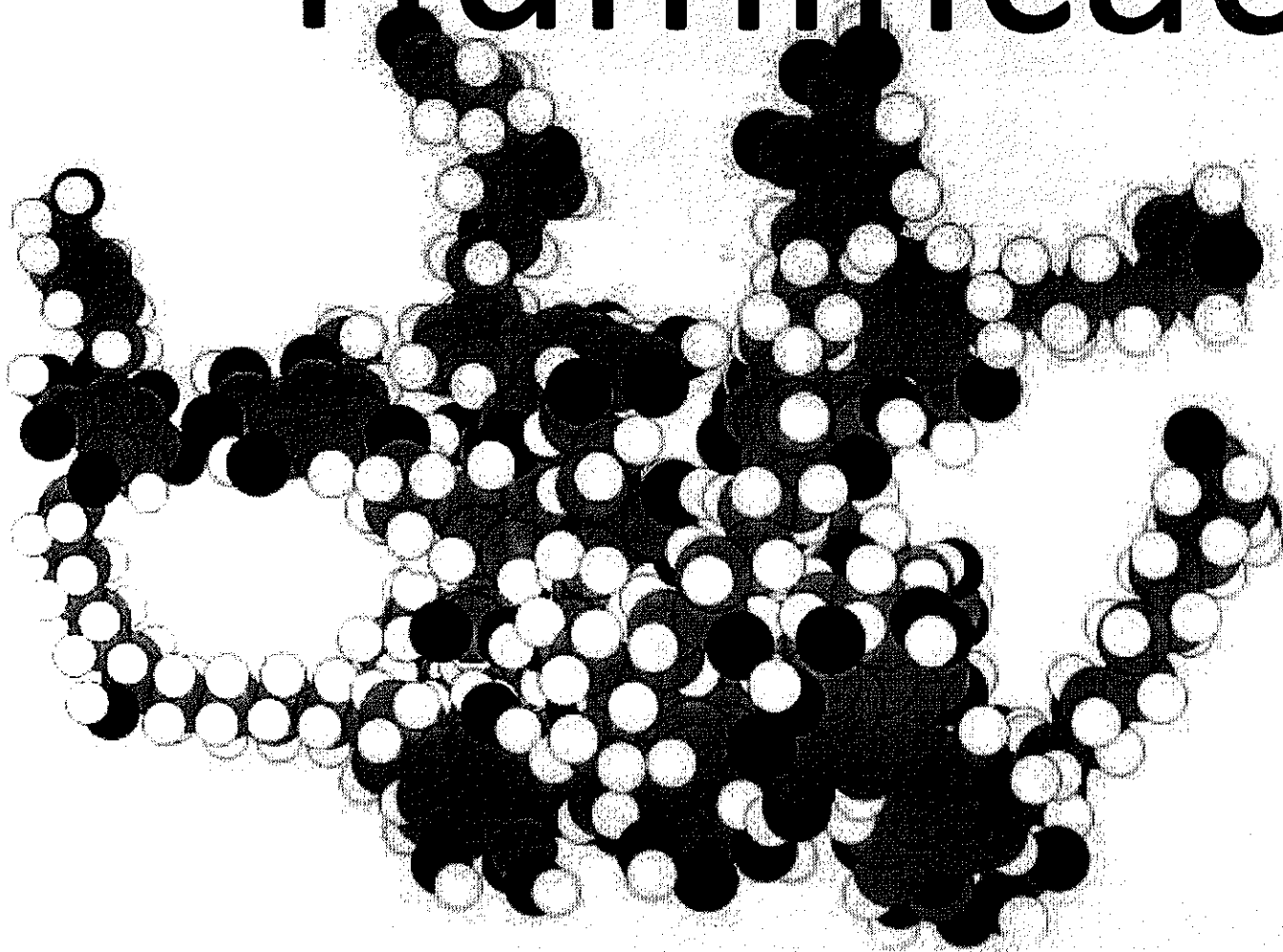
Distribución de la energía fotosintética de la planta

Brotes 30 - 50%

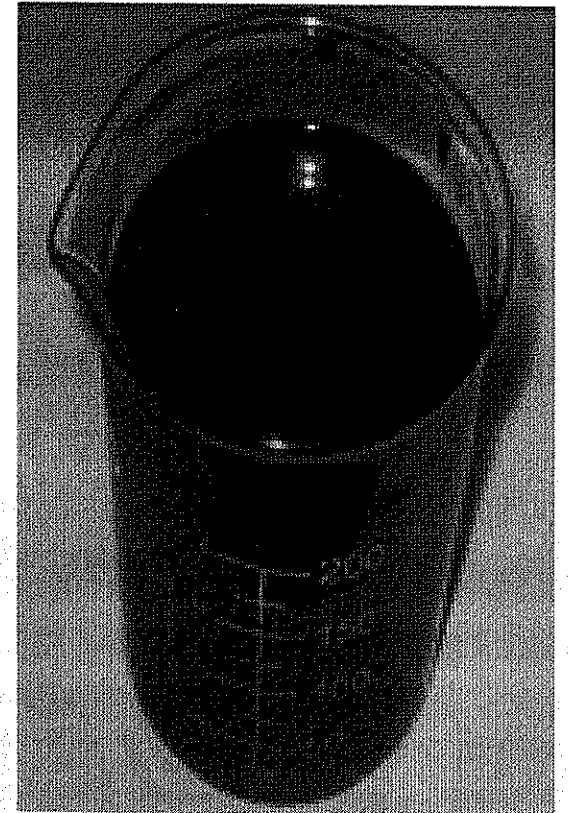
Raíces 30 - 50%

Microorganismos 0 - 40%

Humificación

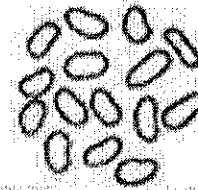


Cambio de compuestos de Carbono de cadena corta a moléculas húmicas de elevado peso molecular y muy estables que forman la Materia Orgánica de los suelos

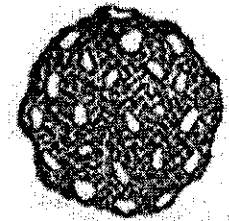
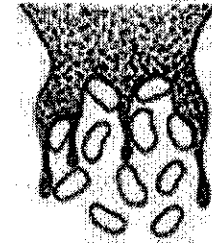


Glomalina

Microbial and Fungal Byproducts Glue the Particles Together



Dispersed State

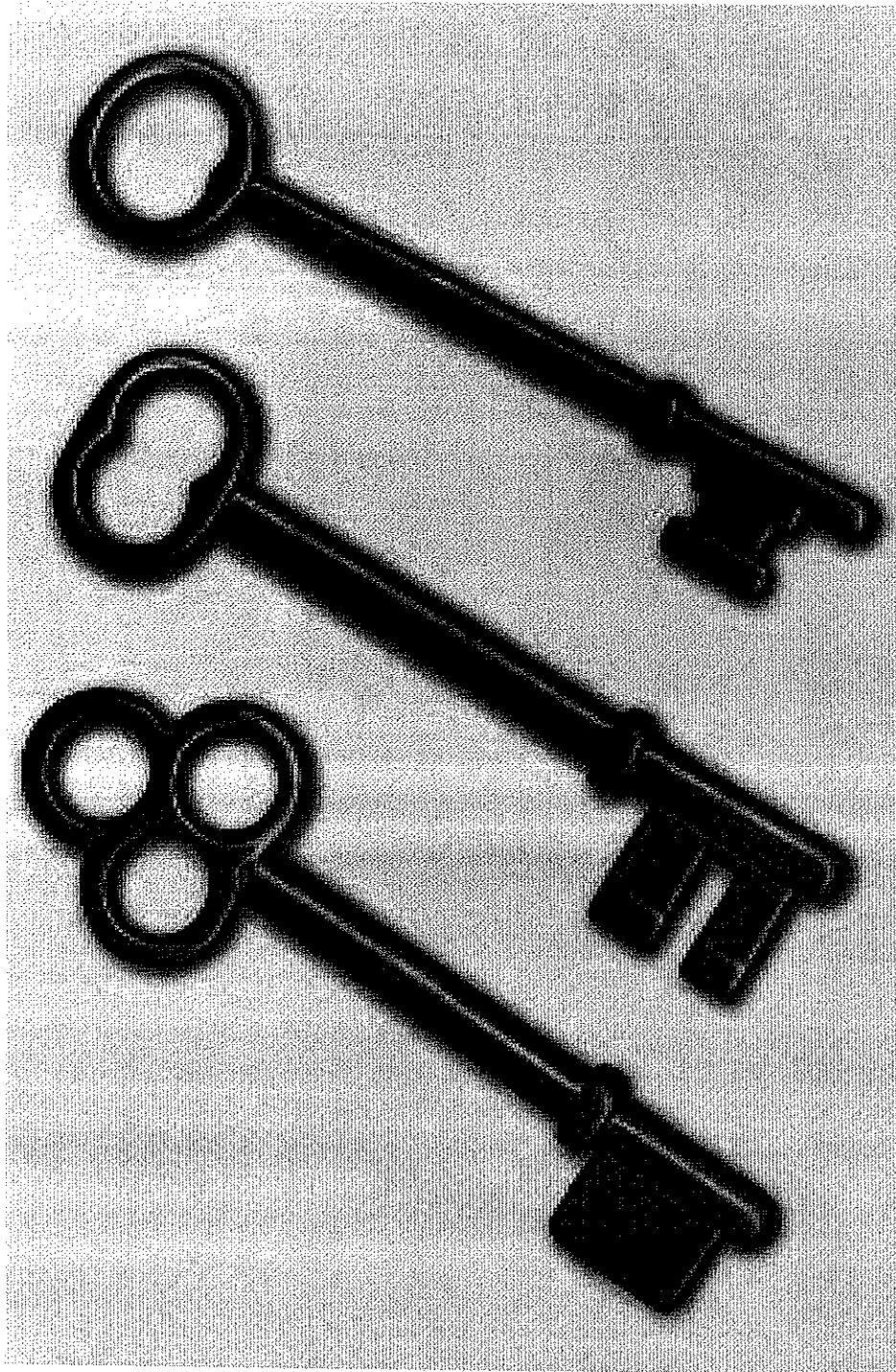


Aggregated State

HUMUS

Moléculas de materia orgánica muy estables con alto peso molecular





El Carbono del suelo

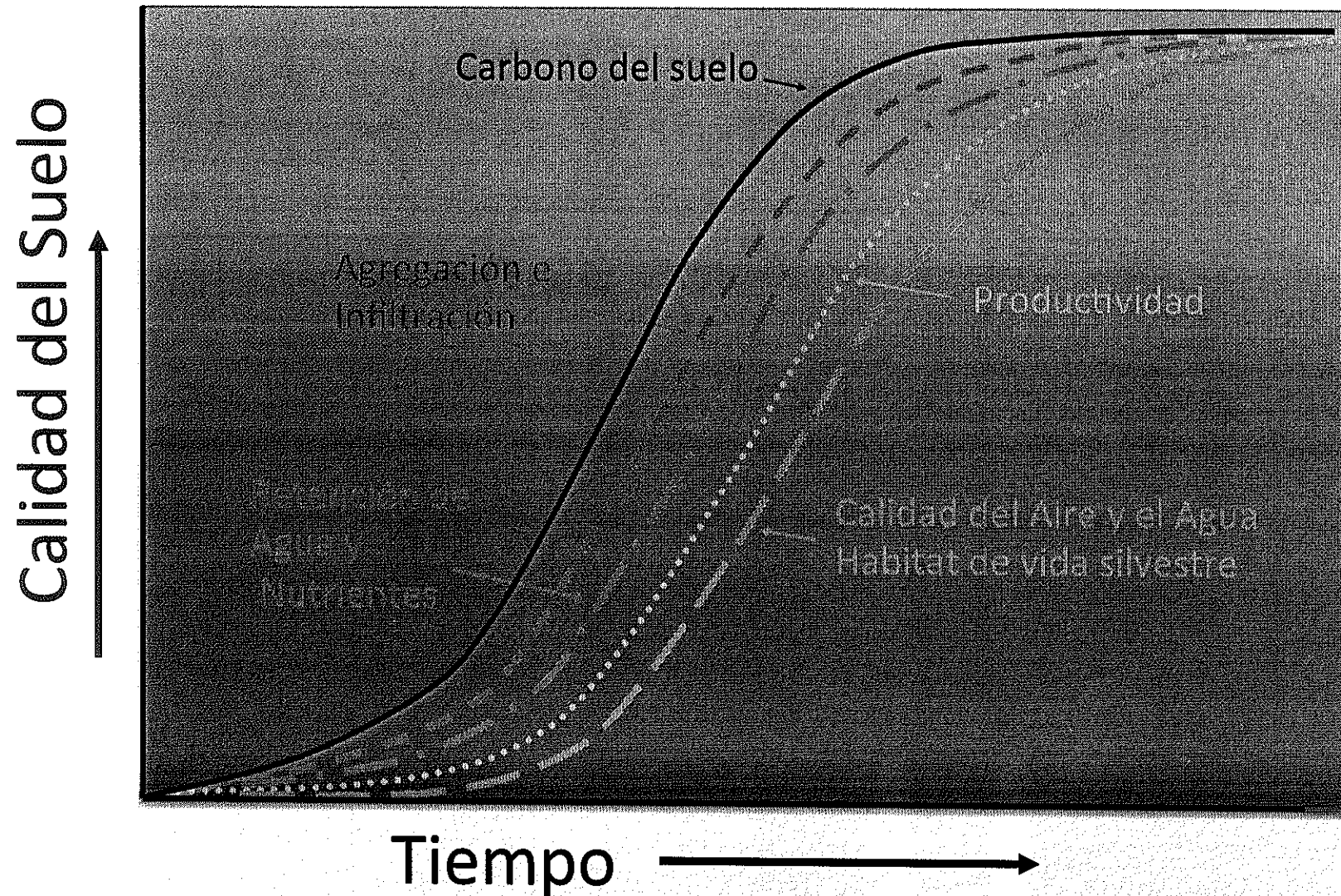
es la llave del estado nutricional de las plantas
y por tanto de los animales y de las personas

El Carbono del suelo

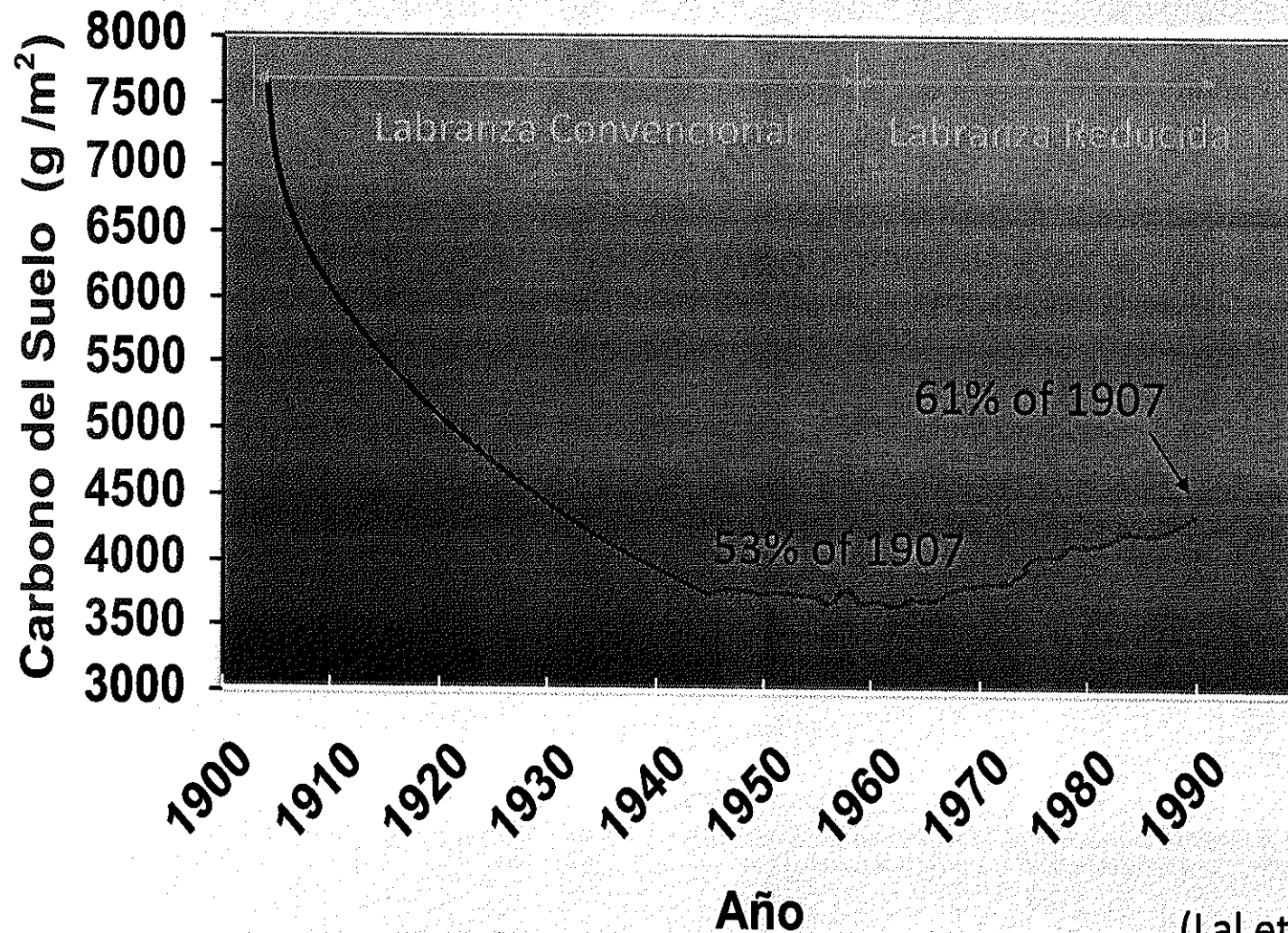
es la llave de la capacidad de retención de agua
del suelo, con frecuencia el factor más limitante

Por tanto, el **Carbono del suelo**
es la llave para el beneficio agrícola

Beneficios del **Carbono** en el Suelo



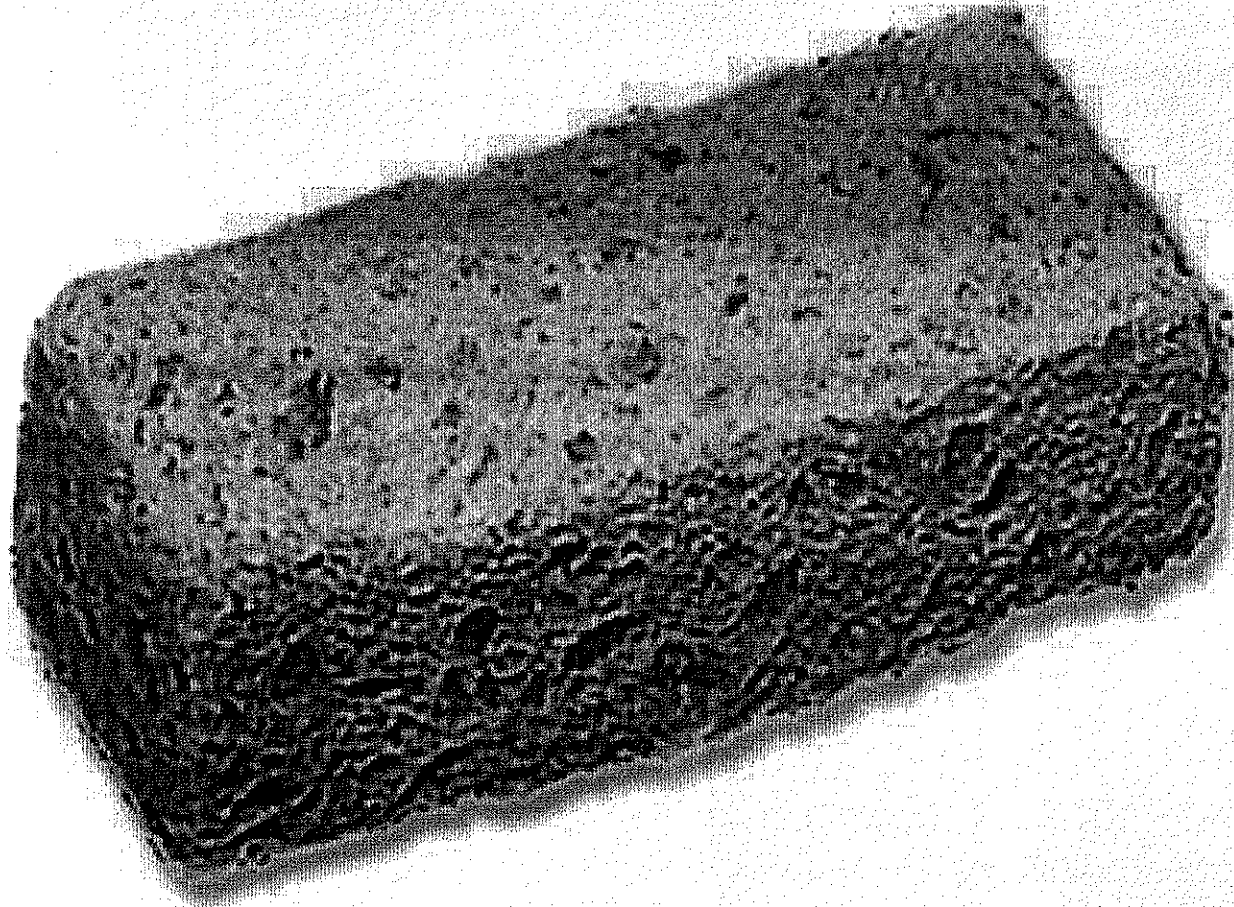
Pérdida histórica del Carbono del Suelo



(Lal et al., 1998)

Una parte de humus puede retener cuatro partes de agua

Cada **1%** de incremento de **Materia Orgánica** en el suelo
(30 cm de profundidad y densidad de $1,4 \text{ gr/cm}^3$),
crea una absorción adicional de agua de aprox. **20 L/m²**



Cambio en la capacidad del suelo para almacenar agua (Litros / Ha)
 en función con los niveles de Carbono Orgánico (CO)
 en los primeros 30 cm de profundidad

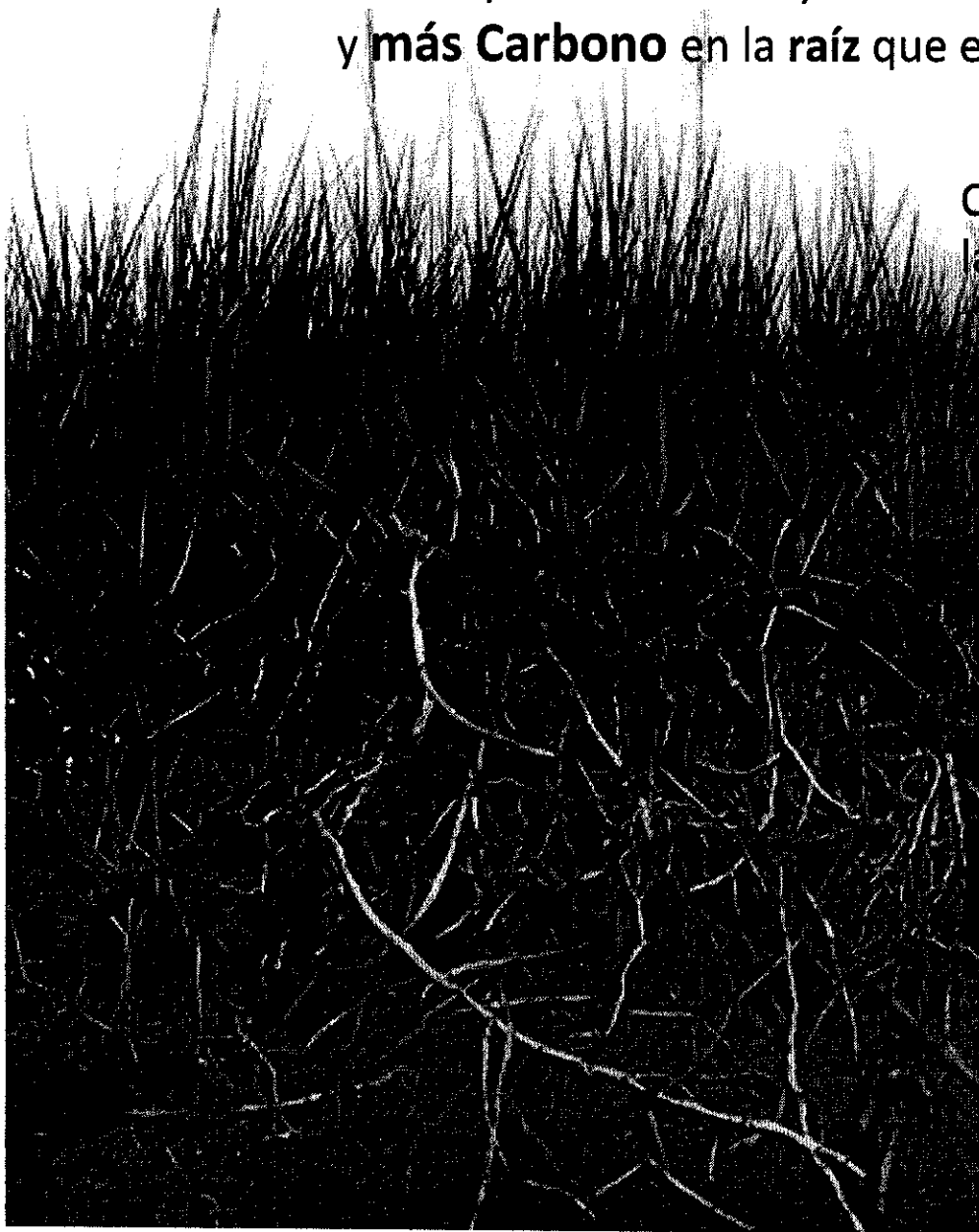
**Change in the capacity of soil to store water (litres/ha) with changes in levels of soil organic carbon (OC) to 30cm of soil depth.
 Bulk Density 1.2g/cm³**

Change in OC Level	Change in OC (kg/m ²)	Extra water (litres/m ²)	Extra water (litres/ha)	CO ₂ Seq. (t/ha)
1%	3.6	14.4	144,000	132
2%	7.2	28.8	288,000	264
3%	10.8	43.2	432,000	396
4%	14.4	57.6	576,000	528

Source: Dr. Christine Jones (www.amazingcarbon.com.au)

Cambio en el % de CO	Cambio en CO (Kg / m ²)	Agua extra (Litros / m ²)	Agua extra (Litros / Ha)	CO ₂ secuestrado (Tn / Ha)
----------------------	-------------------------------------	---------------------------------------	--------------------------	---------------------------------------

En una planta verde hay **más Nitrógeno** en las **hojas** que en la raíz y **más Carbono** en la raíz que en las hojas.

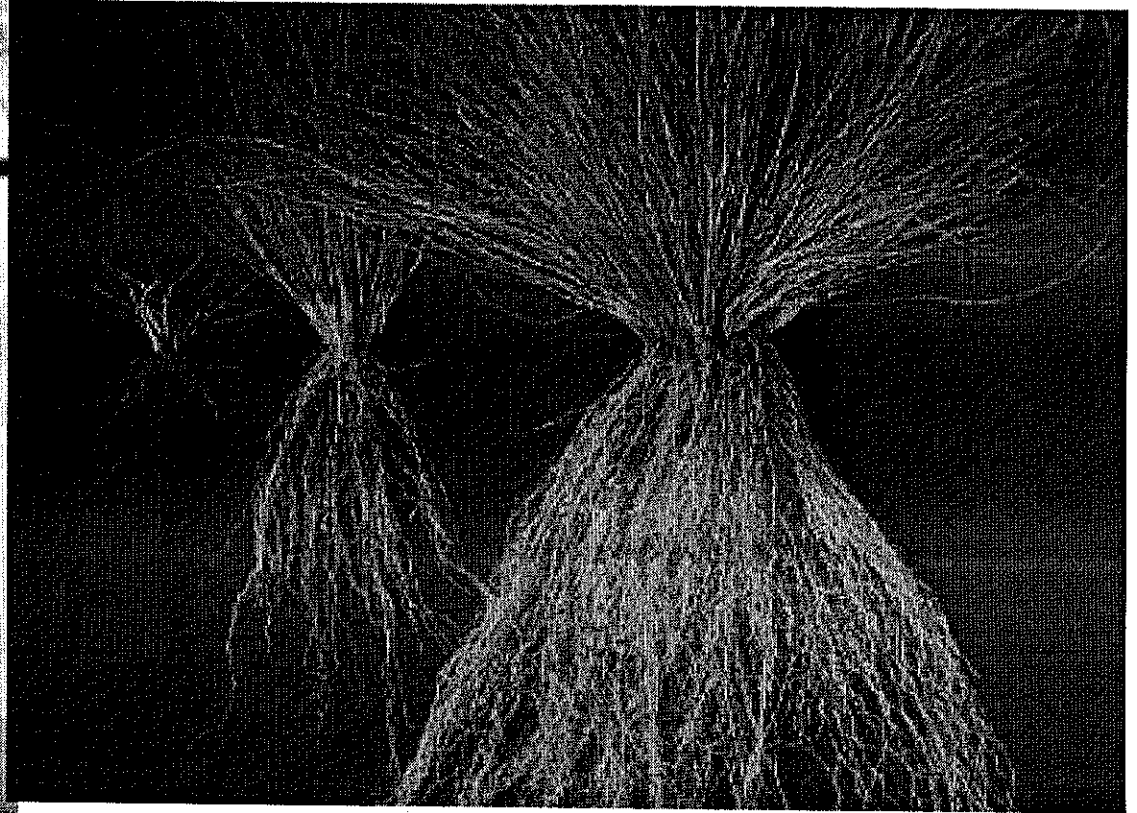


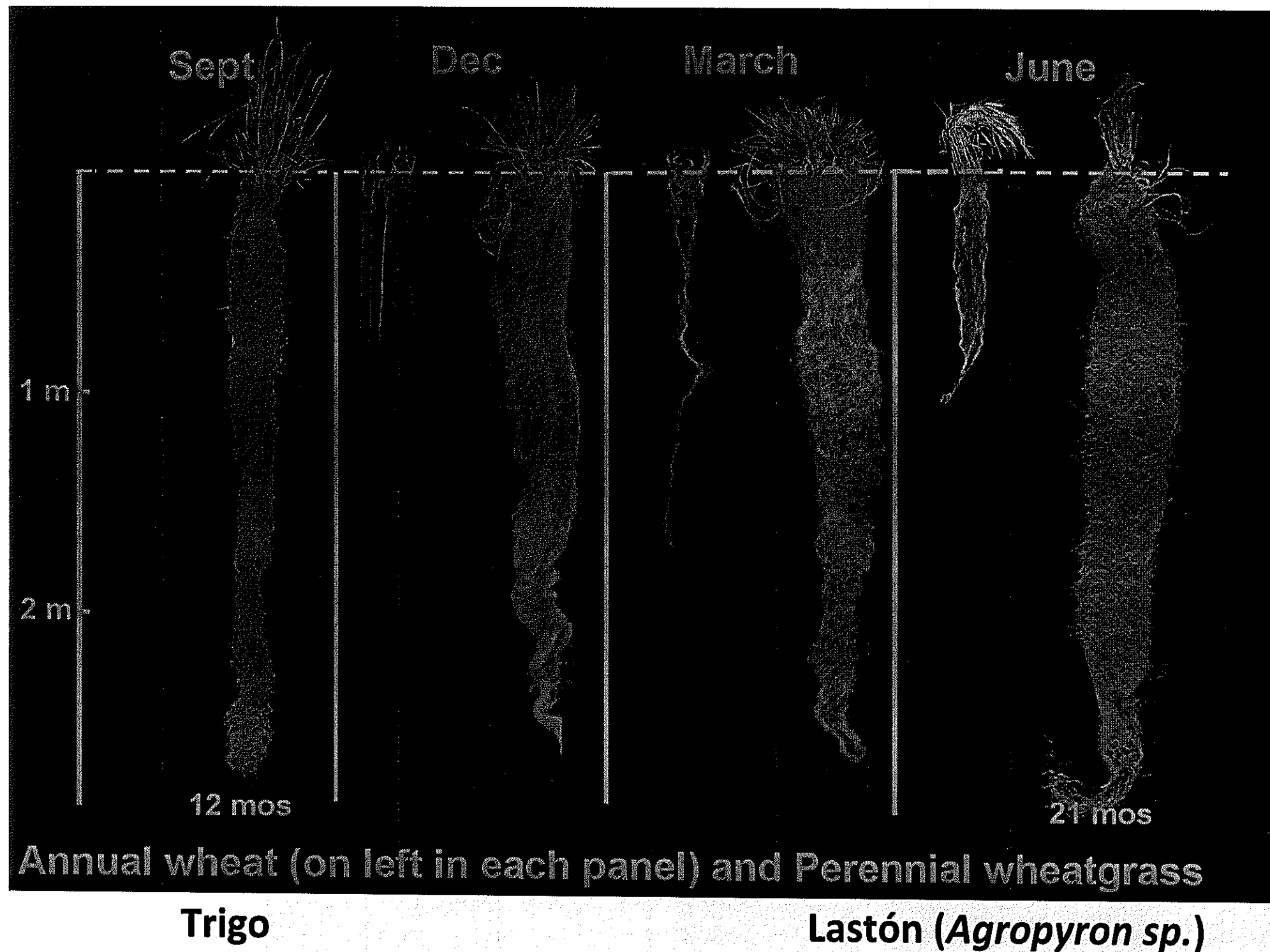
Cuando las hojas son comidas por el pastoreo las plantas responde reajustando este equilibrio

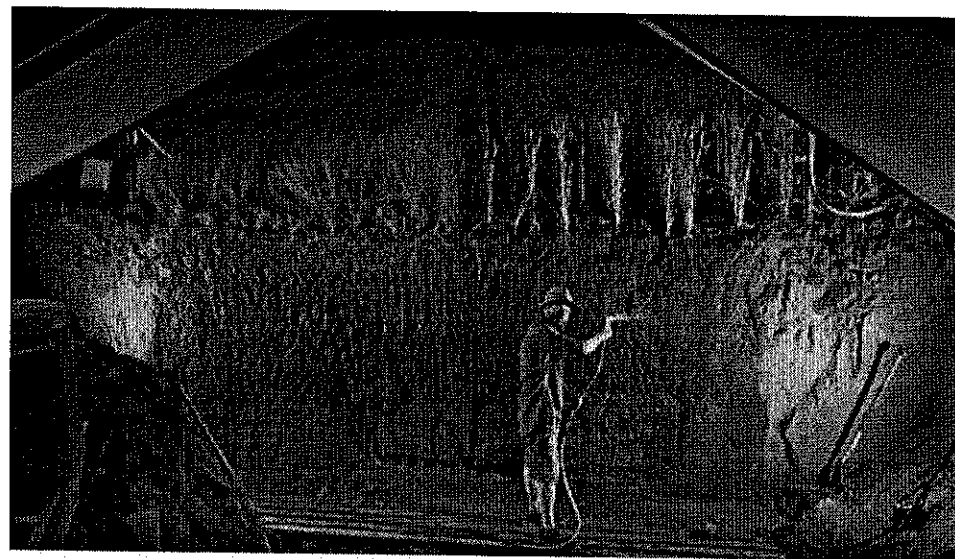
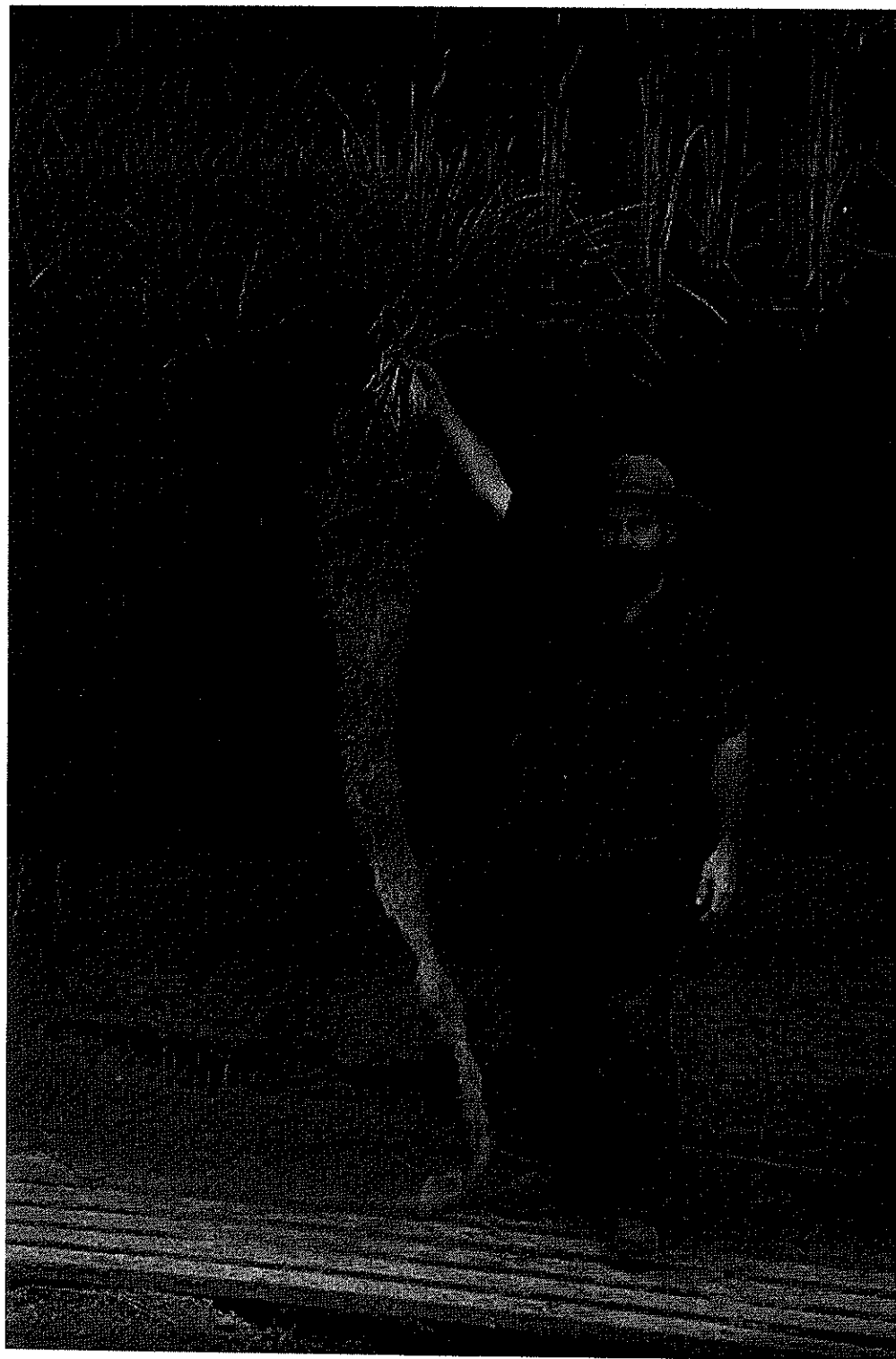
Parte del **Carbono** es movilizado hacia la corona para crear nuevas hojas, parte es exudado por las raíces (fomentando la vida en la rizosfera) y otra parte se pierde con las raíces que se “podan” de forma natural

Si el pastoreo es continuo no hay tiempo de recuperación y se pierde el crecimiento del pasto y la vida del suelo

La Captura de Carbono
en los suelos agrícolas
depende del crecimiento y
la profundidad de las raíces





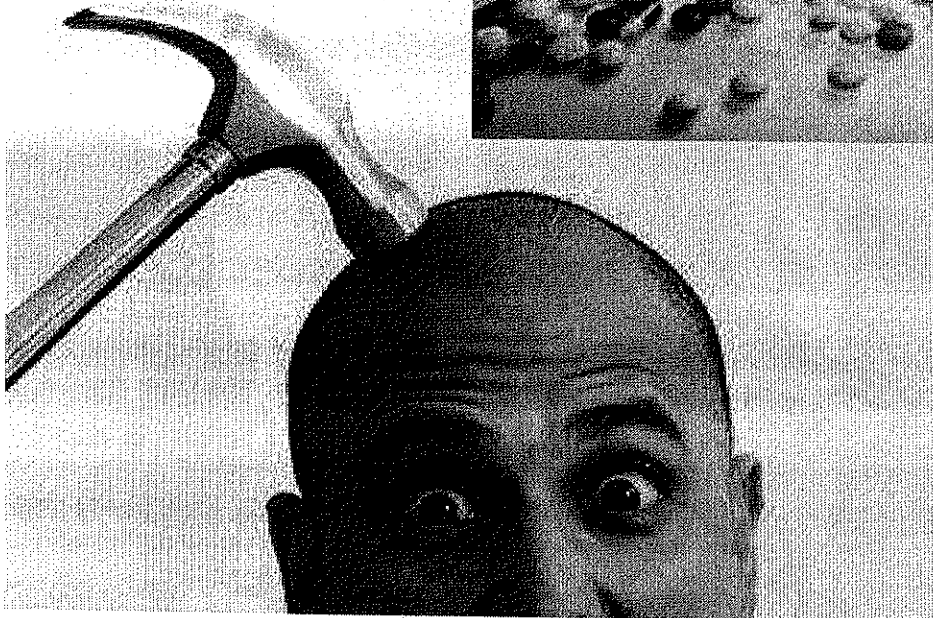
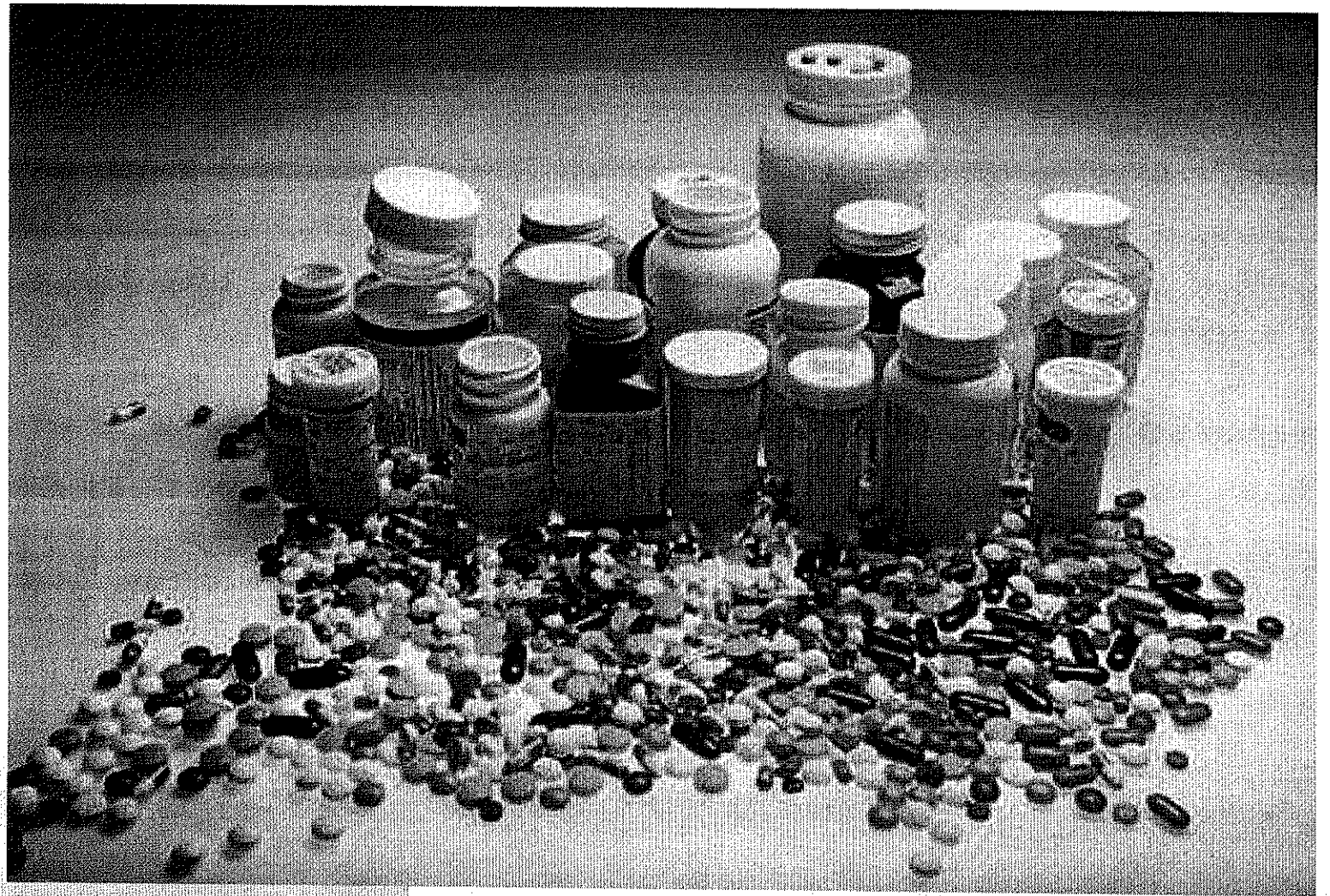


Amplio uso de **Bio-cidas**

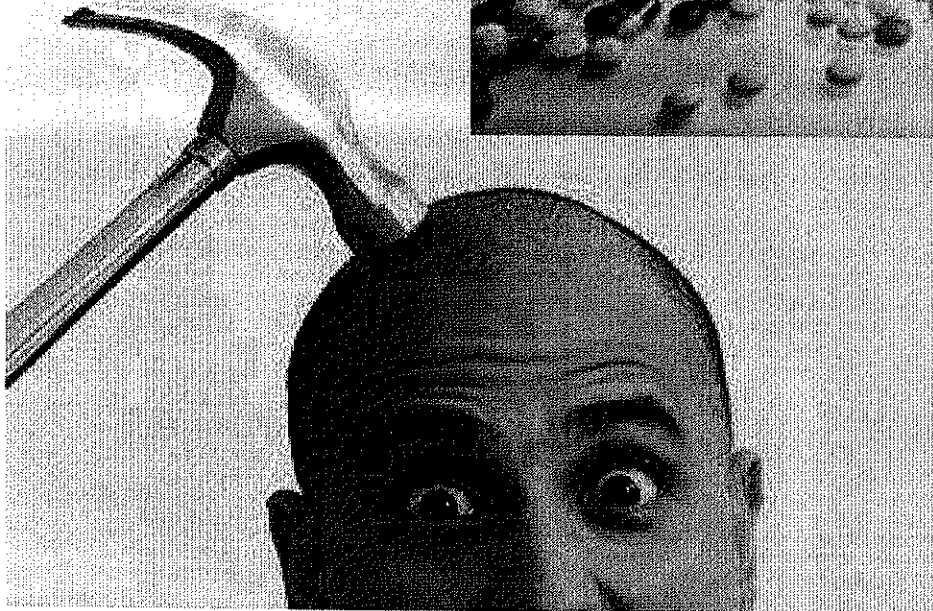
(herbicidas, insecticidas, fungicidas ...)

Un producto químico para cada problema

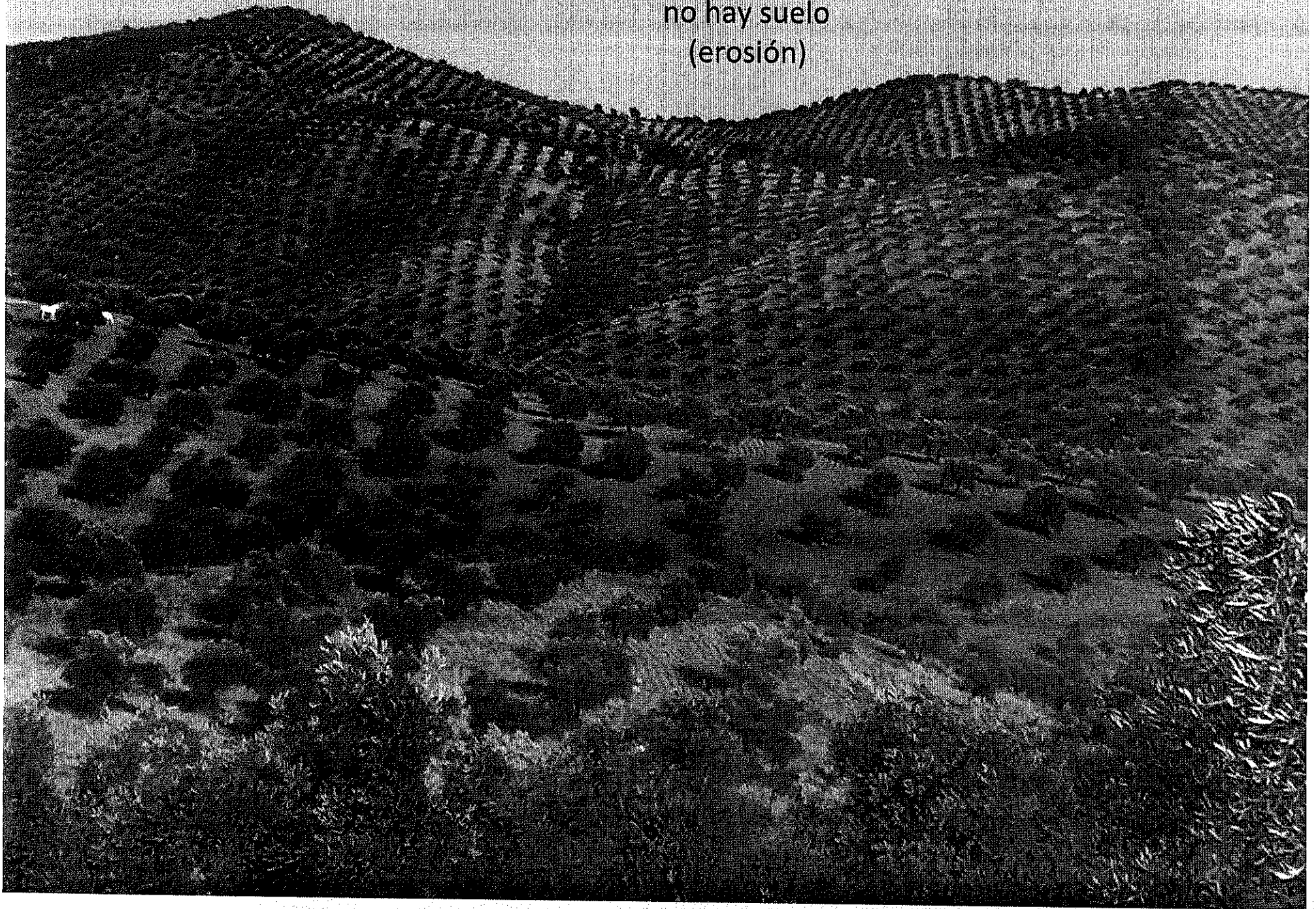


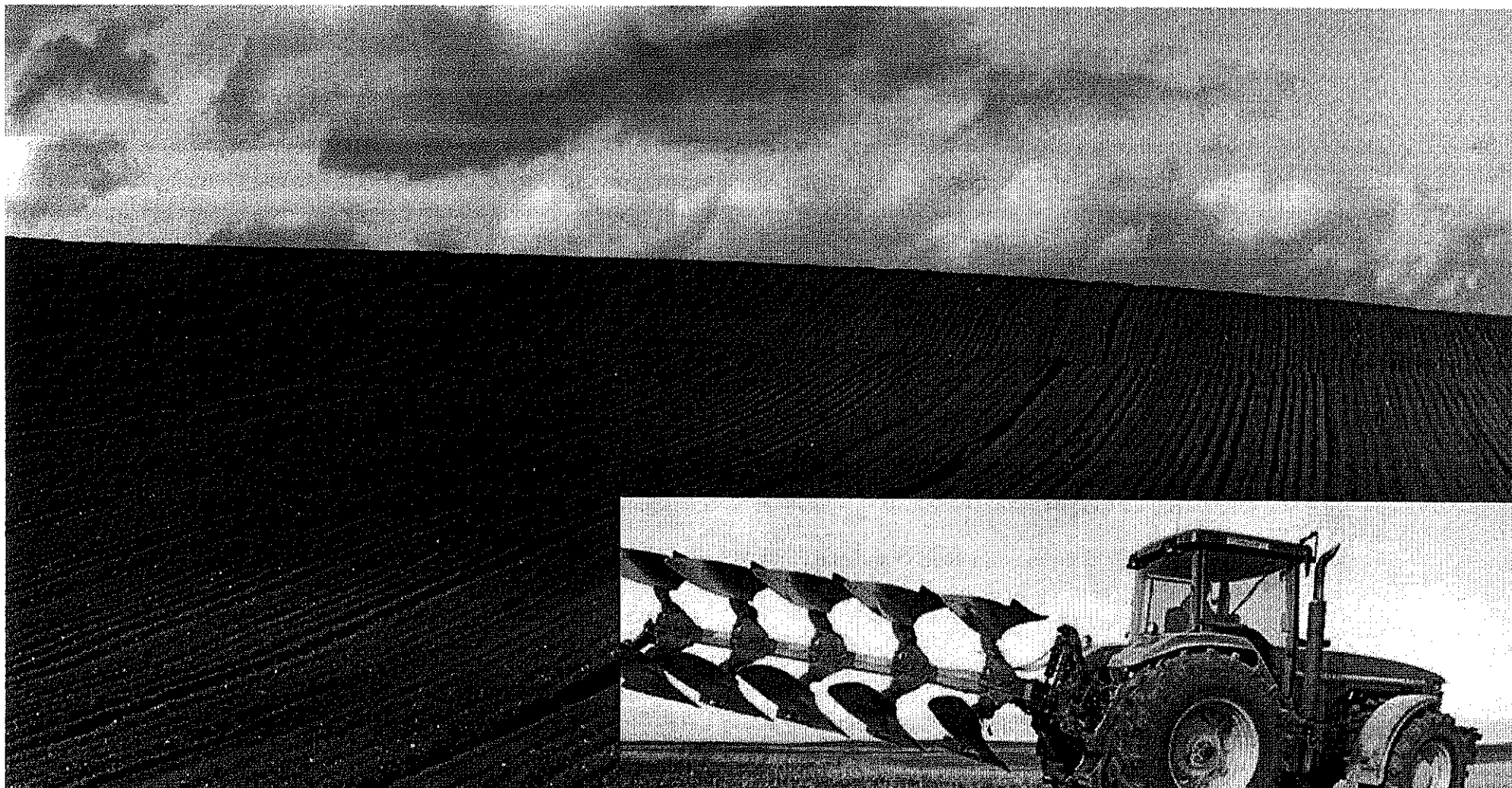


**Atajar las causas
*no las consecuencias***

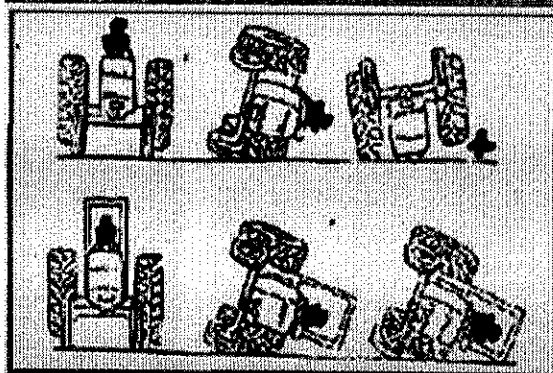
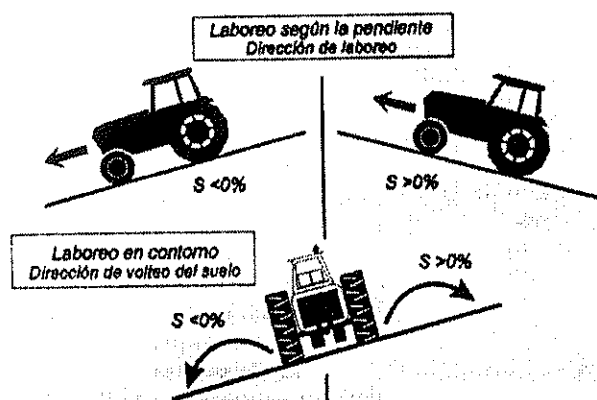


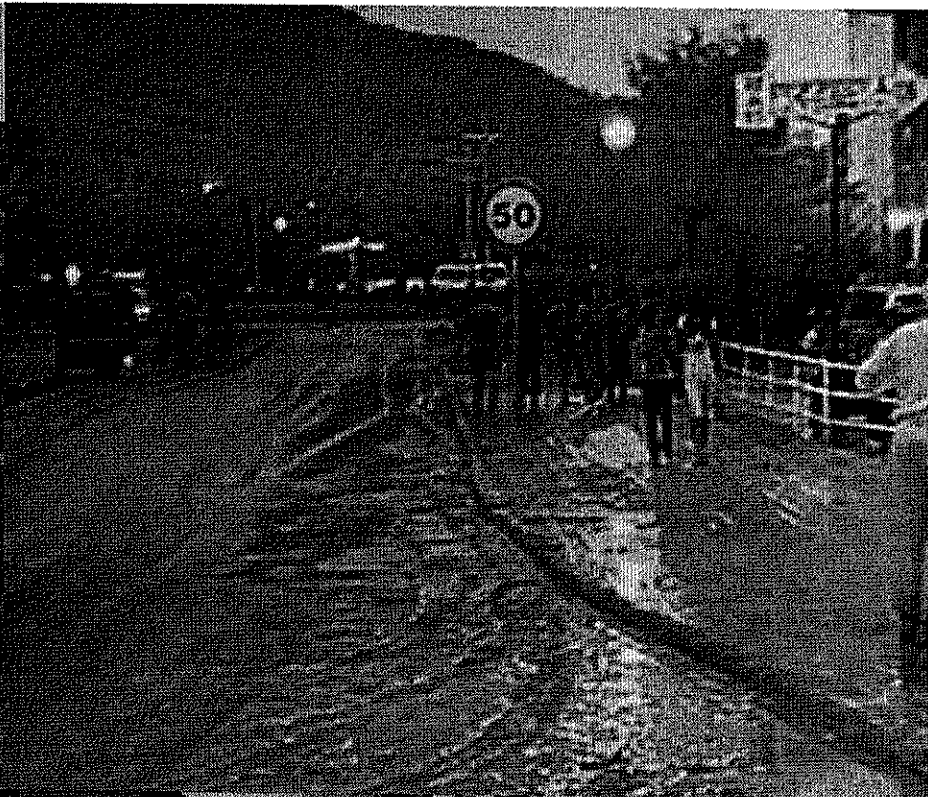
Sin cubierta vegetal
no hay suelo
(erosión)

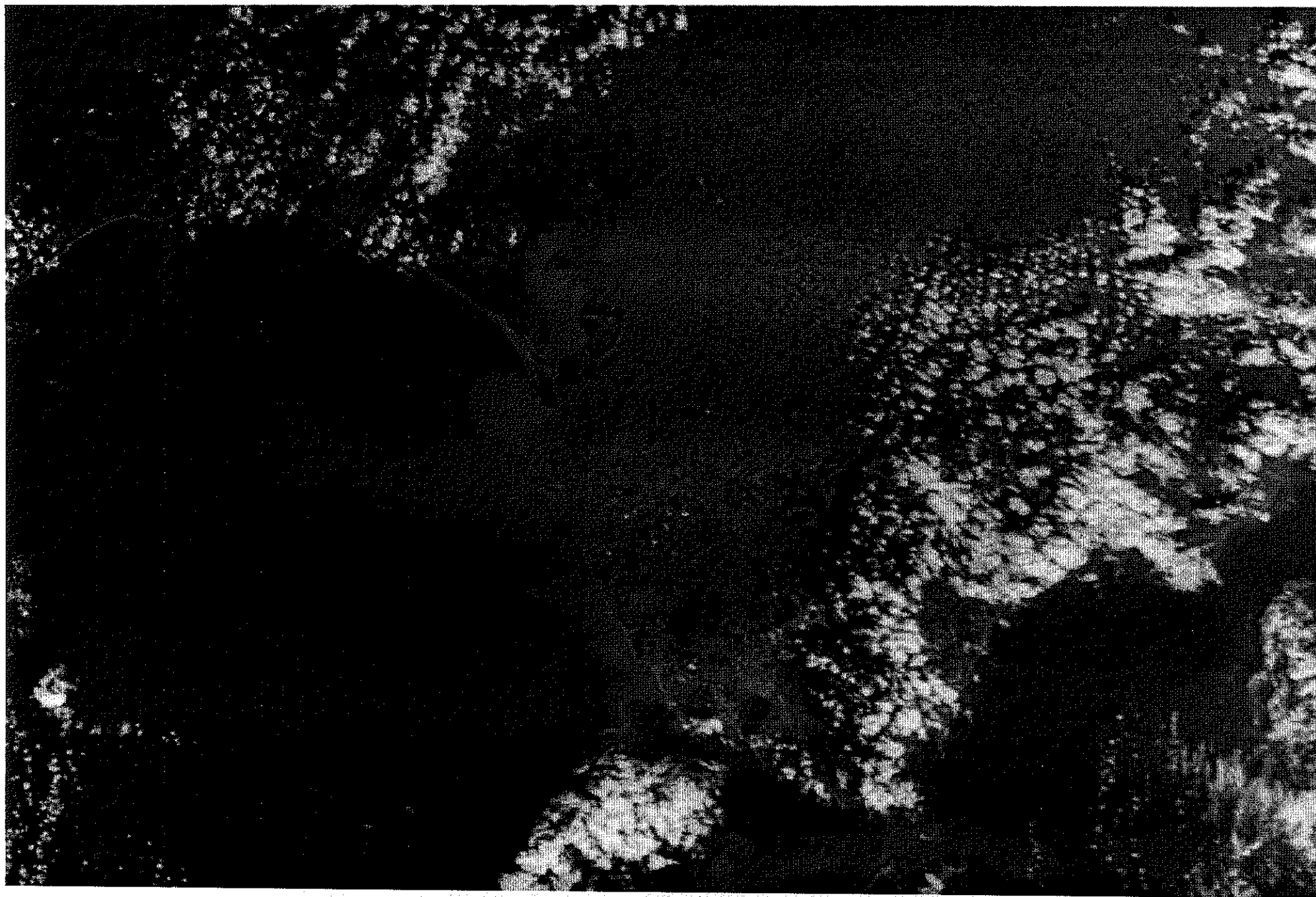


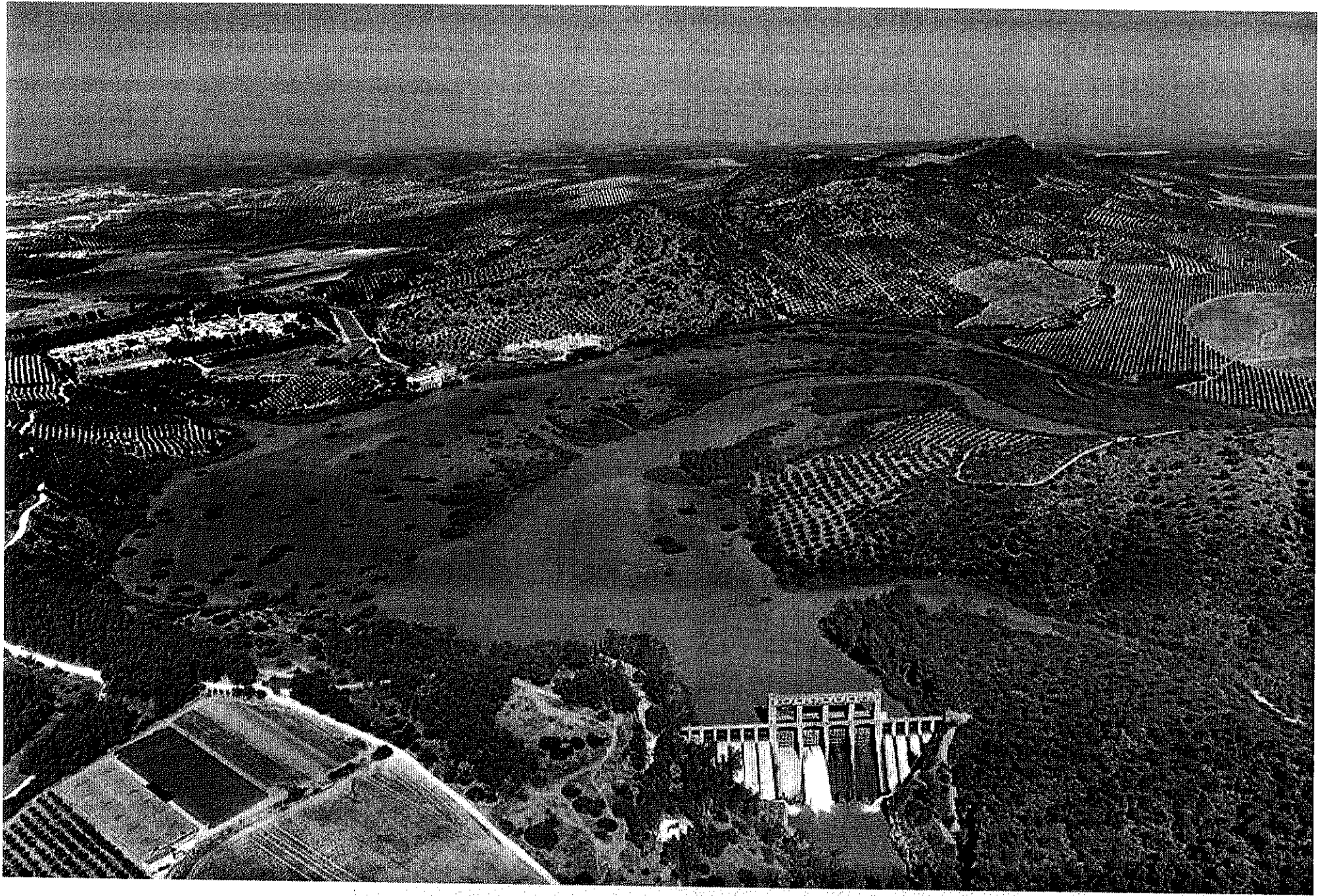


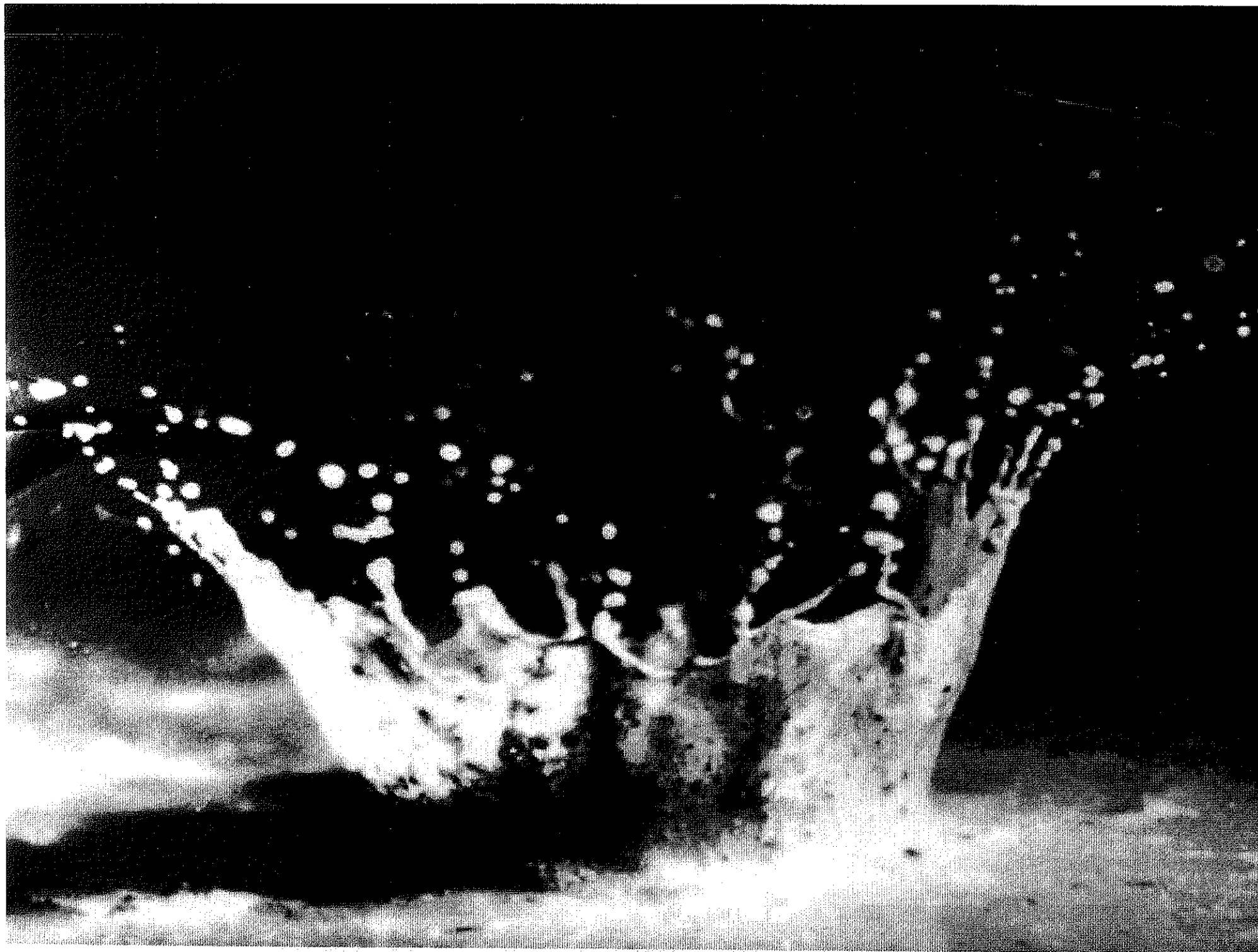
Erosión por laboreo.

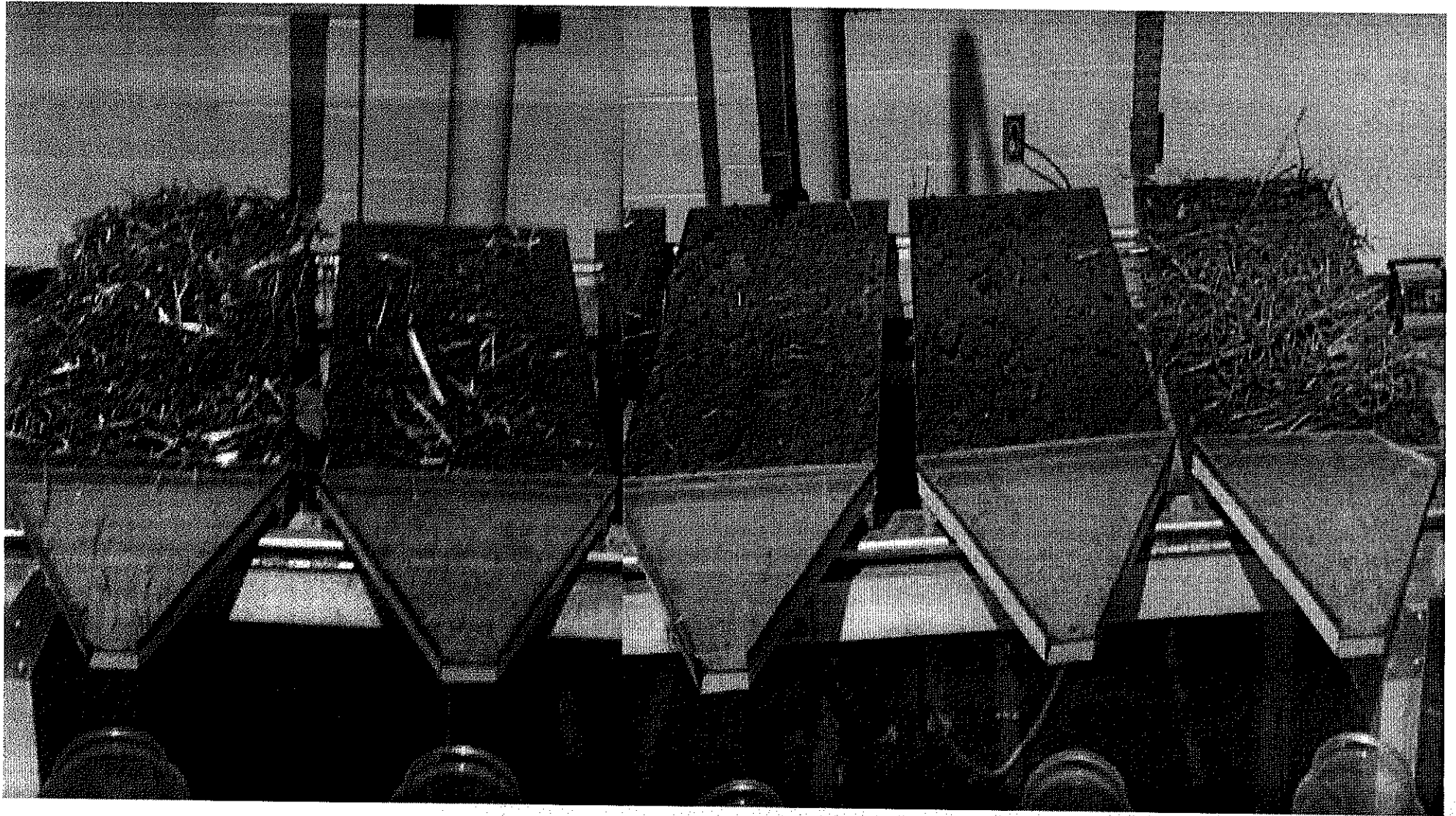












100% Cubierto
restos vegetales

30% cubierto
restos vegetales

Desnudo
(arado)

Desnudo
(estructurado)

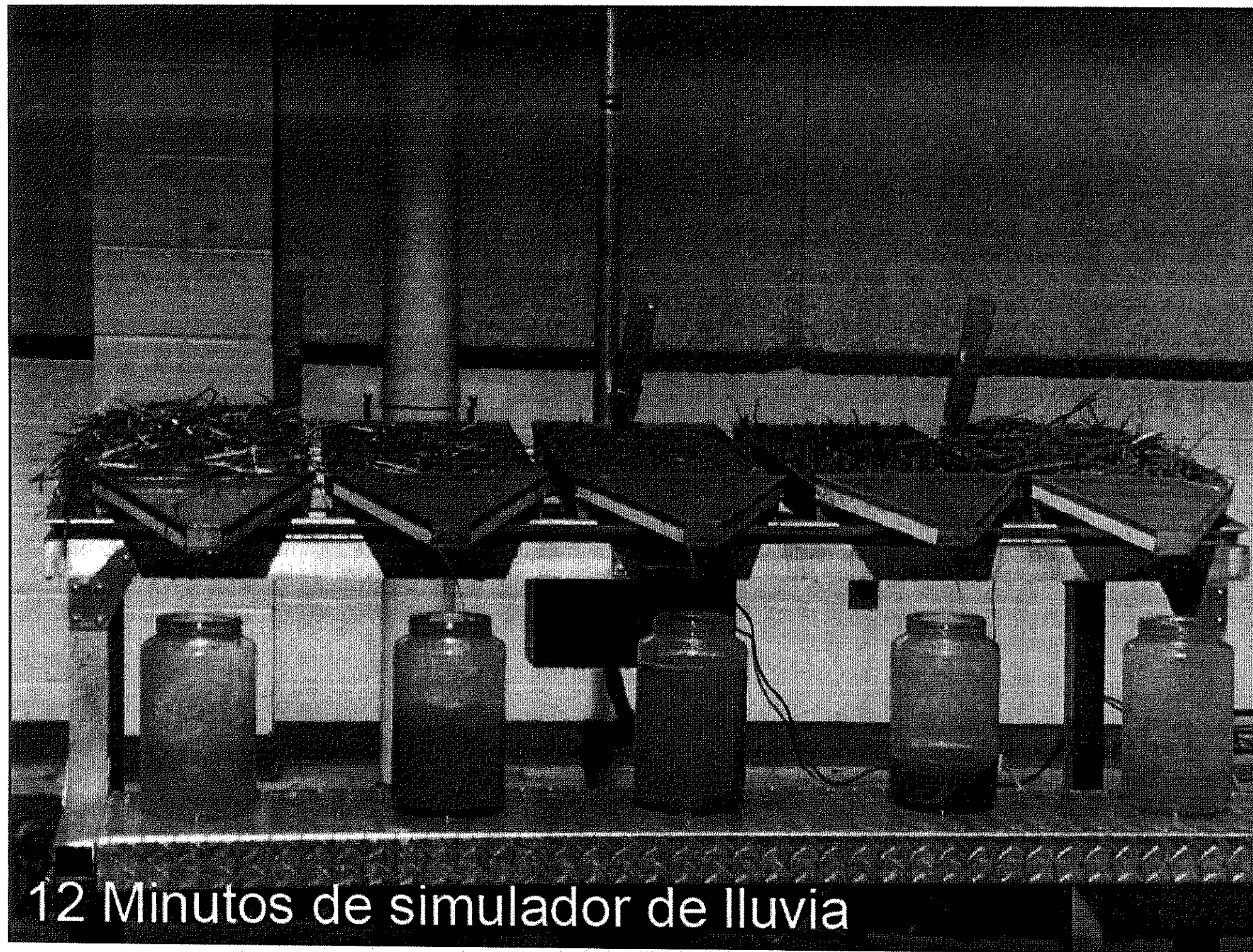
Cubierto
con Hierba



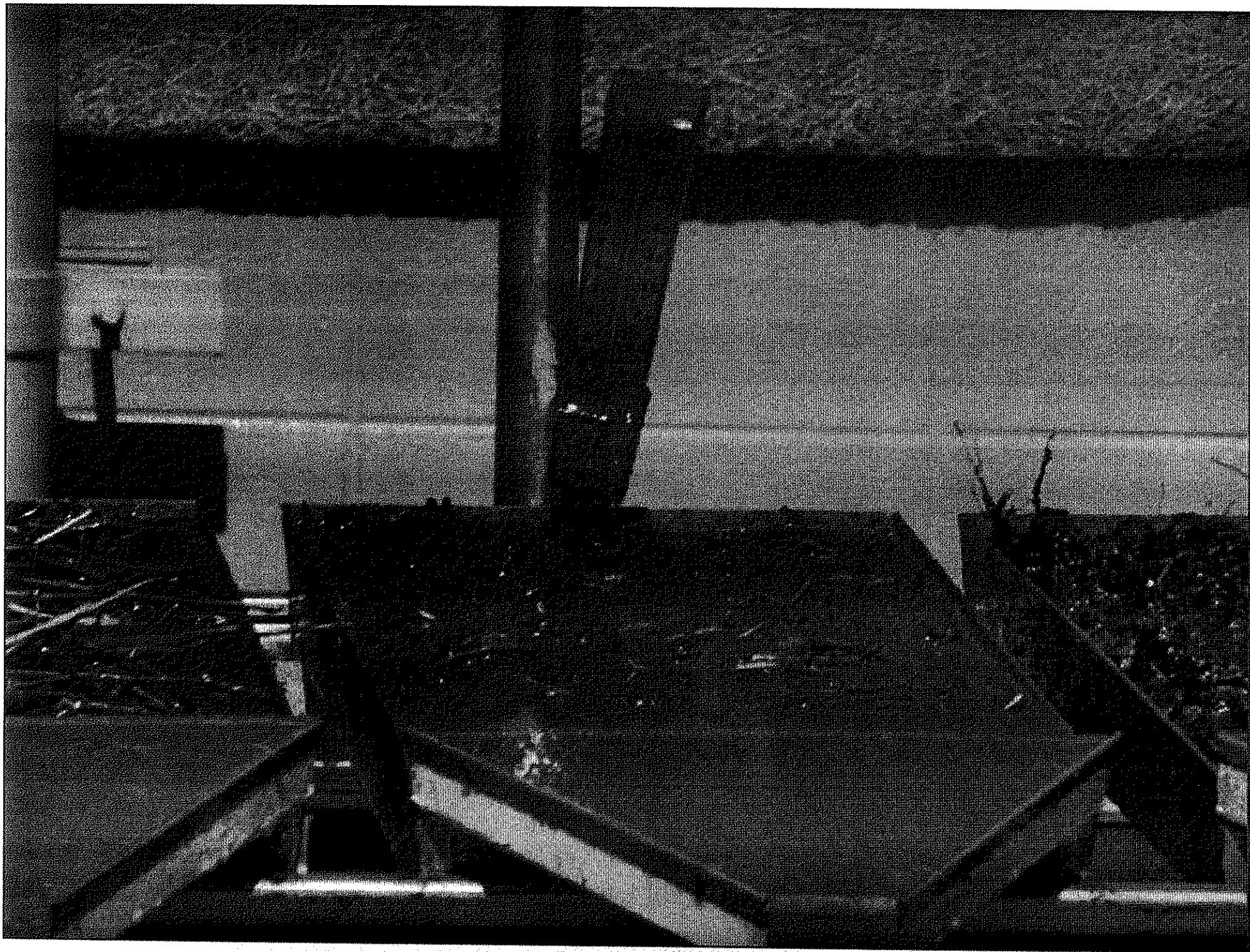
2 Minutos de simulador de lluvia



8 Minutos de Simulador de Lluvia



12 Minutos de simulador de lluvia





Enemigo Público
Número Uno

Suelo
desnudo

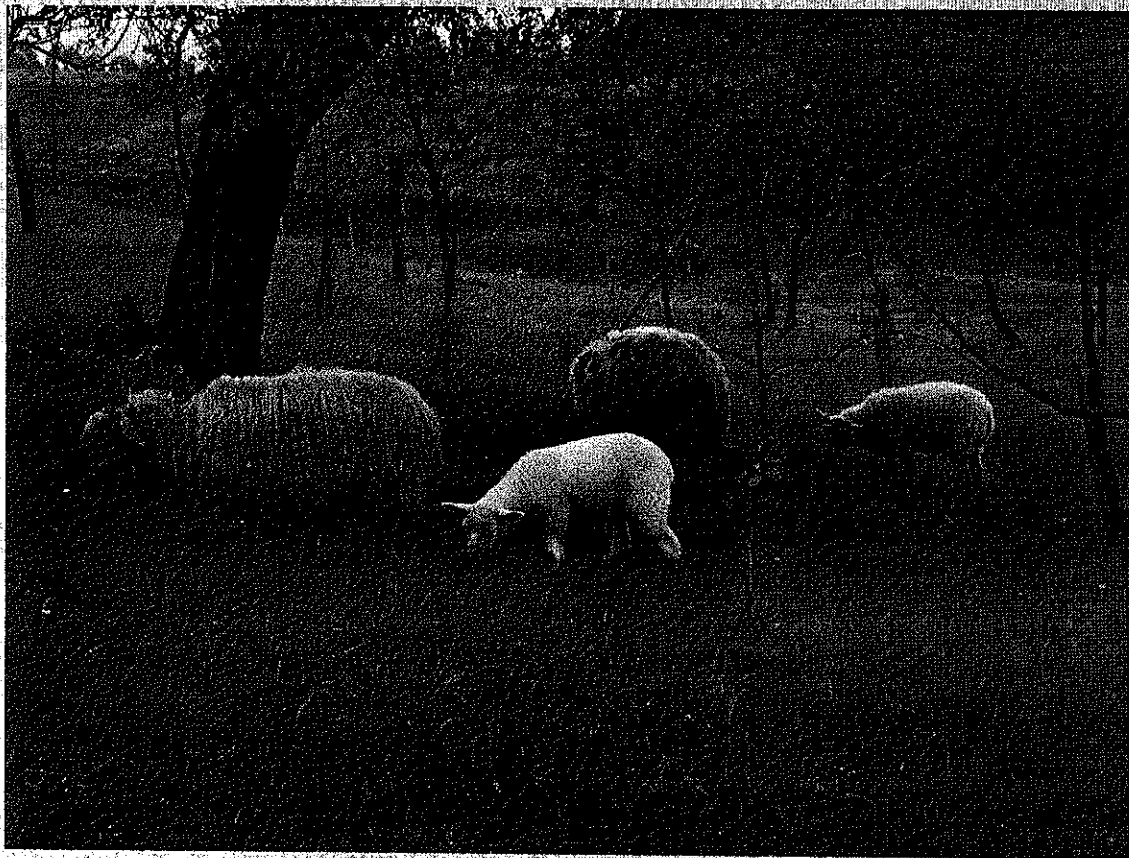
Frutales con cubierta vegetal permanente

(25 años sin labrar)

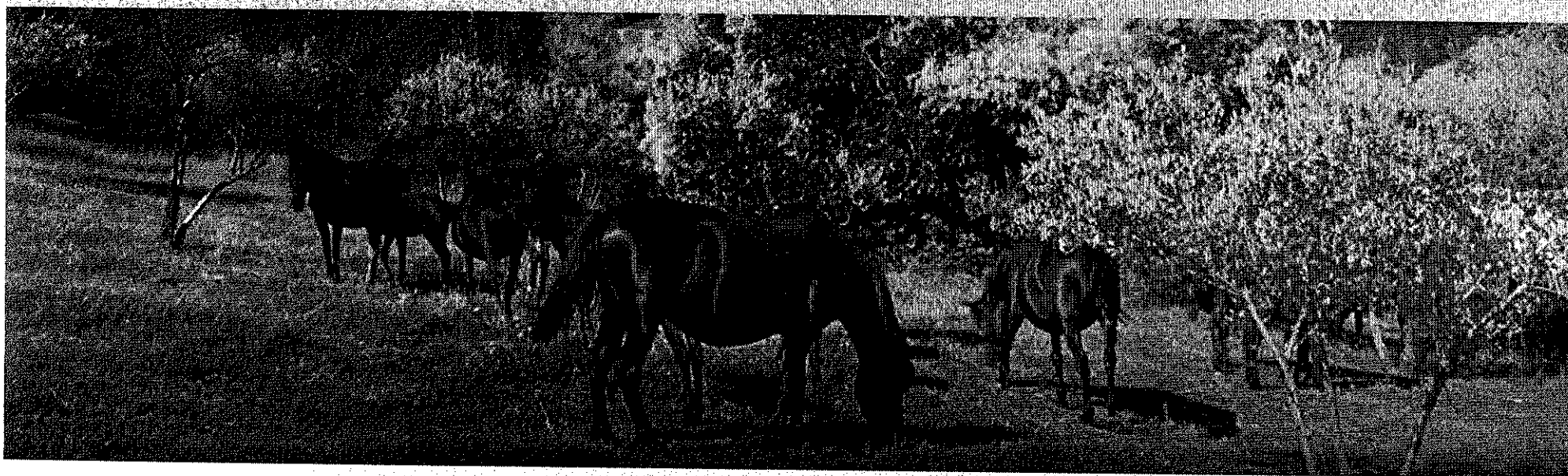


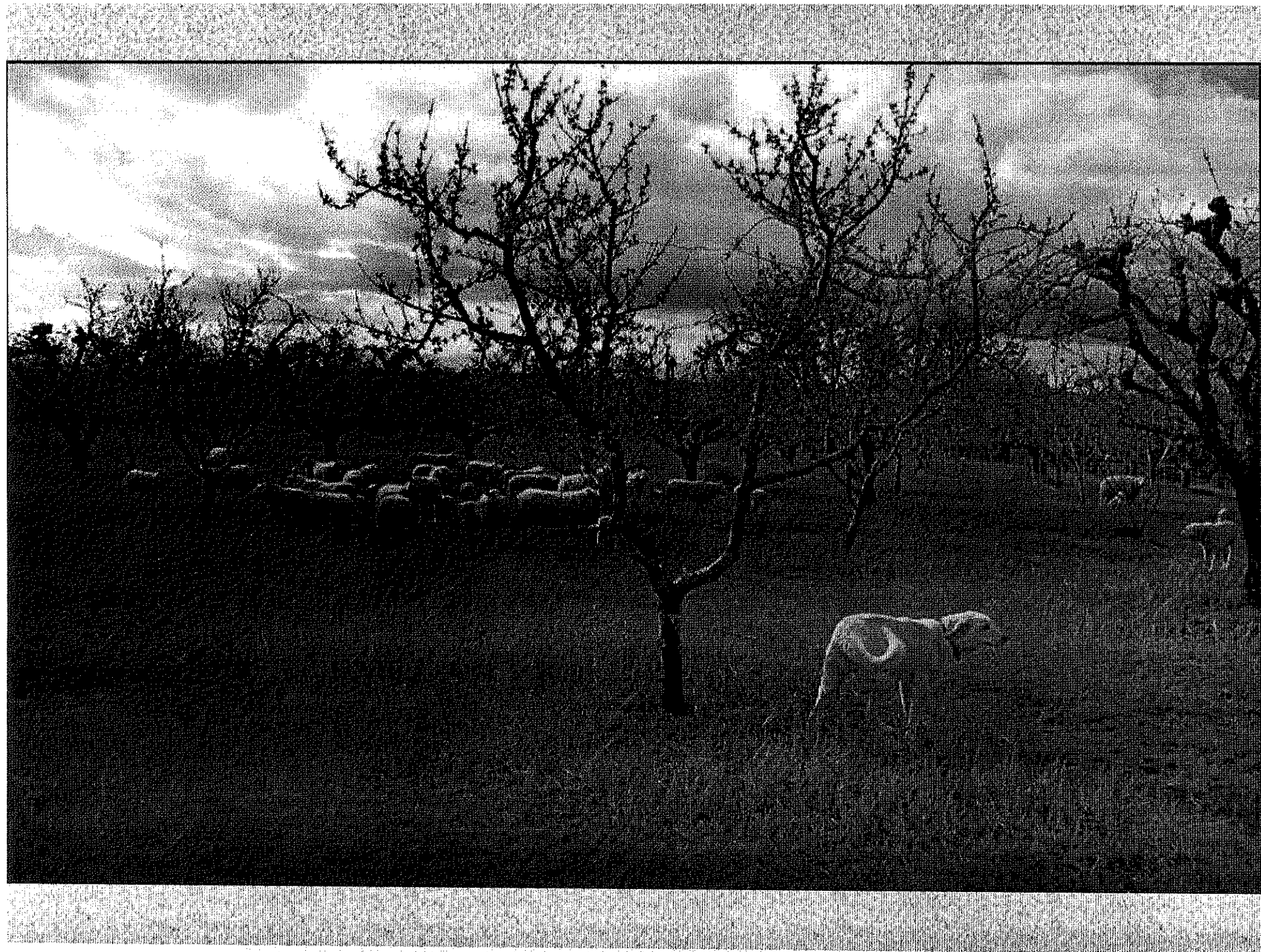
**La *hierba* NO es
un problema
cuando hay *ganado***

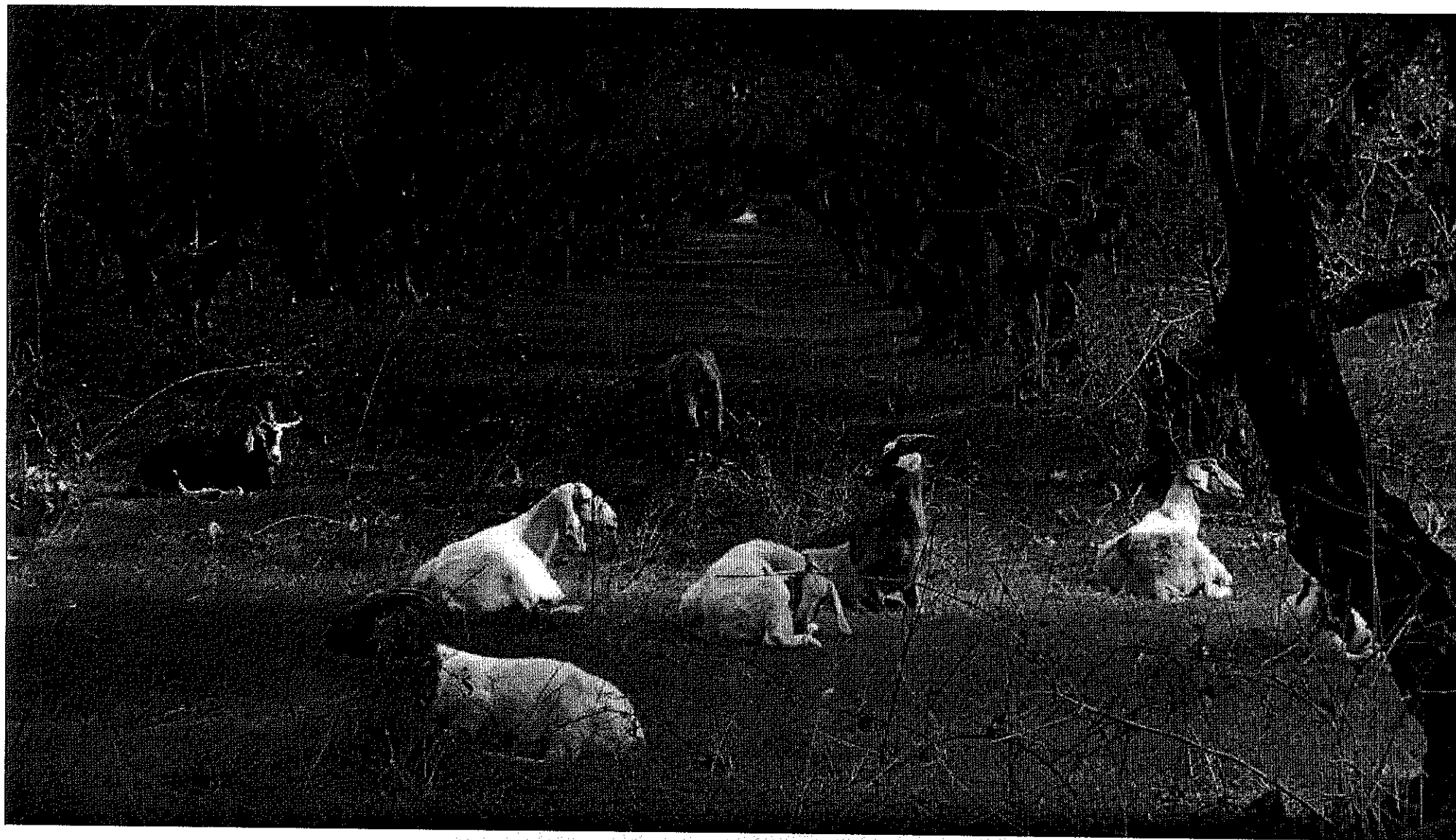


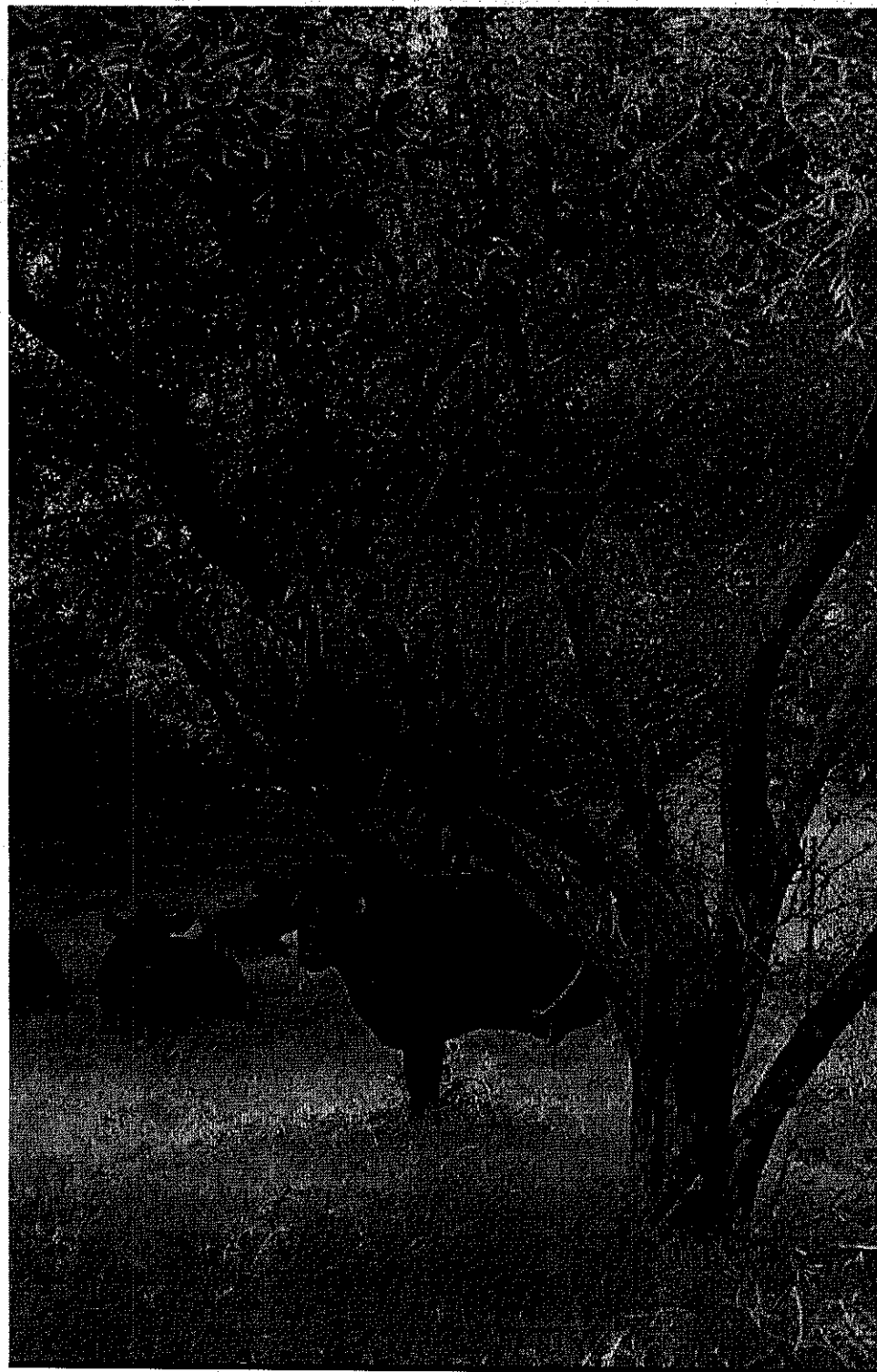


Hay que conseguir la
convivencia entre
Agricultura y Ganadería



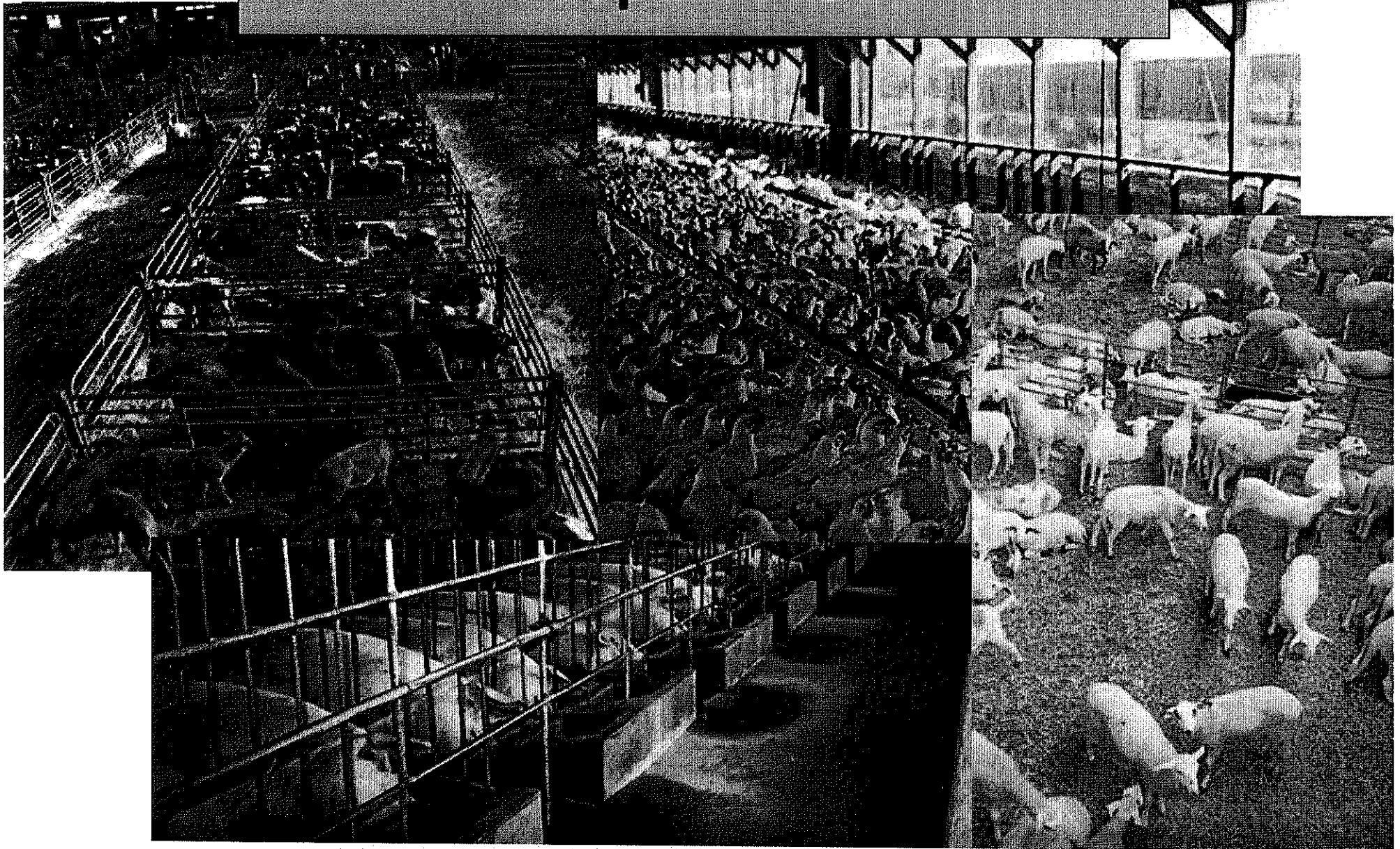




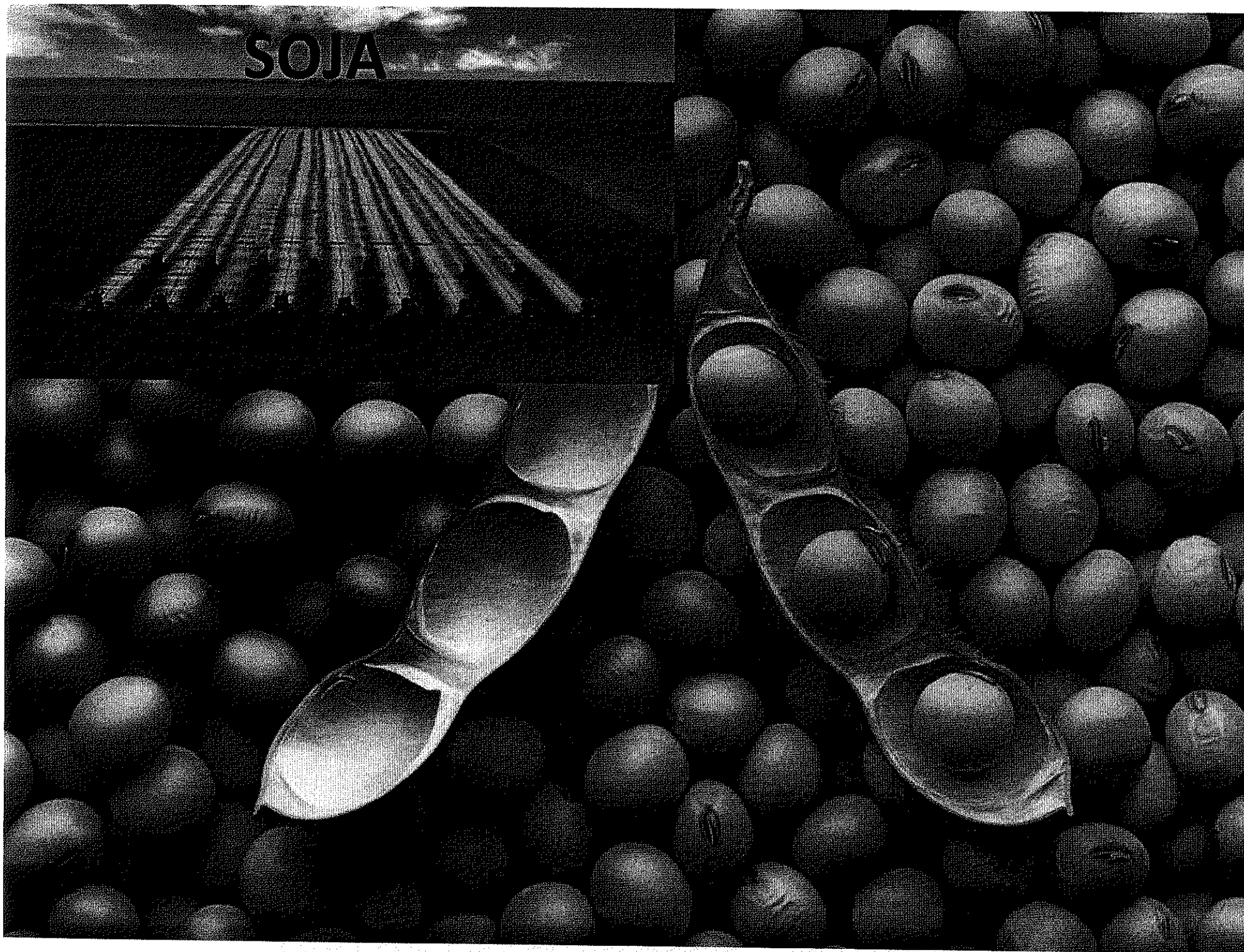


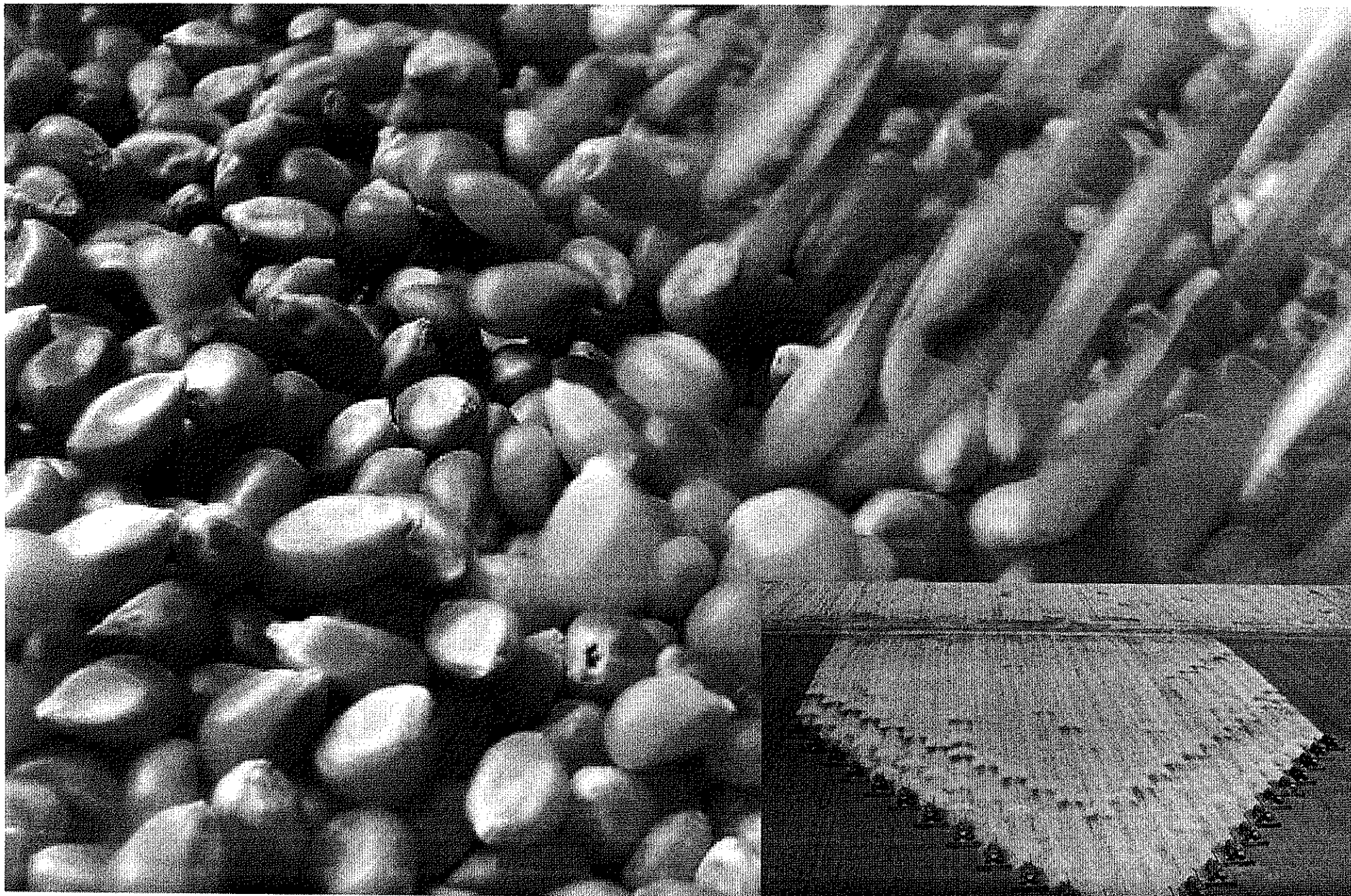


Agricultura y Ganadería separadas

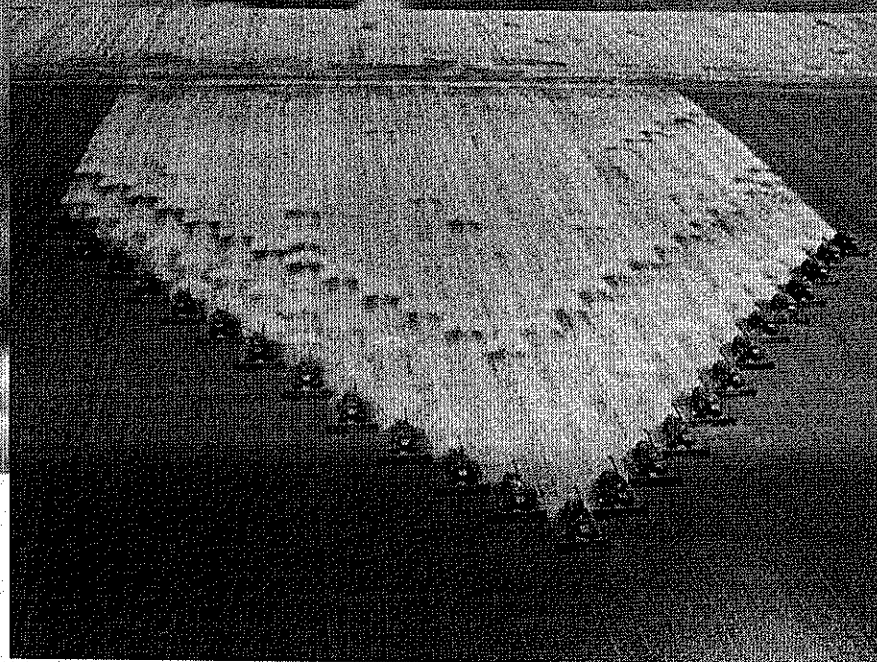


SOJA

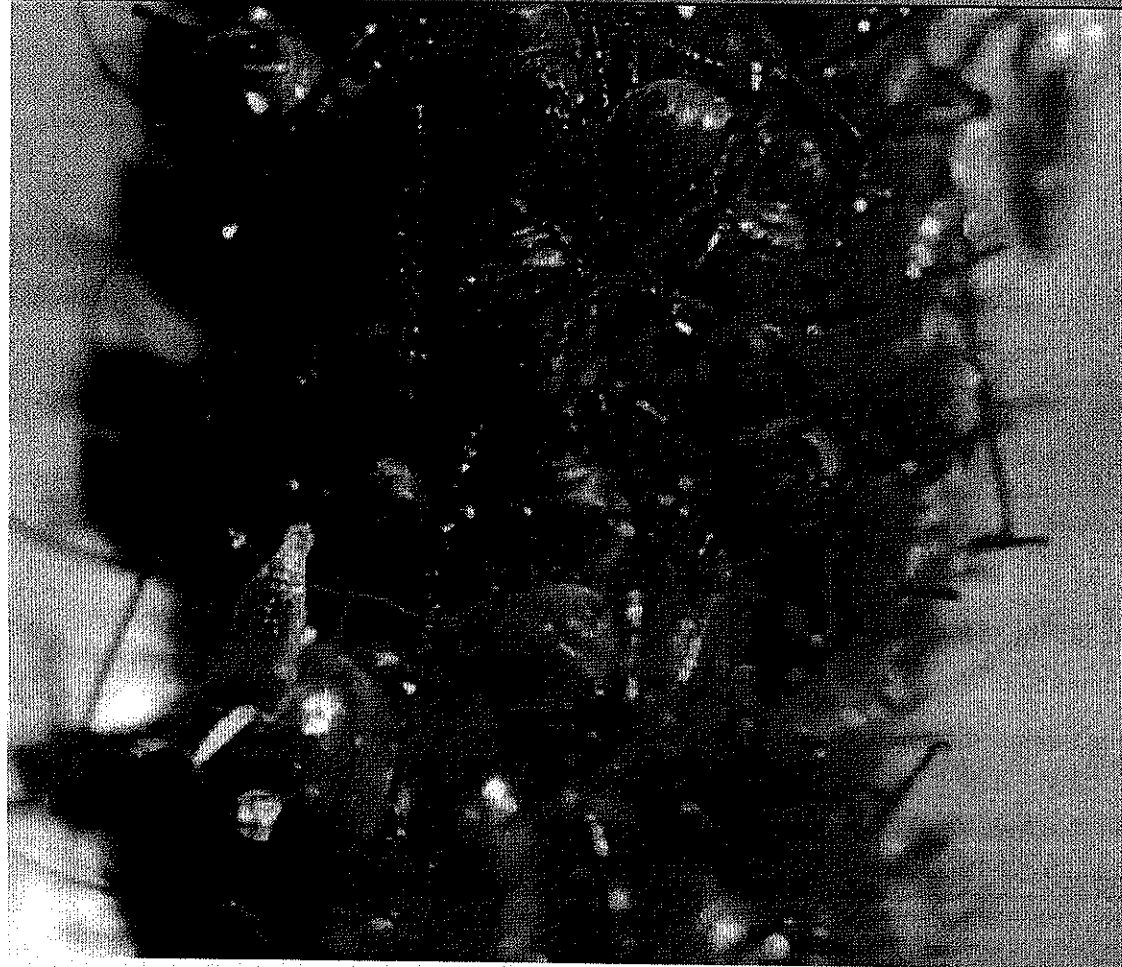




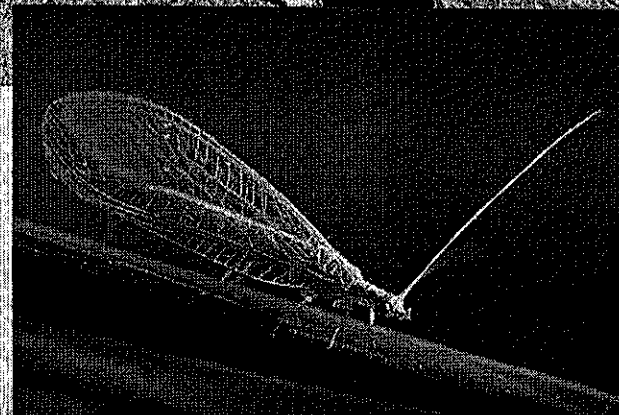
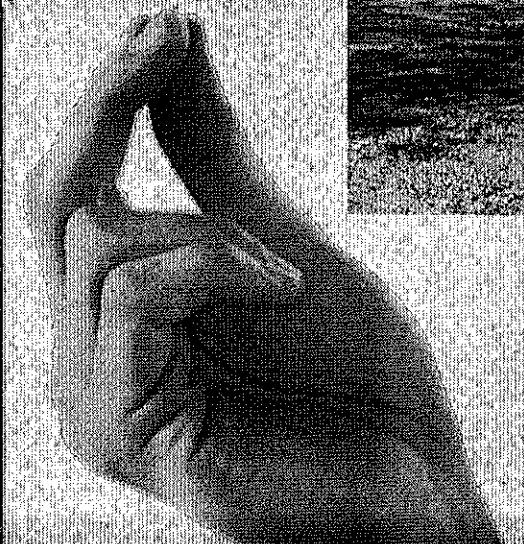
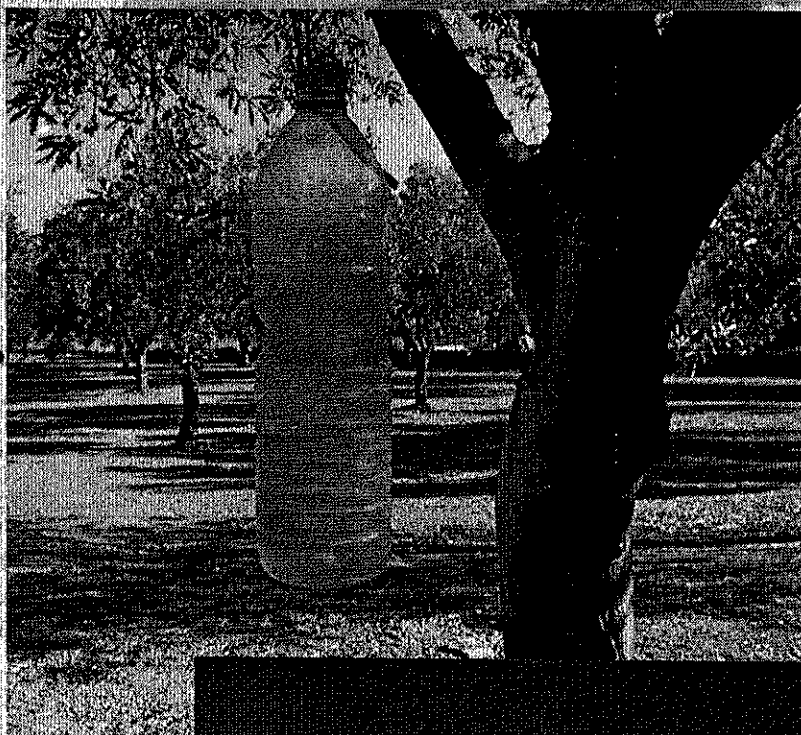
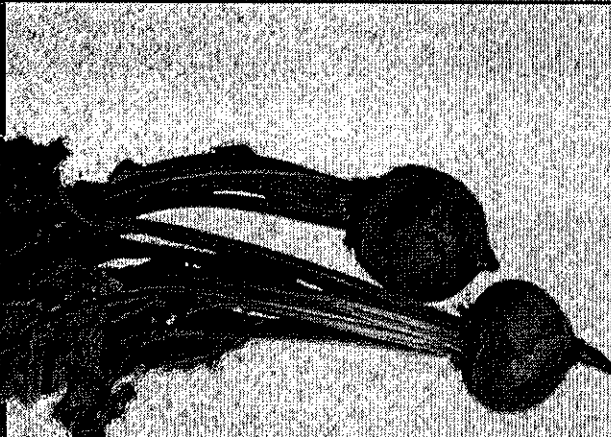
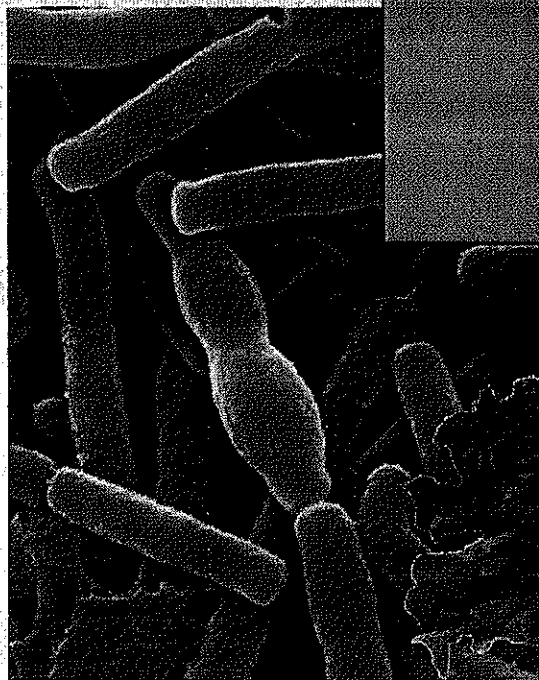
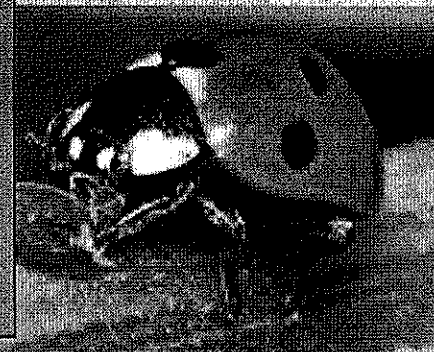
MAIZ



PLAGUICIDAS



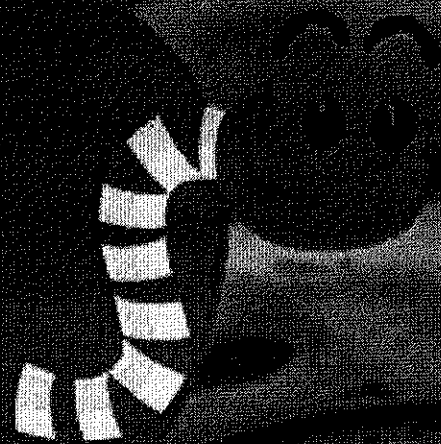
Manejo de Plagas y Enfermedades



Concepto de daño



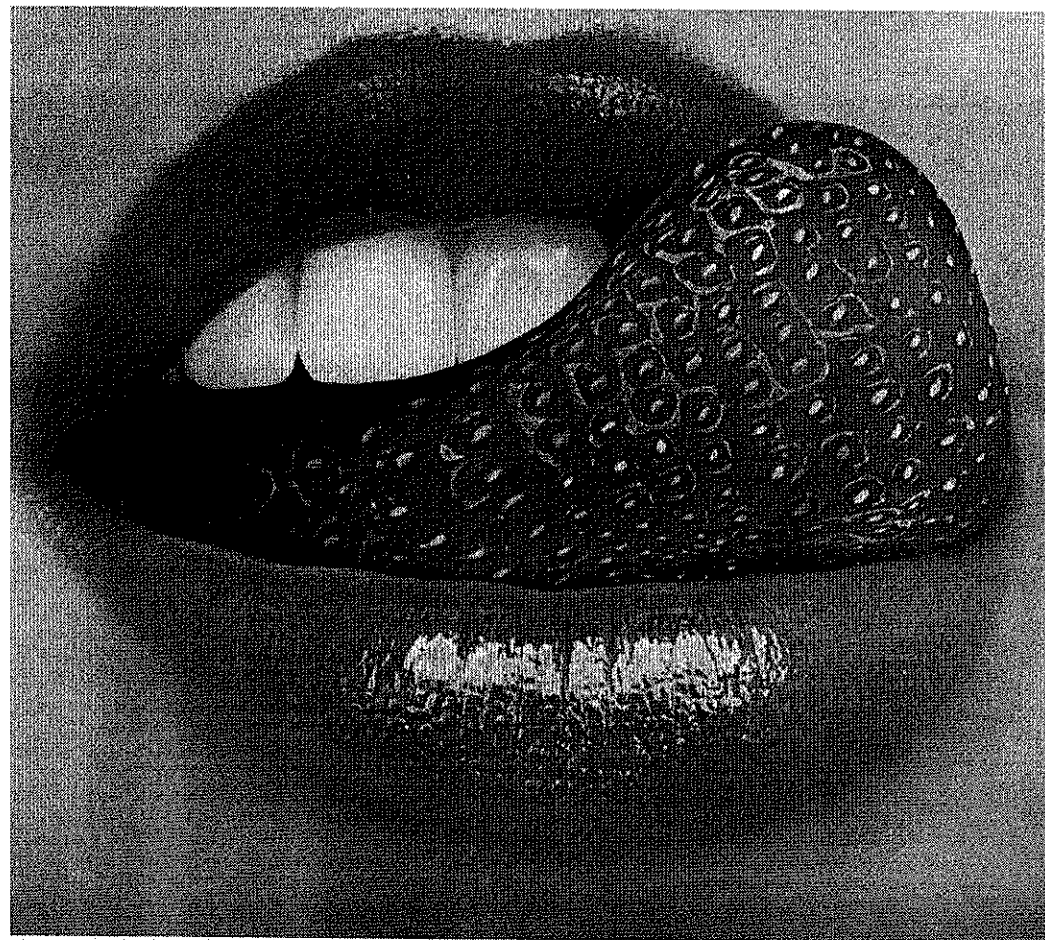
Concepto de calidad



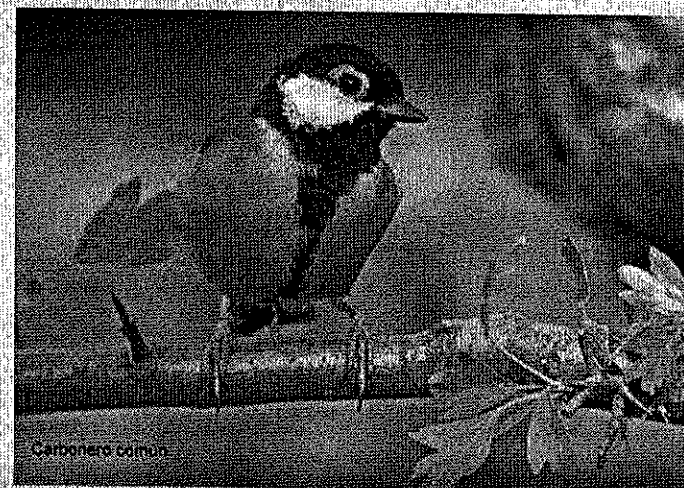
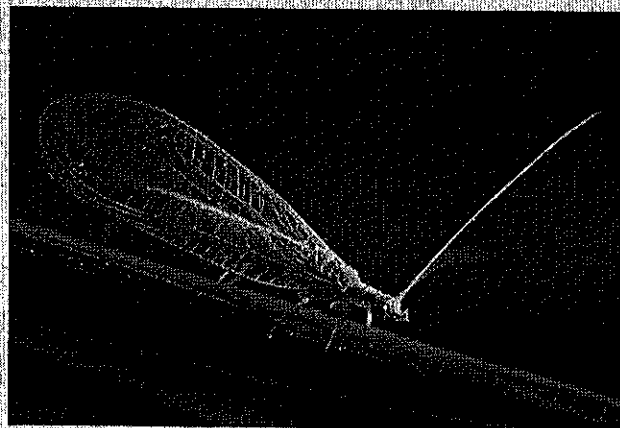
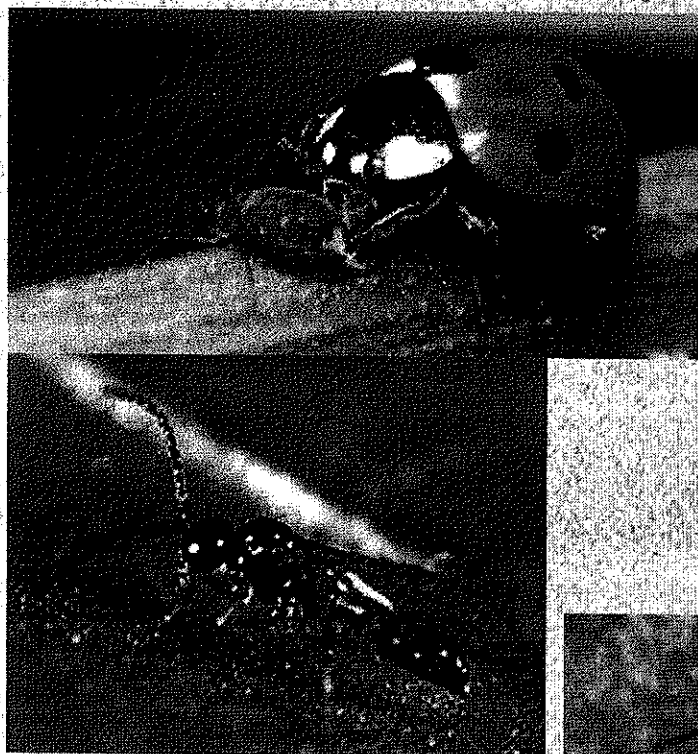


Comemos
pensando
con el **ojo** (*aspecto*)
y el **bolsillo** (*barato*)

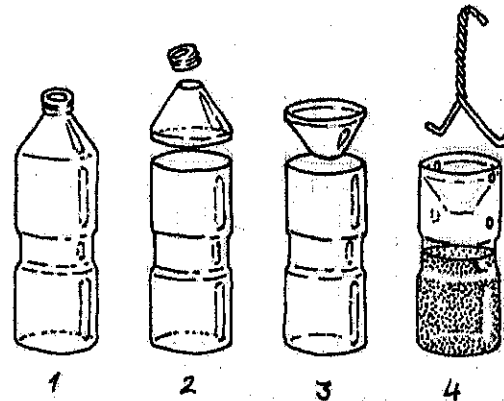
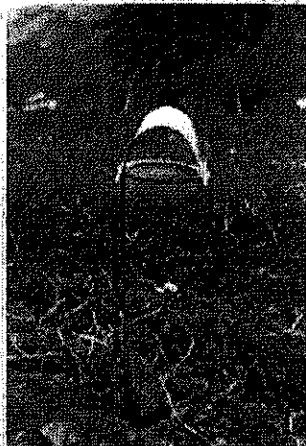
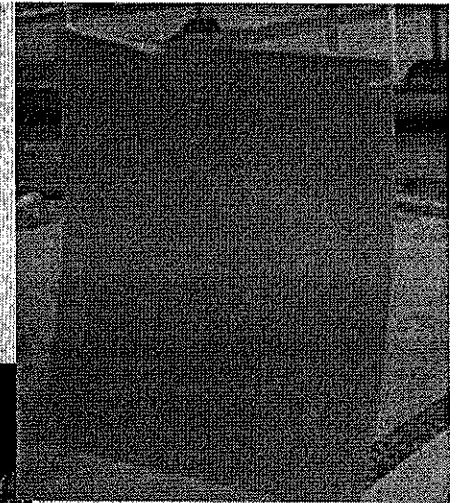
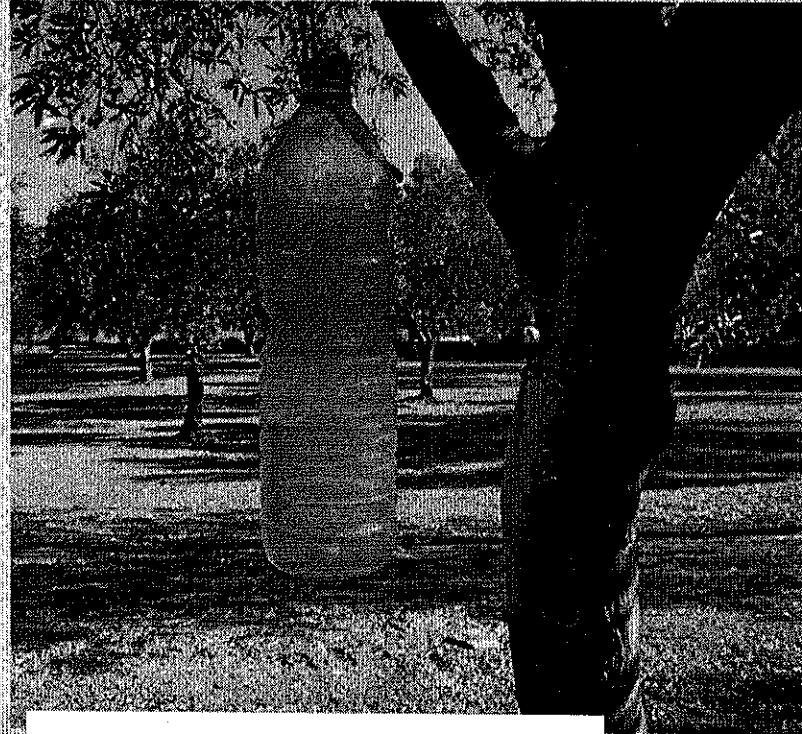
Deberíamos
alimentarnos
pensando
con la **boca** (*sabor*)
y la **barriga** (*salud*)



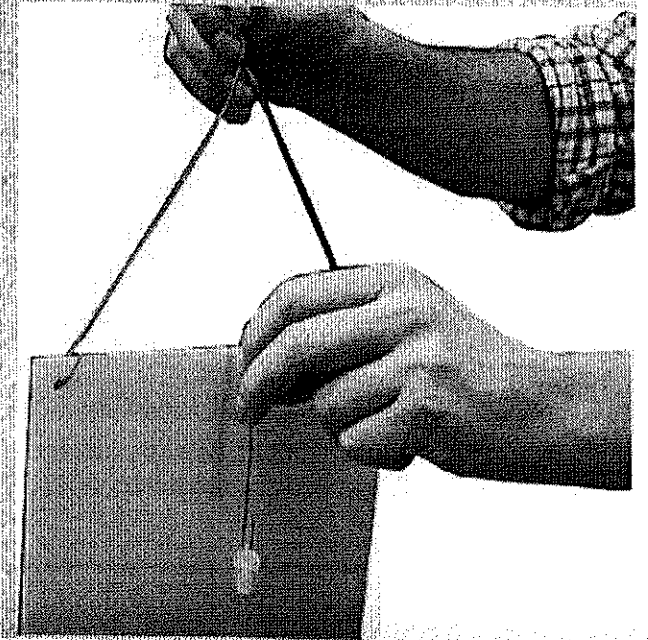
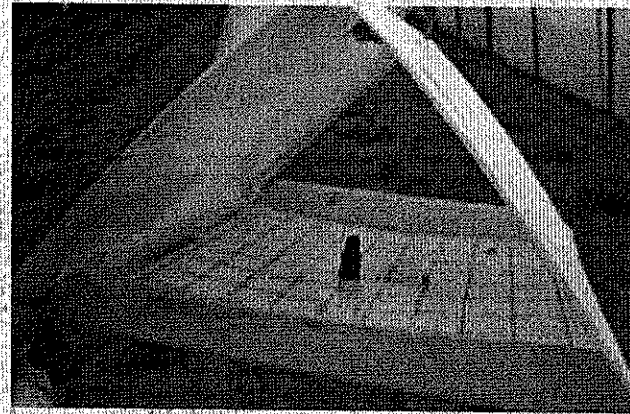
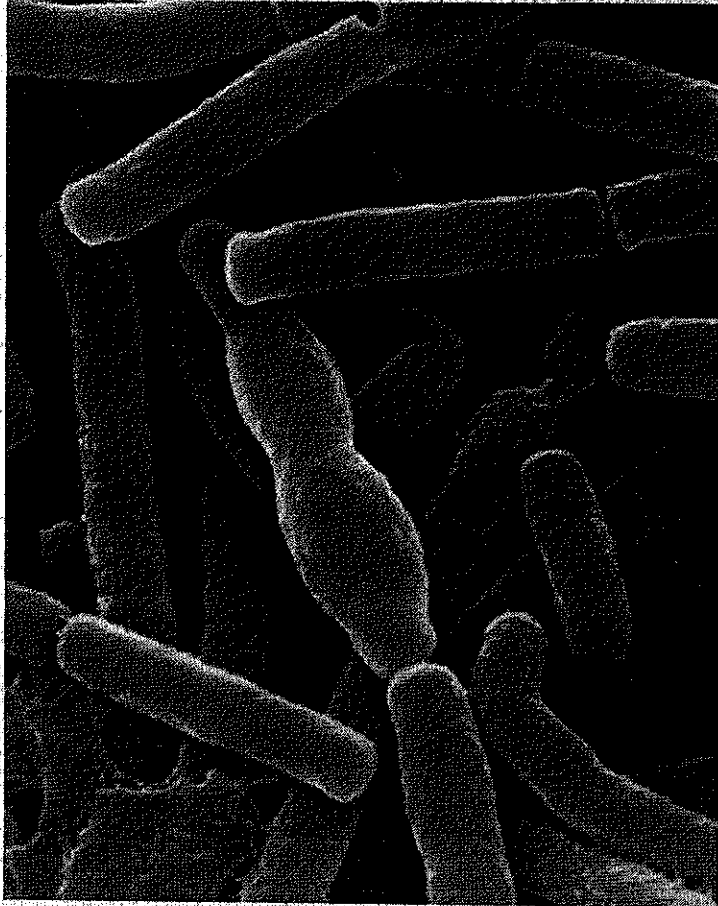
Fomento de depredadores auxiliares



Trampas y feromonas



Uso de Biotecnología

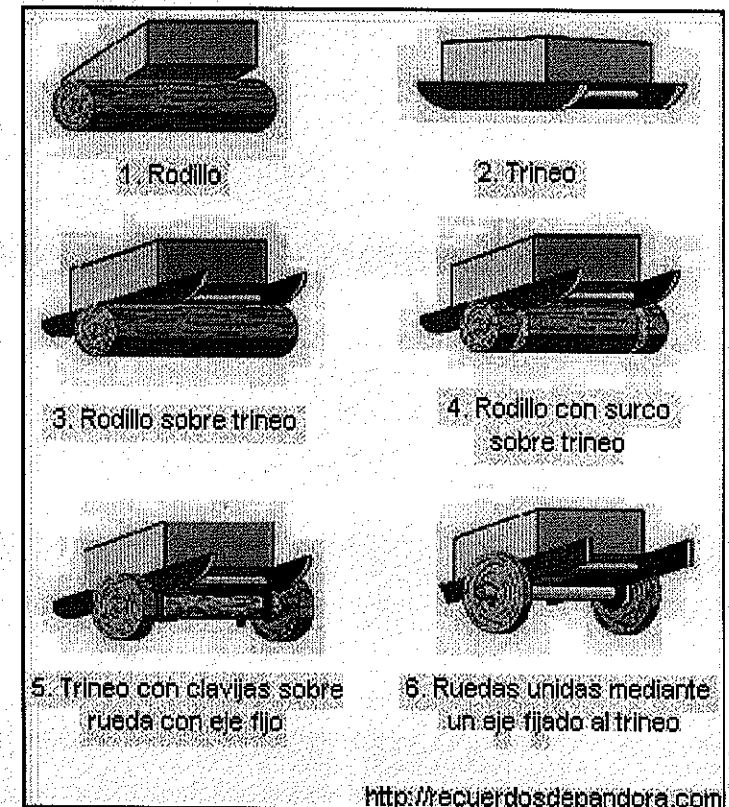


Re-Socializar la sabiduría

Darle al agricultor los medios y el conocimiento para autoproducir sus propios insumos agrarios

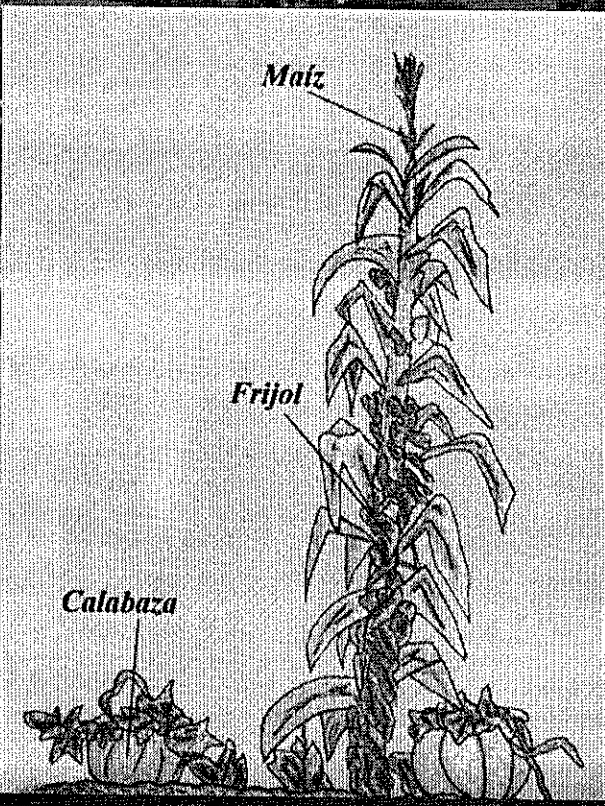
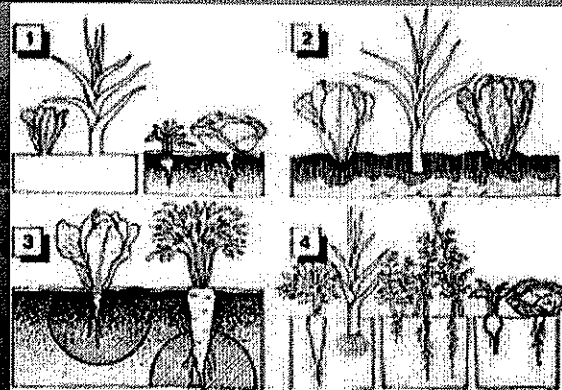
Alpargatizar la tecnología
Hacer ciencia en *babuchas*

Copy-left o Creative-Commons



Biodiversidad

Asociación de cultivos
Plantas Trampa
Plantas Cuartel
Efecto Barrera



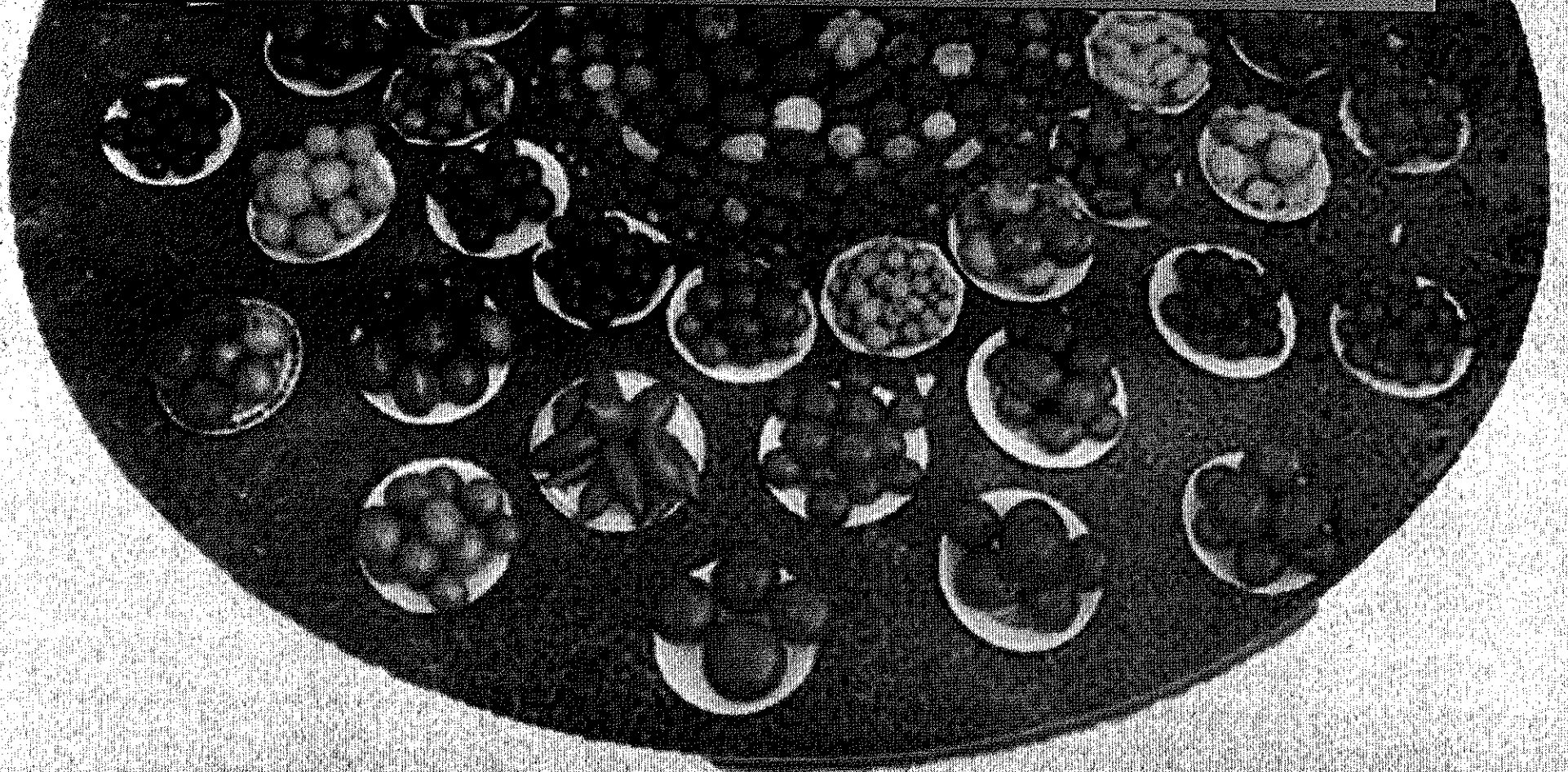


BIODIVERSIDAD

Asociación de Cultivos

BIODIVERSIDAD

de especies y variedades



Las TRES LEYES de
la AGROECOLOGÍA
BIODIVERSIDAD
BIODIVERSiDAD
BIODIVERSiDaD

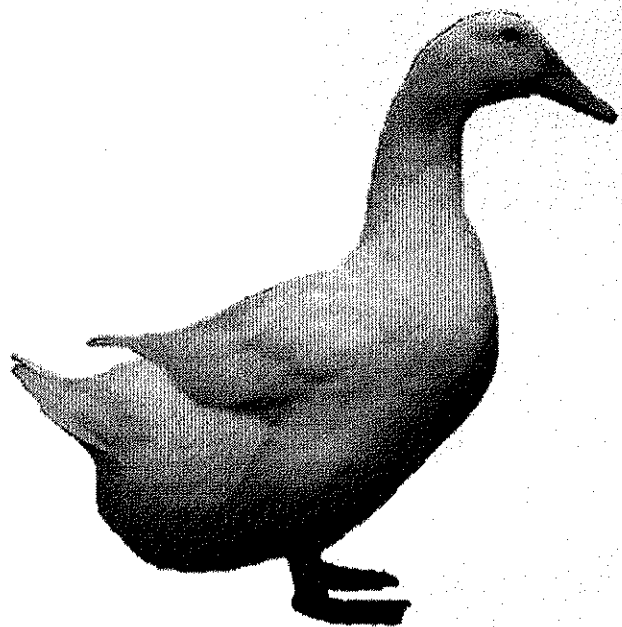
No existen plagas y enfermedades Tan solo *malos diseños productivos*



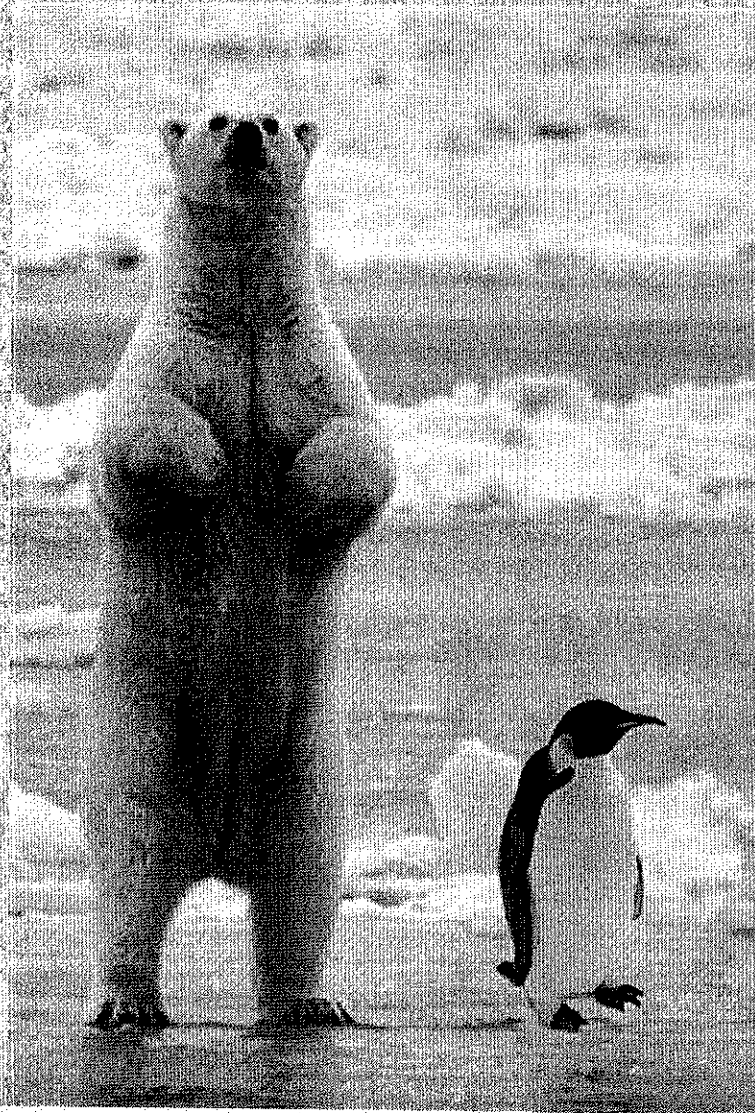
Hay que pensar en **lo que falta**
(biodiversidad, vida en el suelo)
y dejar de pensar en **lo que sobra**
(plagas y enfermedades)

Normalmente **no** sobra ningún elemento vivo
en los sistemas productivos,
más bien suele haber falta de **bio-diversidad**

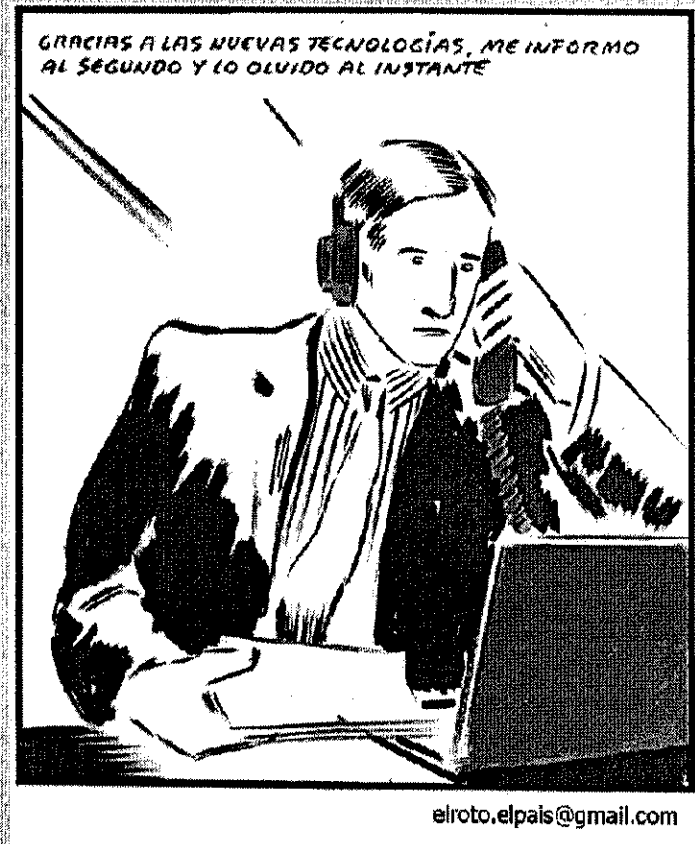
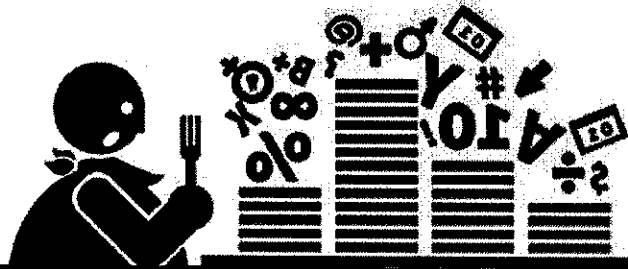
Nunca hay
muchos caracoles
si no *pocos patos*



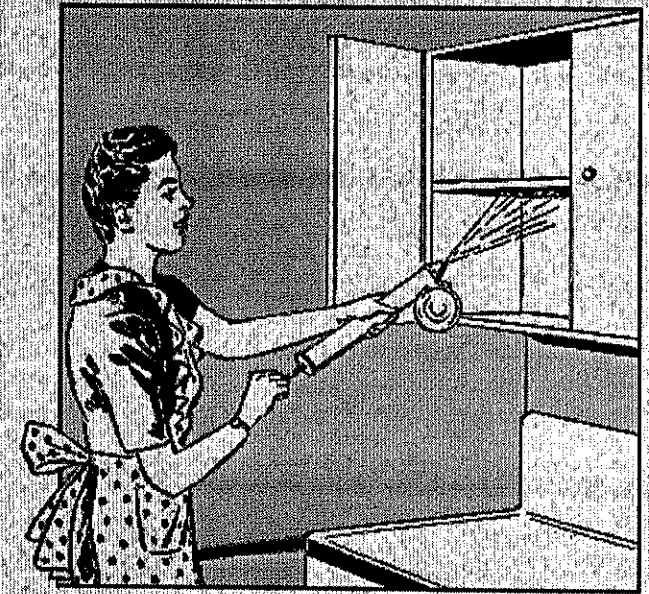
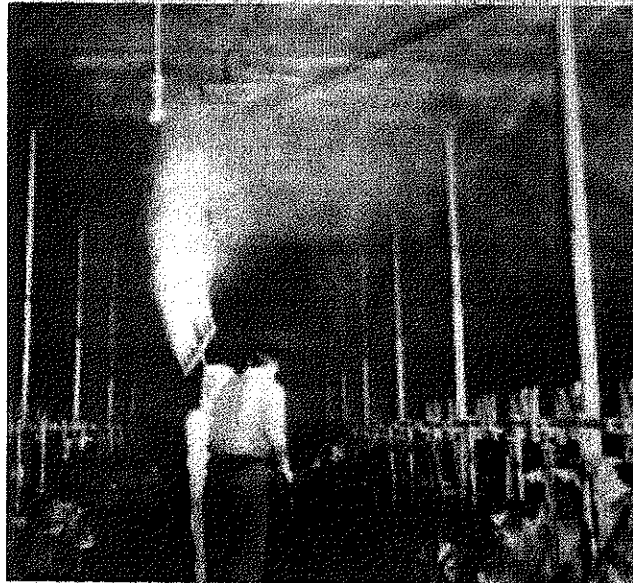
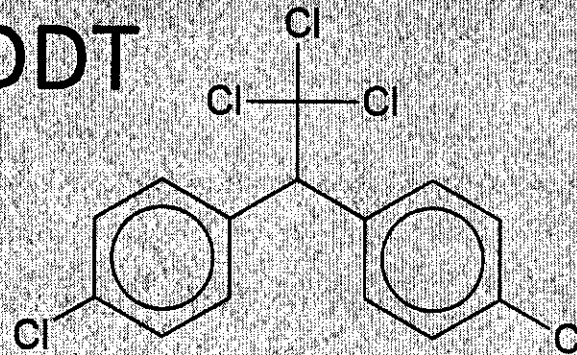
**¿Por qué los osos polares
no comen pingüinos?**



INFOXICACIÓN



Historia del DDT



DDT... FOR CONTROL OF HOUSEHOLD PESTS



Prepared by the
Bureau of Entomology and Plant Quarantine
Agricultural Research Administration
United States Department of Agriculture, and
the United States Public Health Service
Federal Security Agency
Washington, D. C. Issued March 1947

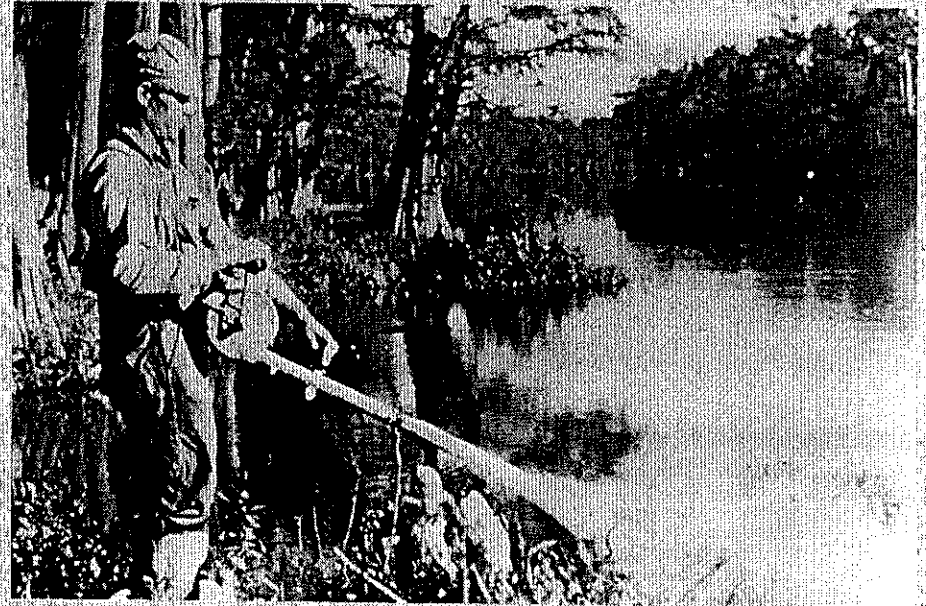


Entomology, 961 185-20070-5001
GPO: 1947 O-480-115, August 1947



In Rosedale, Miss., children frolicking in the fog of pesticide sprayed regularly to control mosquitoes. At right, a *Culex quinquefasciatus* mosquito, a species that carries the West Nile virus.





KILLS FLIES, MOSQUITOS, ANTS

4. as well as water, bedding, towels, and other household items after contact.

[illegible]

NON-MAXIMOUS (in a line or orbit, to get or obtain)
 Confused to be shocked with his hair on. Tired and
 concerned by Peter's behavior.

PROVEN TO BE THE MOST EFFECTIVE

NO HEAVY: NO LIGURES: NO PUNCTUATION: NO CONVERSIONS:
no safe because the DOT is fixed to the paper. It can't
roll off!

quarrels "Back and Fill" or "Inevitable Fights"—and now tellings that pretend as they tellers a child's own and chosen friends, some Karna promising to your child's name — for every other friend in the house. Classes of friends.

READY, FASTEN! Just Dig In Water and Hugs!

Anyone can put Trine Wallpaper up without help or previous experience. Millions have done it—pasted it in quick, clean, easy fashion to get ready—no nails, paste or glue. Past it step by step, in 10, 15 or 20 minutes. It's dry in 30 minutes! Guaranteed to stick—guaranteed to please or money back. And no investment! You can protect your child for \$5 to \$15—depending on size of room.

Times DDT Chalkers: Susan Wallinger. Times DDT Color Chalkers: Wallinger was available as Department, Chalk, Hand-ness, Paper, and Wallinger during operations.

Miss Kewell's new partner, who is also a regular Tulsa Ready-Mix customer, will be 50, 60, 70, 80, 90 and 100 yds. long.

TRIMZ READY-PASTED
WALLPAPER

Library of Congress of the U.S.A. (C) 1994. Printed in the United Kingdom

World Leading System and Largest Manufacturer Manufacturing More Than 10,000 Units

*** YES SIR
2-WAY
BECAUSE**

★ 3 號老丁的書
KILLING 有他在
北方人又都 通通
去以月平片(5)

*** INSTANT
KILLING WHEN
SPRAYED ON
INSECTS!**

OFFICE HILLING! When you spray
NUT LACER all around it kills it each.

KILLS ALL HOUSEHOLD INSECT
PETRIE Used either way **DOES NOT** Kill
 Fleas, Flies, Spiders, Mosquitoes, Wicks,
 Beetles, etc.

1. POINTING EASTING ACTION

[illegible]

Liquid DDT BILL COAT

09-16-2008 **Dr. C. A. J.**

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

DOT is good for me-e-e!"



The great experiments held for 1957 have been evaluated. During 1956, extensive scientific work has shown that, when judiciously used, 191F lifts a load of destructive insects pests, and is a *benefactor* of all humanity.

one of the country's largest producers of this essential commodity. Turkey, everyone can agree, added comfort, health and safety through the insect-killing power of Permethal DDE products . . . and DDE is only one of Permethal's many chemical products which benefit industries, farms and homes.

Prima de pendere (1831) sind die großen
wie in die ständische Form und die neue:

GOOD FOR FRUIT—Hedges
offer freedom from such
pests as insects, birds, etc.,
and are especially useful
for fruit trees.

· 100 ·

KNOX FOR THE MOUNTAINS—
Off to make his own
mountain country below
pentecost house. Lady's
deception! Many people
knowing that Knox was
and Spence as they
then watch the light.

Keep the lights—By no means does the city have a "dark" future. Mayor Patrick, in announcing the first phase of the plan, said that the city will not be "dark" at all. He said that the city will be "bright" as it moves forward with the plan. He said that the city will be "bright" as it moves forward with the plan. He said that the city will be "bright" as it moves forward with the plan.

KILLING SALT

RESUME

of least service to business & home & most

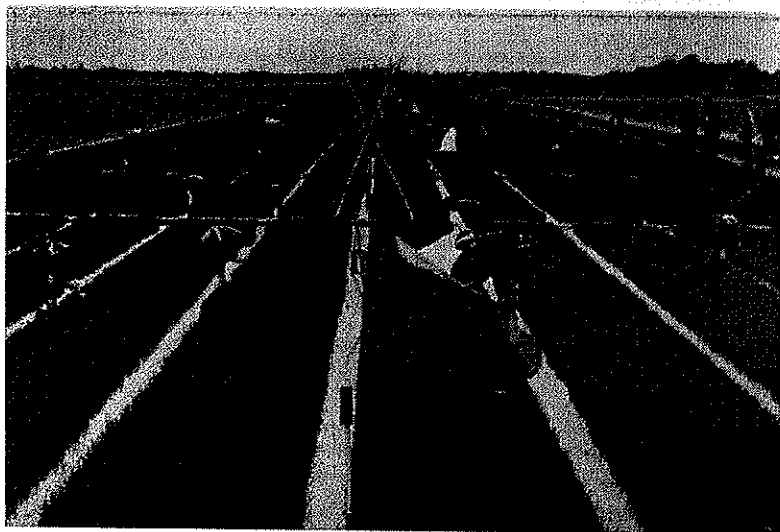
She looked for a New York-type doctor with a taste of the old diagnostic tool. The doctor, and a few computer biscuits, would locate the exact cause of her newly discovered and doctor-baiting short lesions and assign powerless treatment with no side effects.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]

On [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
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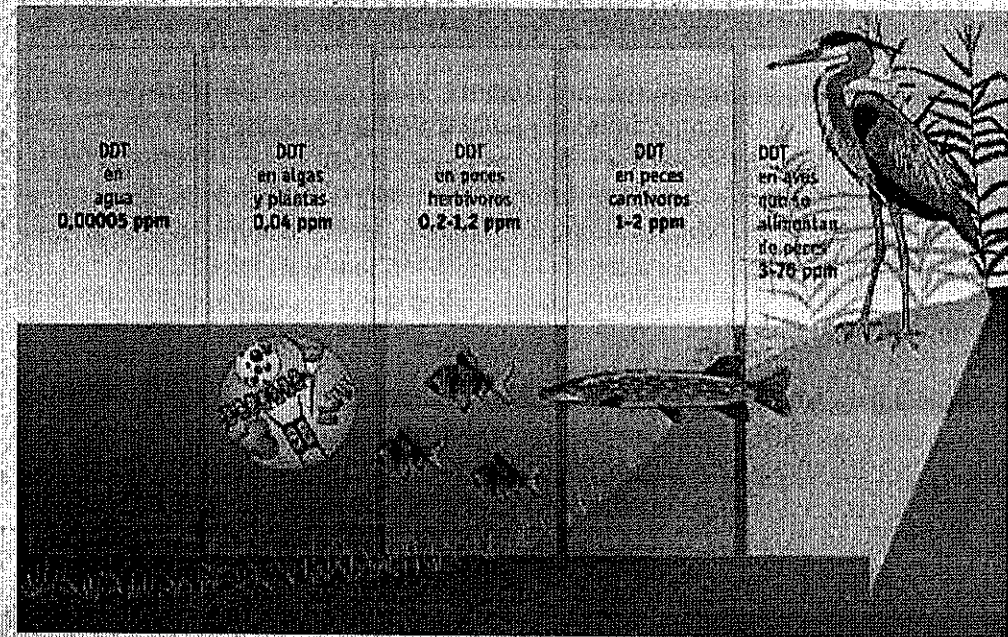
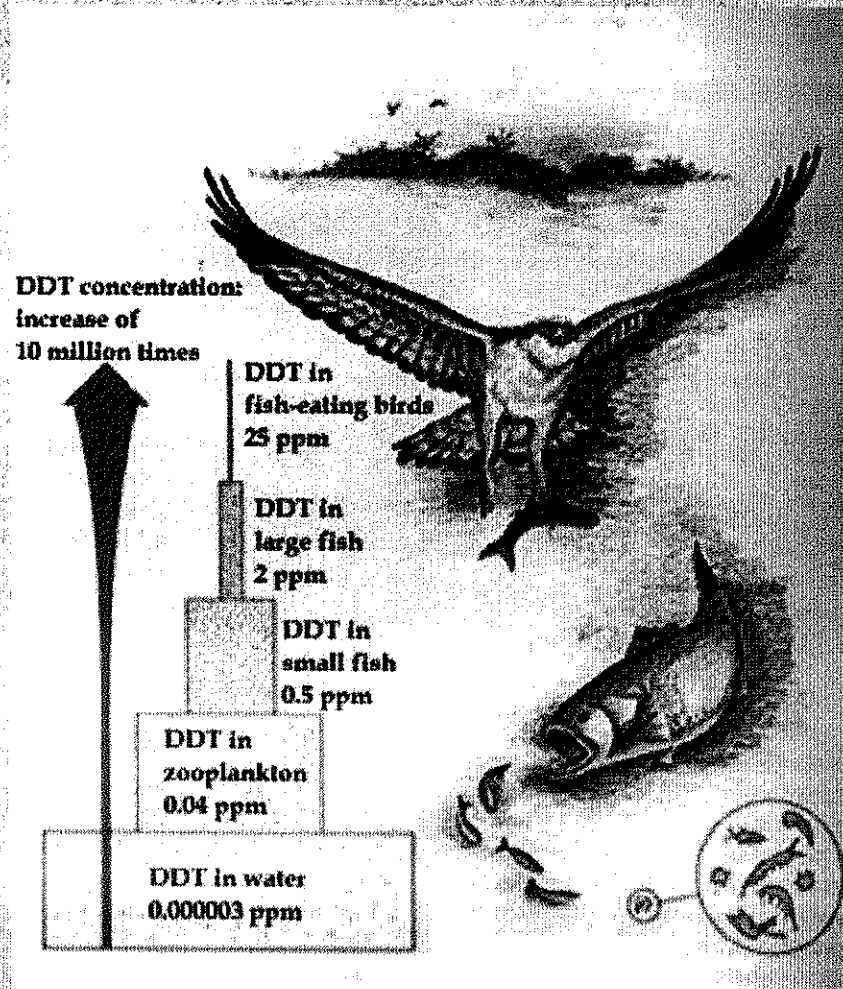
Captura manual



D_e D_i T_o

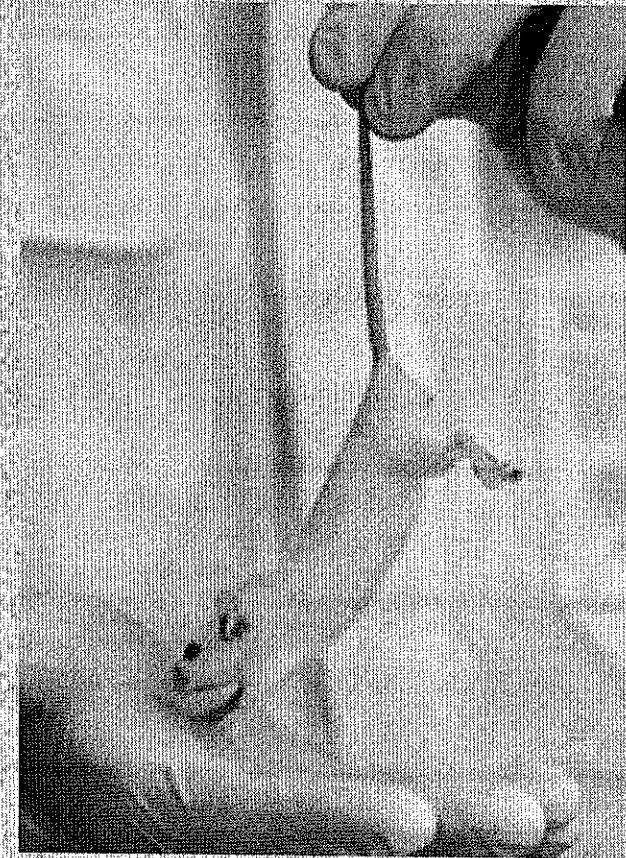


Bioacumulación y Biomagnificación de sustancias xenobióticas



Toxicidad aguda

**Muerte repentina
por altas dosis letales**

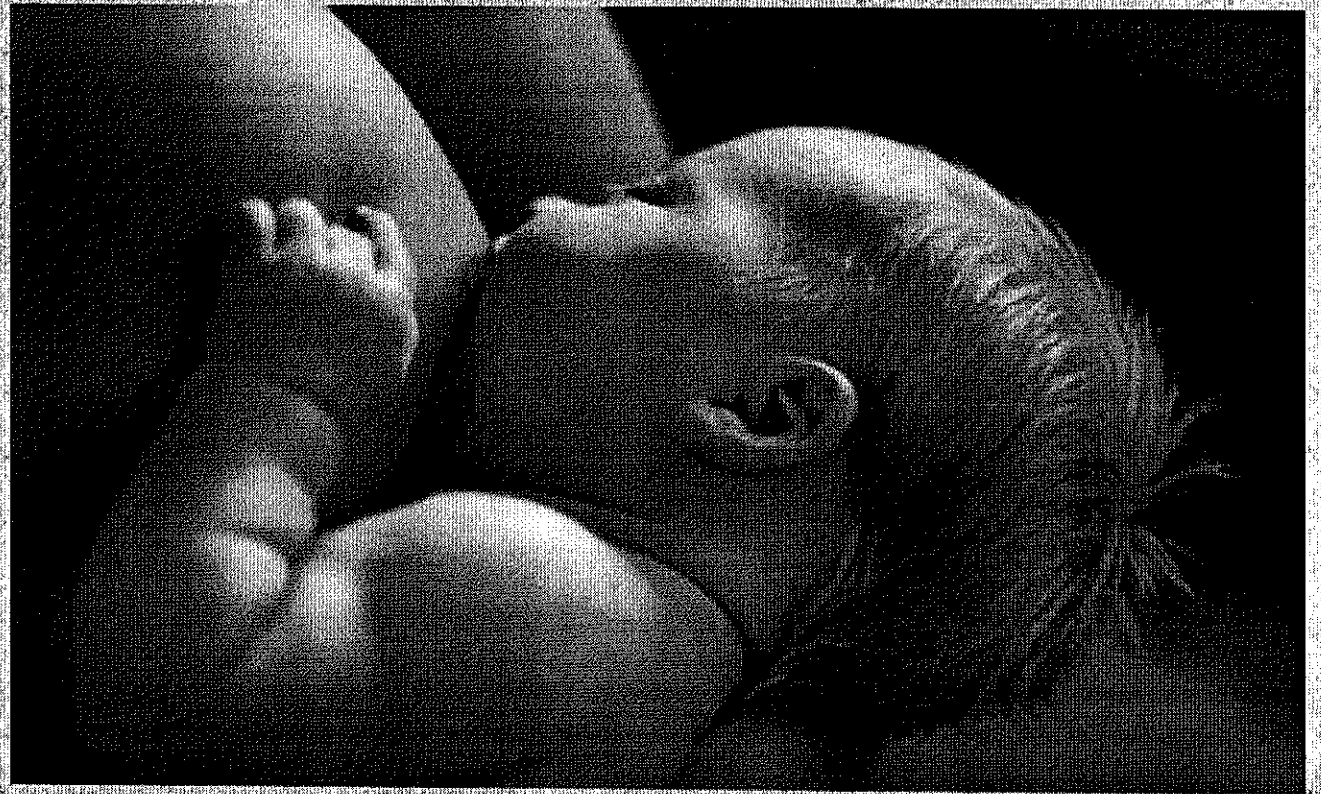


Toxicidad crónica

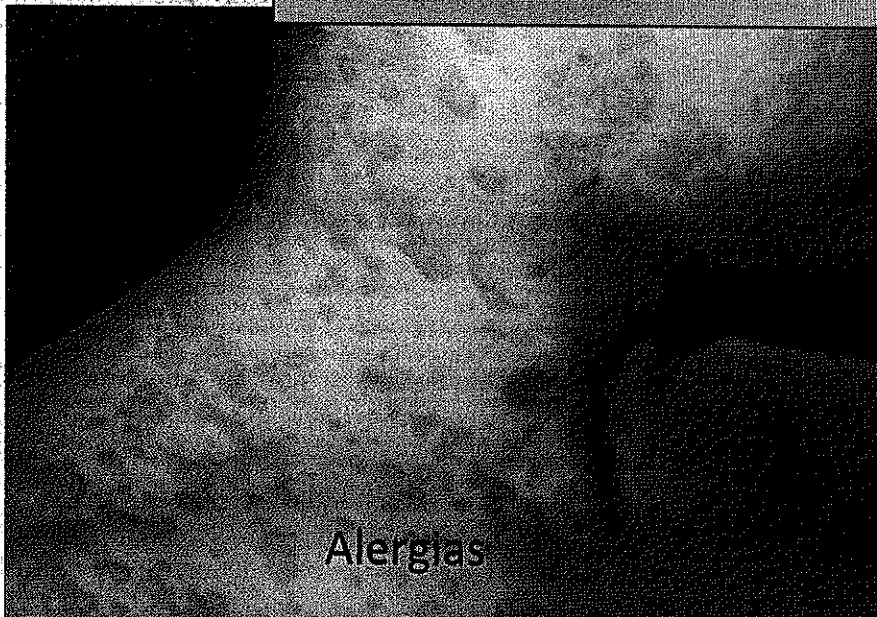
**Efectos a largo plazo
de pequeñas dosis subletales**

DISRUPTORES HORMONALES

**Sustancias xenobióticas
que sustituyen a las hormonas**



Alimentos poco saludables



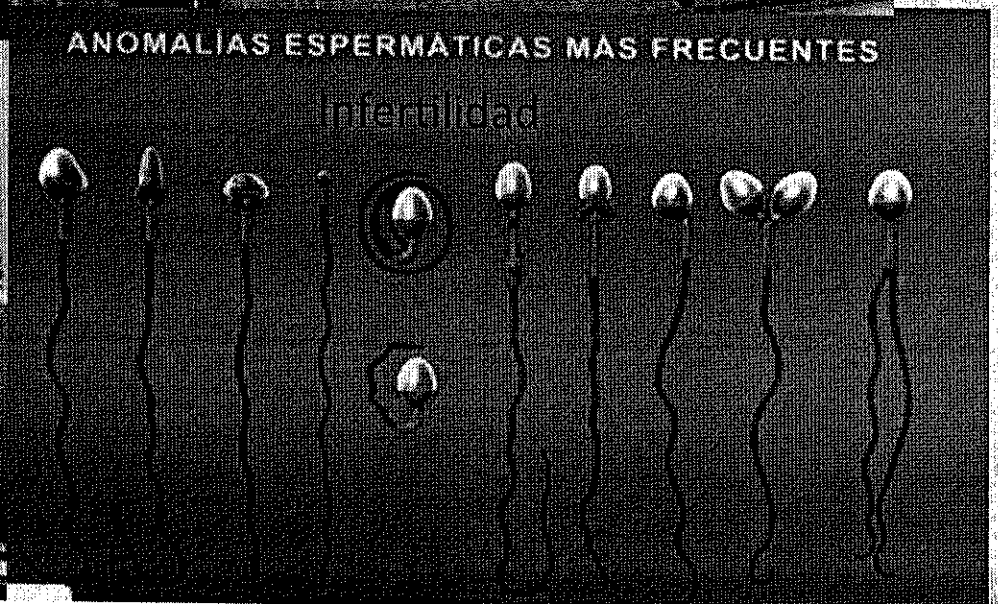
Alergias



Crisis alimentarias



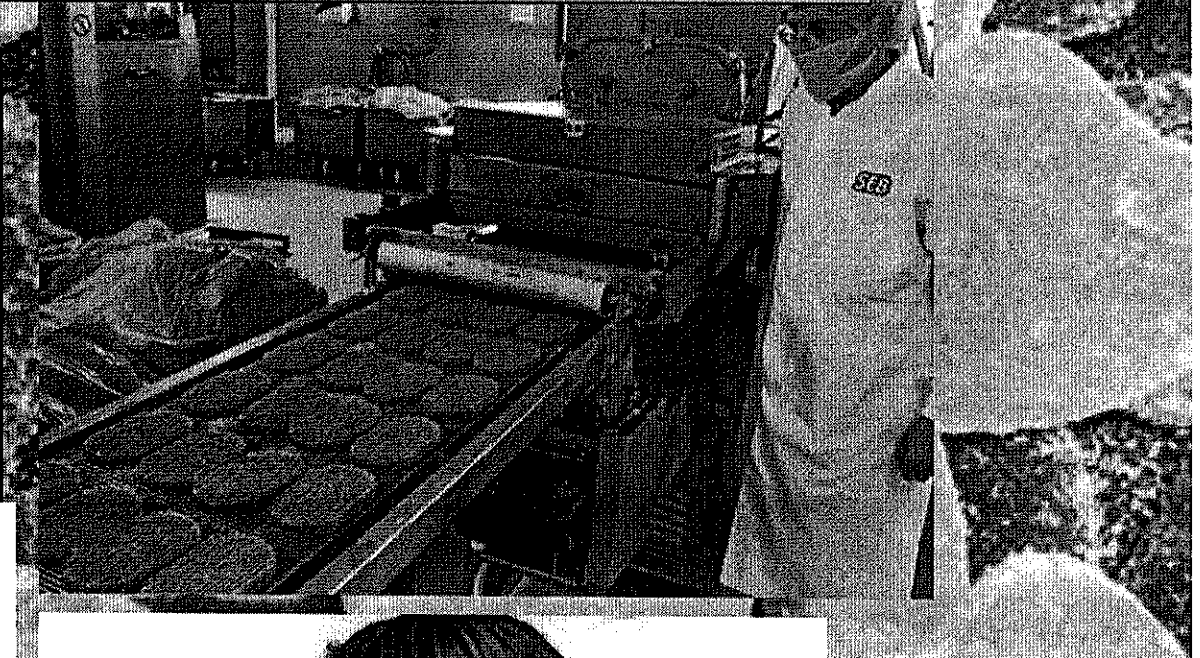
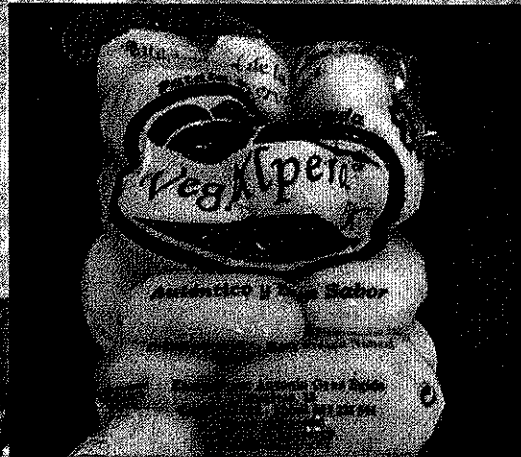
Obesidad infantil



ANOMALÍAS ESPERMÁTICAS MAS FRECUENTES

Infertilidad

Alimentación industrial y comida rápida



Despilfarro de comida

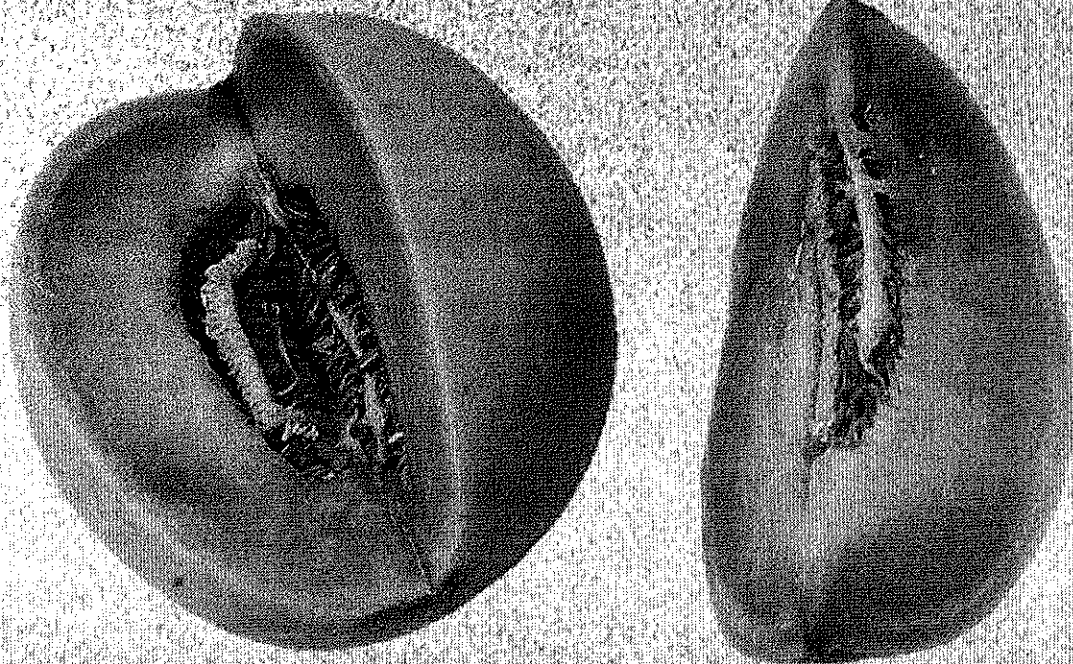
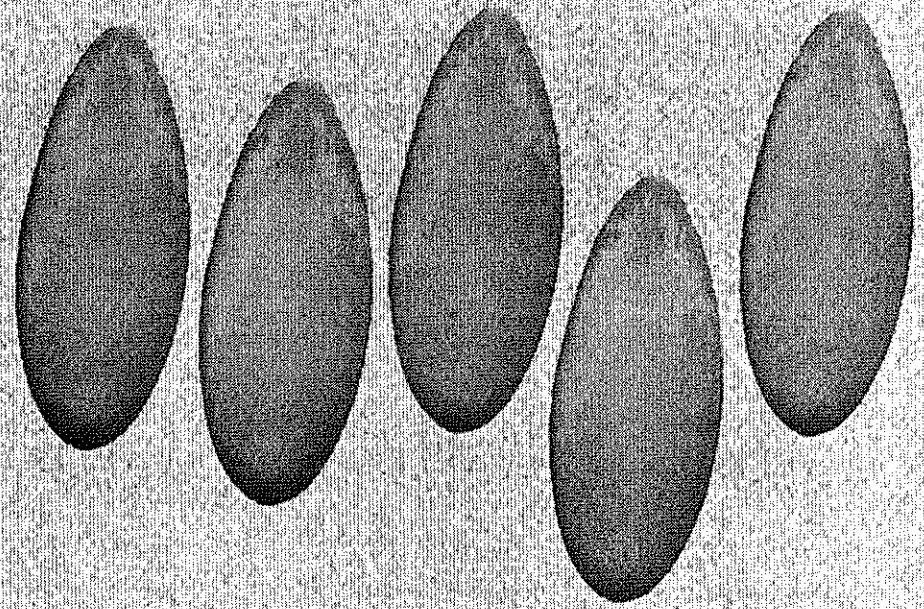


La naturaleza es abundancia y gratuidad



La economía capitalista se
construye desde la escasez
y la apropiación

Se pueden contar
las semillas que
hay en un fruto ...

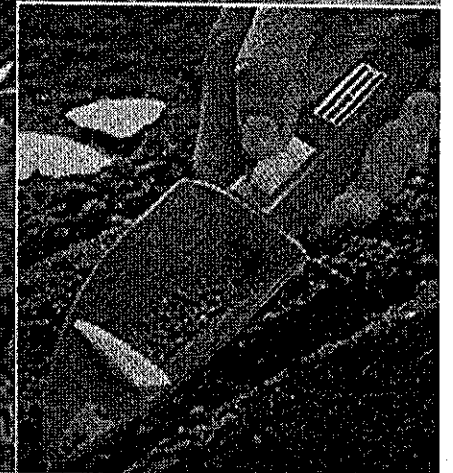
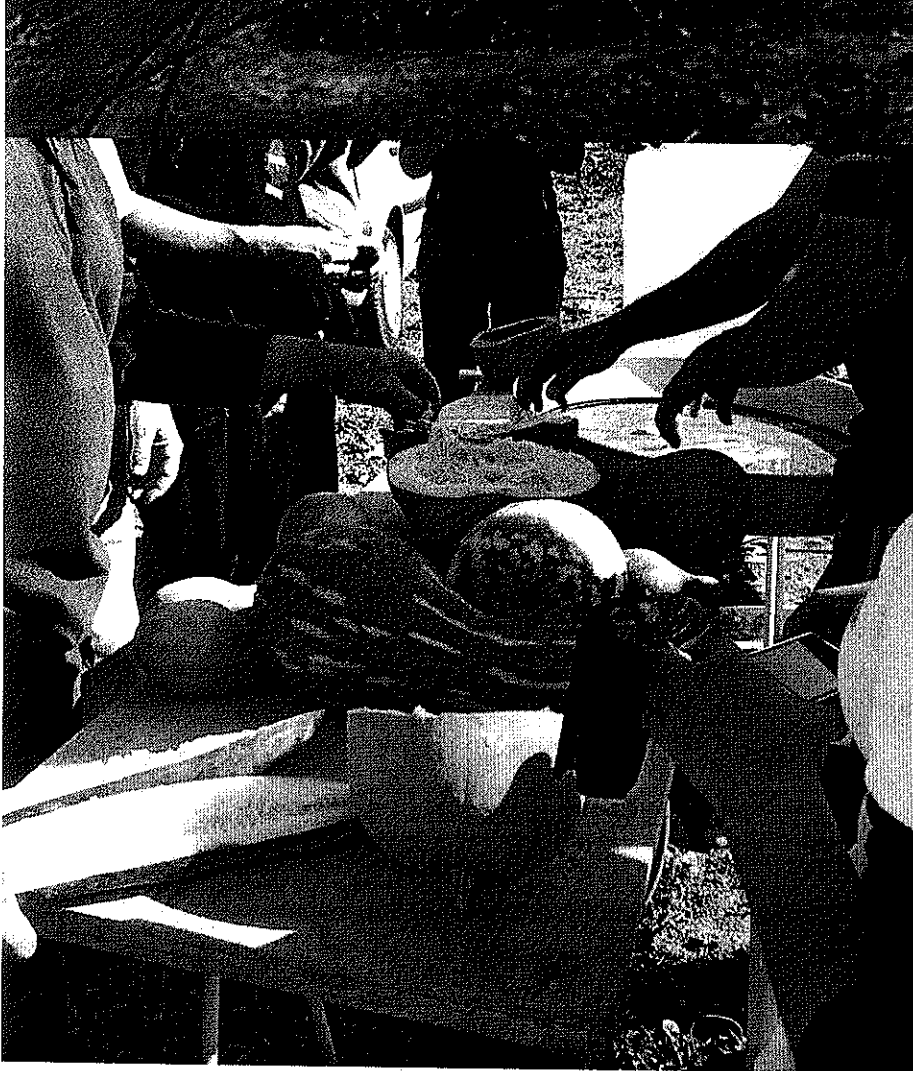


... pero nunca
se podrán contar
los frutos
que habrá
en una semilla.

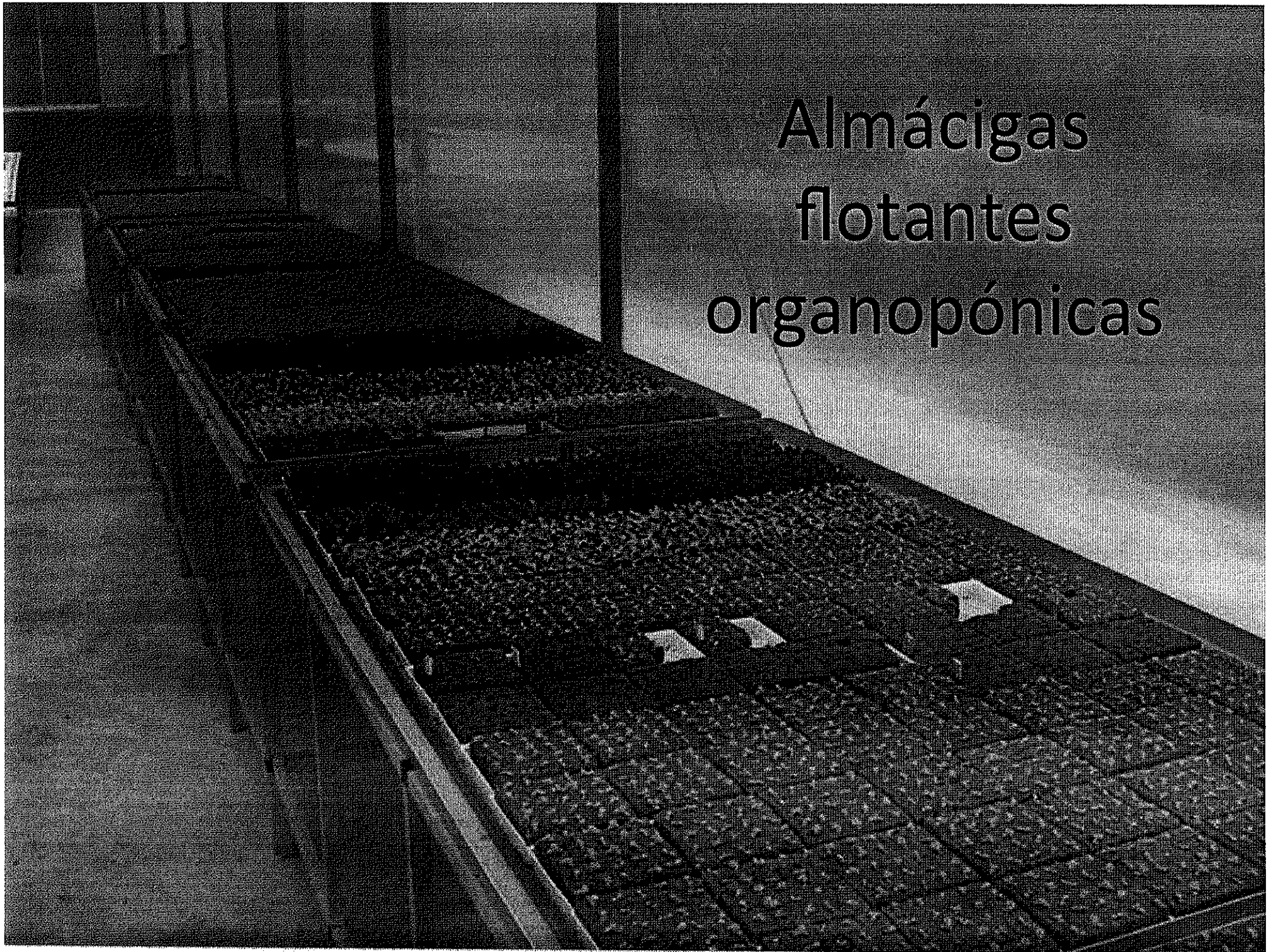
Variedades Locales



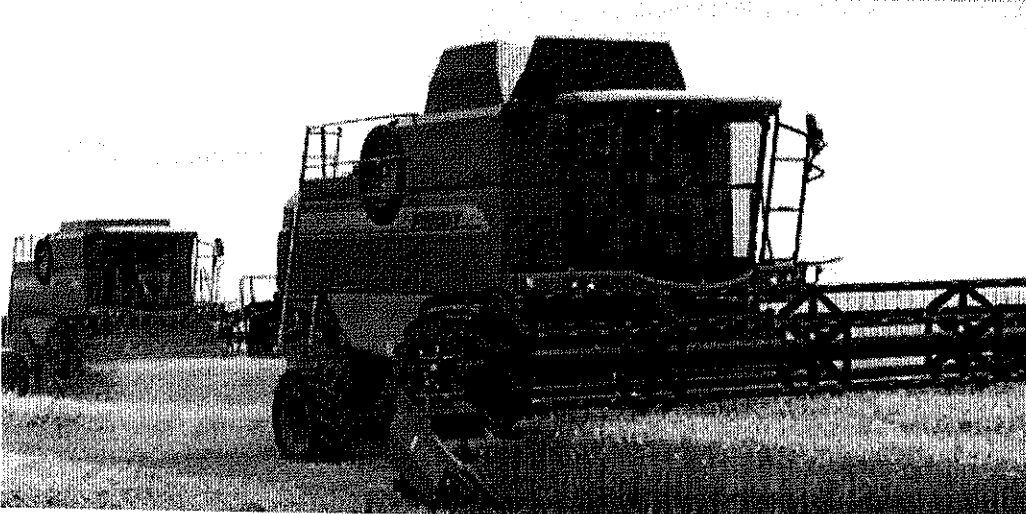
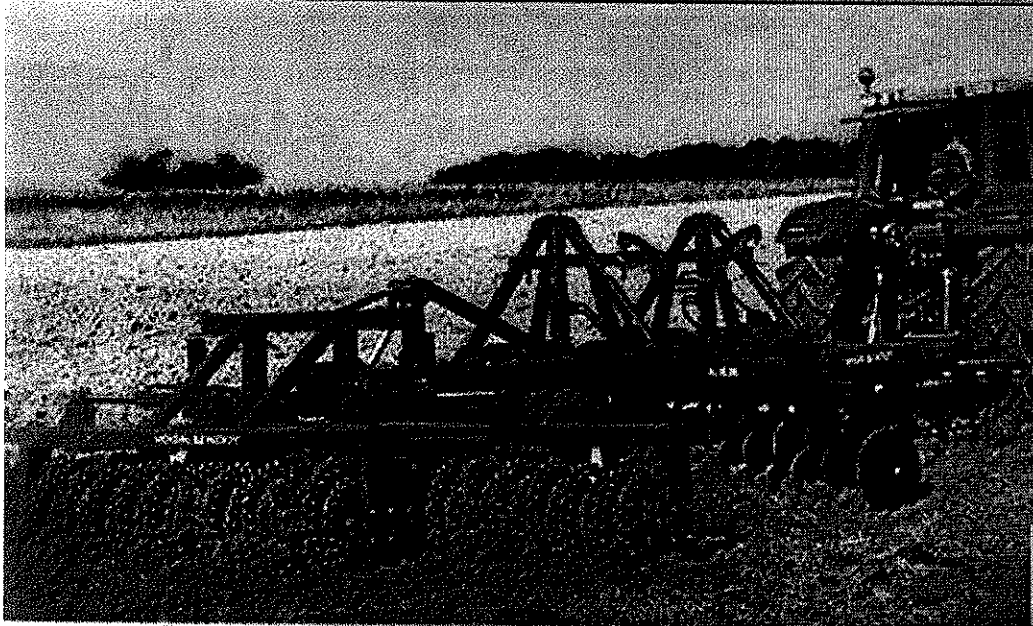
Autoproducción del plantel y las semillas



Almácigas flotantes organopónicas



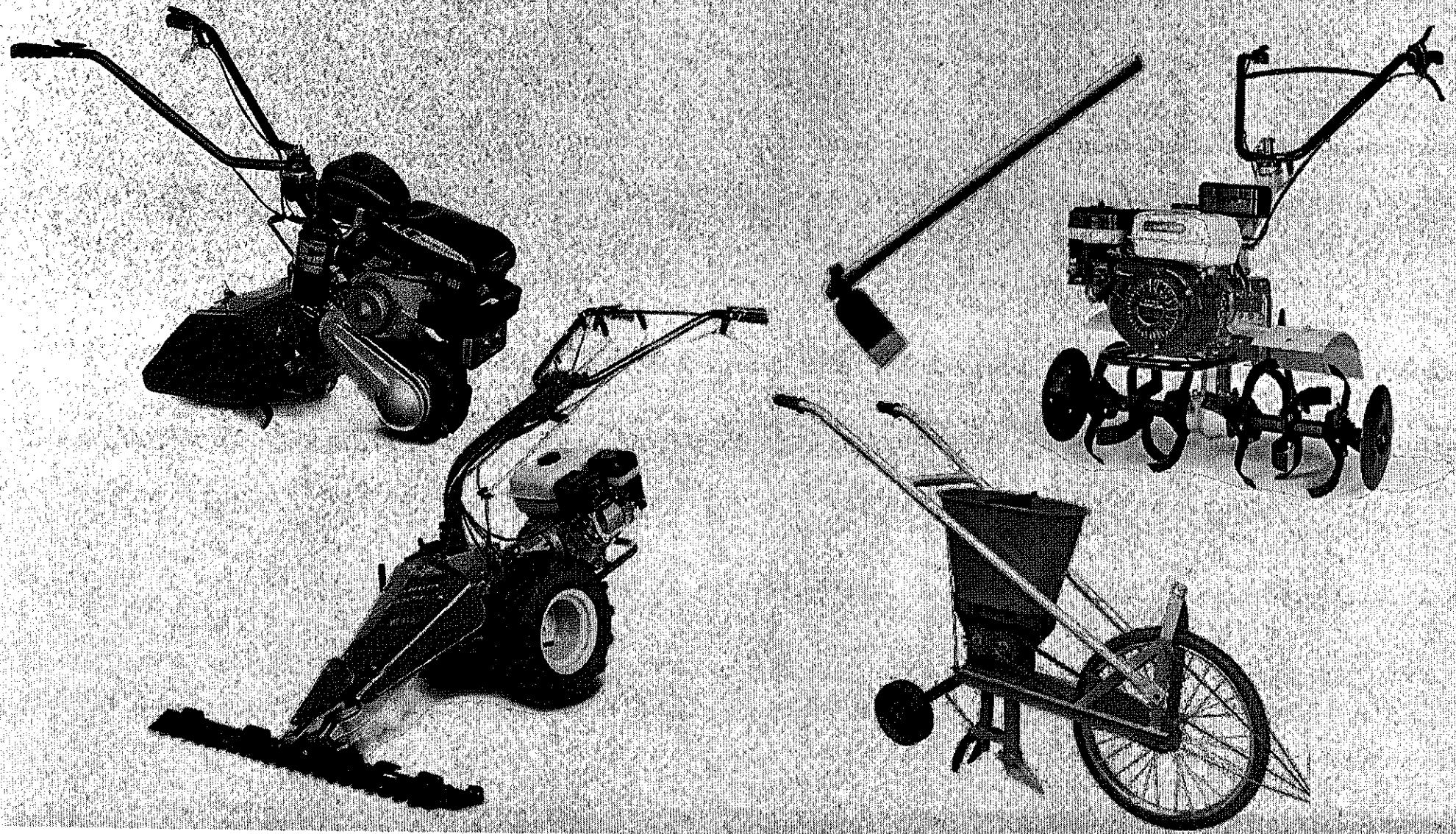
Mecanización con maquinaria pesada



Elevado consumo energético (combustibles fósiles)

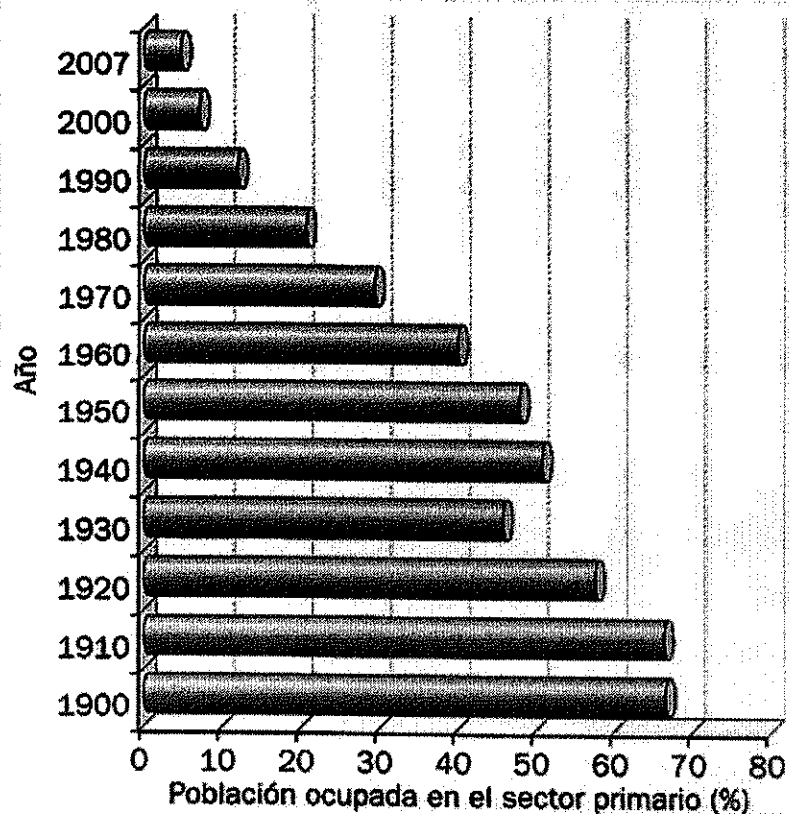


Baja mecanización y mucho mano de obra



Agricultura *SIN* agricultores ni agricultoras

Evolución del sector primario en España

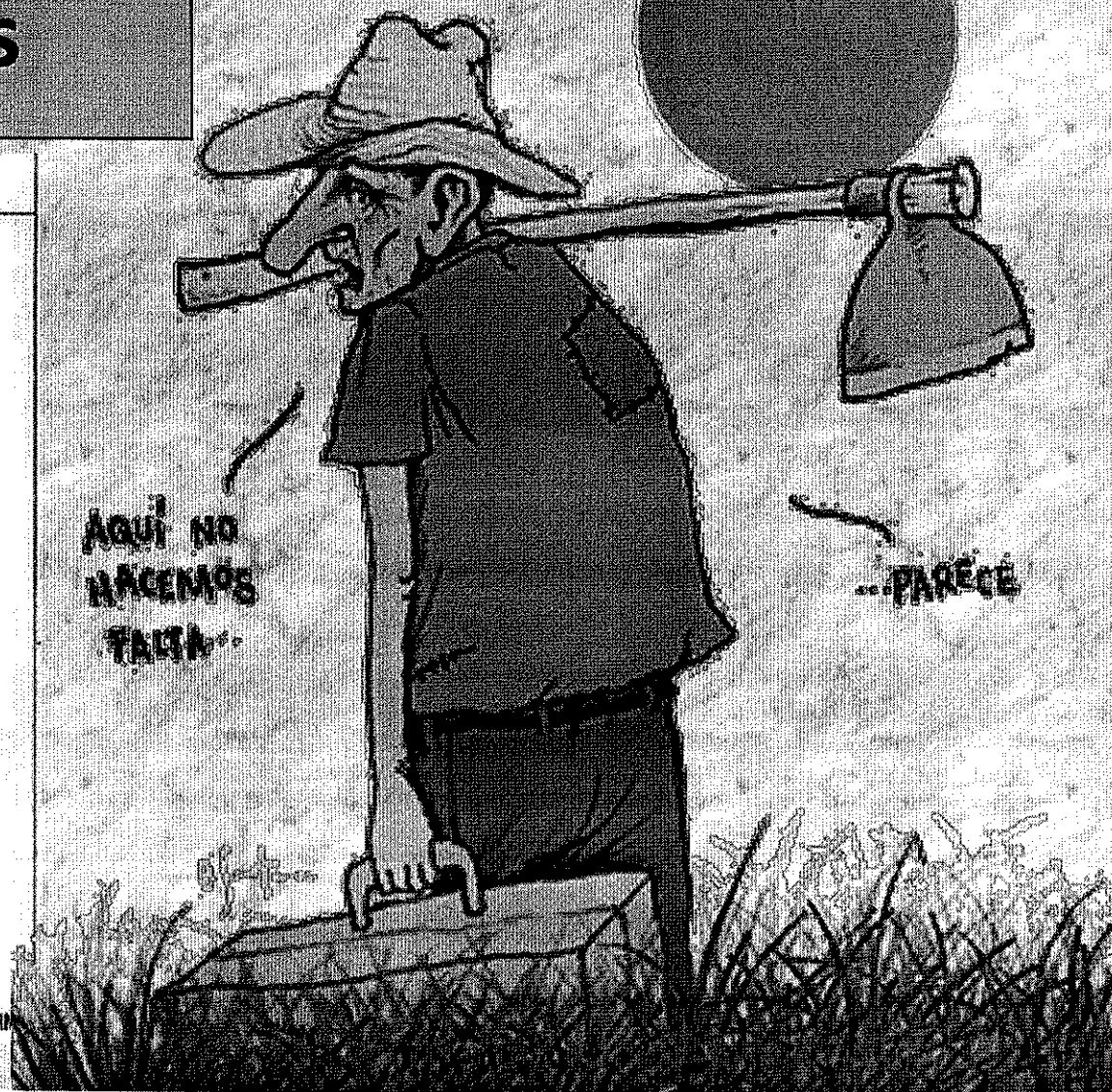


Fuente: MARIN

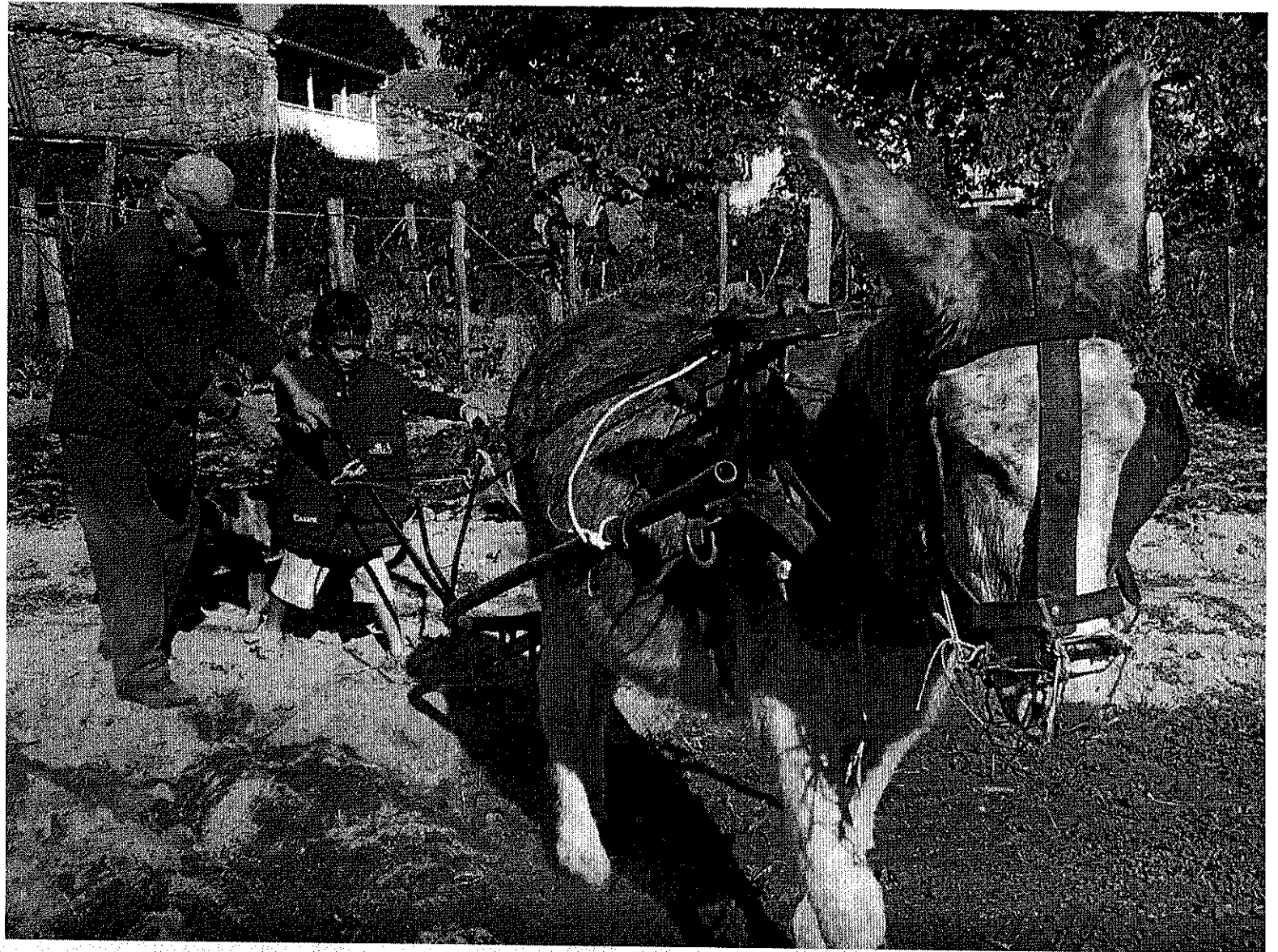
POBLACIÓN ACTIVA AGRARIA SOBRE
EL TOTAL NACIONAL EN 2009

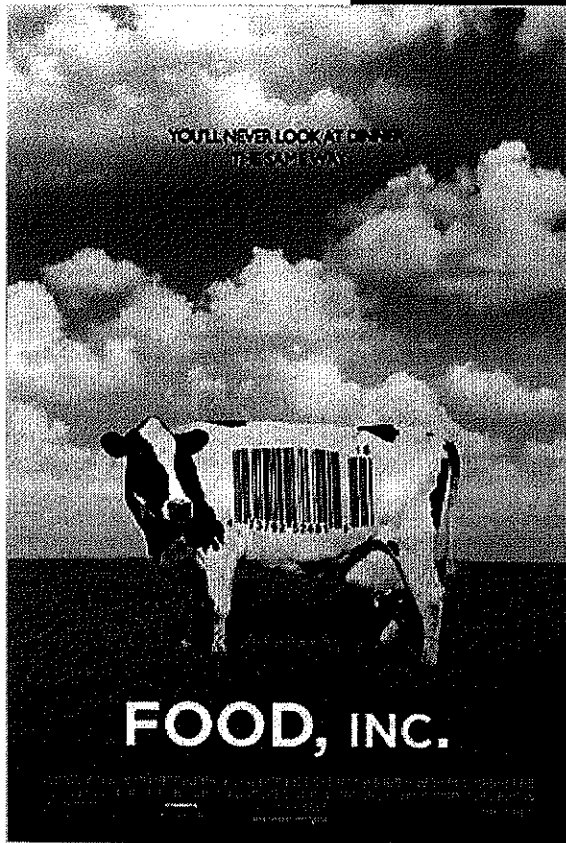
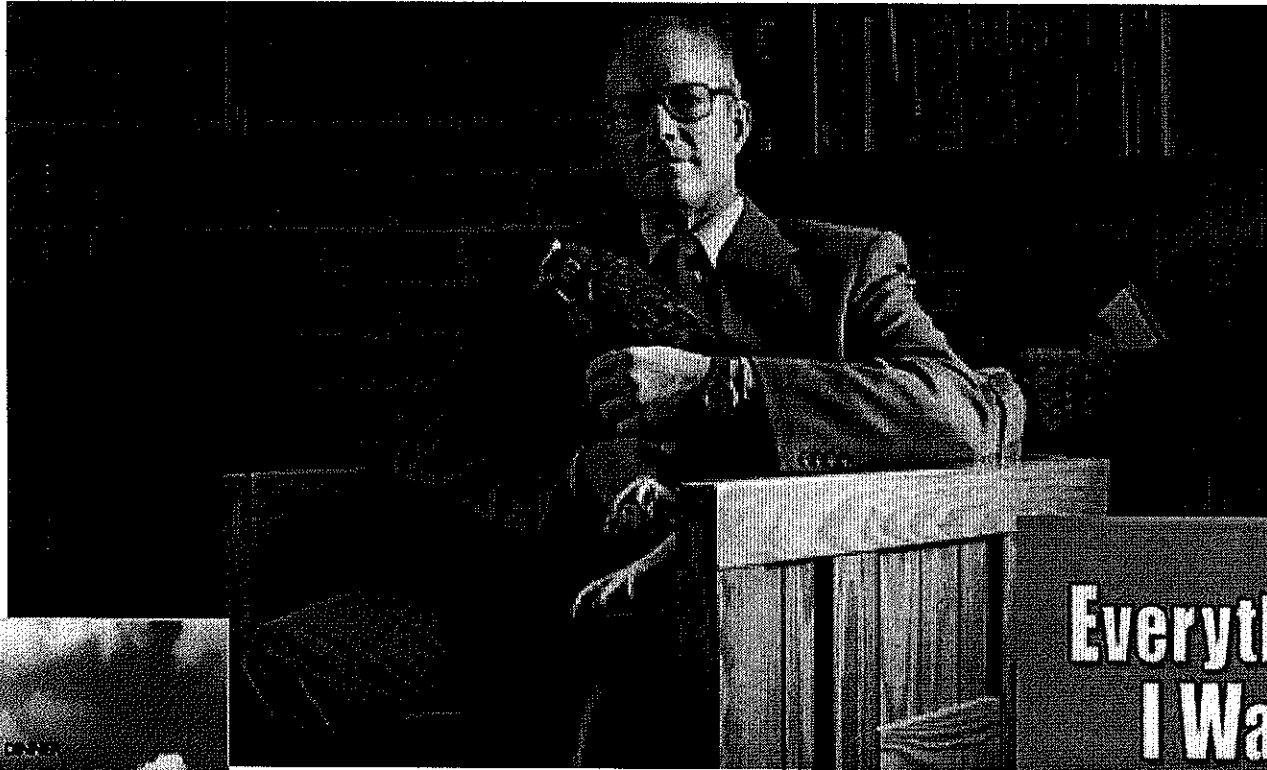
agraria 4,4 %

industria
y servicios 95,6 %

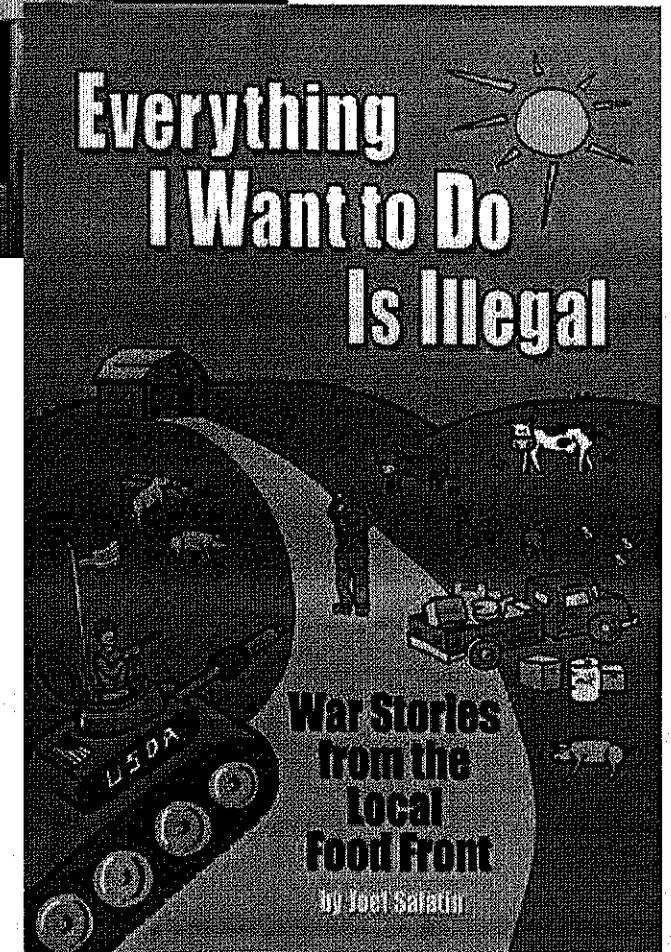


¿Cómo debemos alimentarnos para tener futuro?





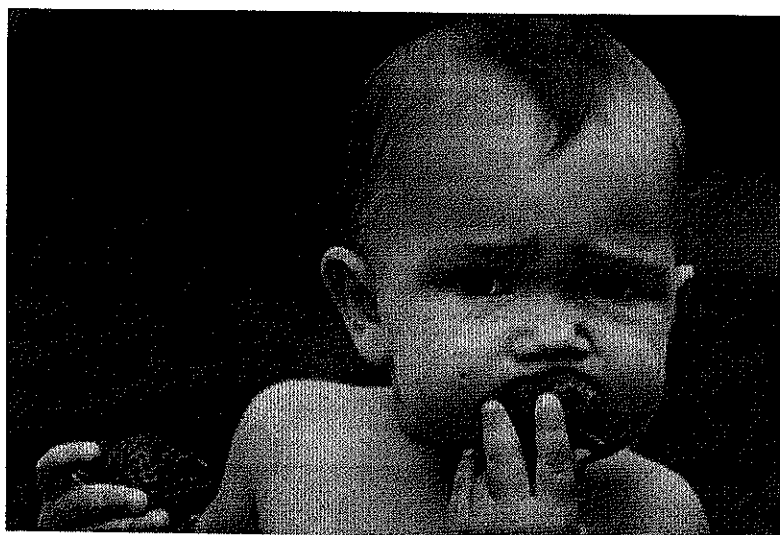
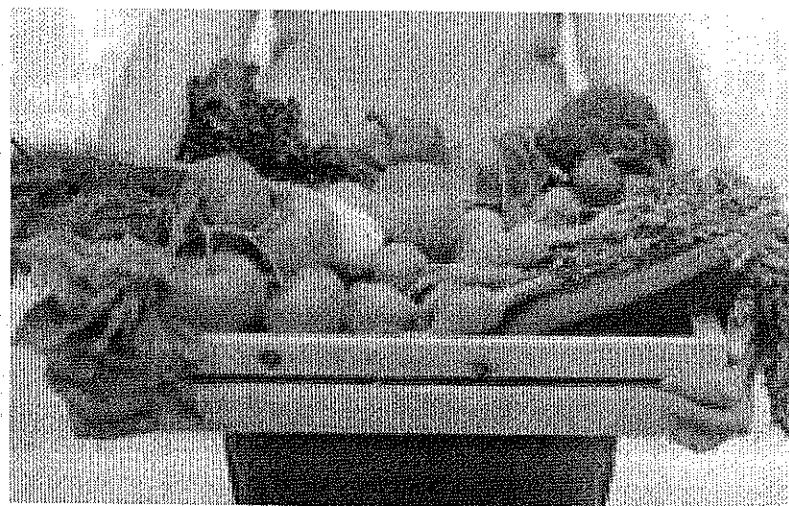
Todo lo que hay
que hacer es ilegal



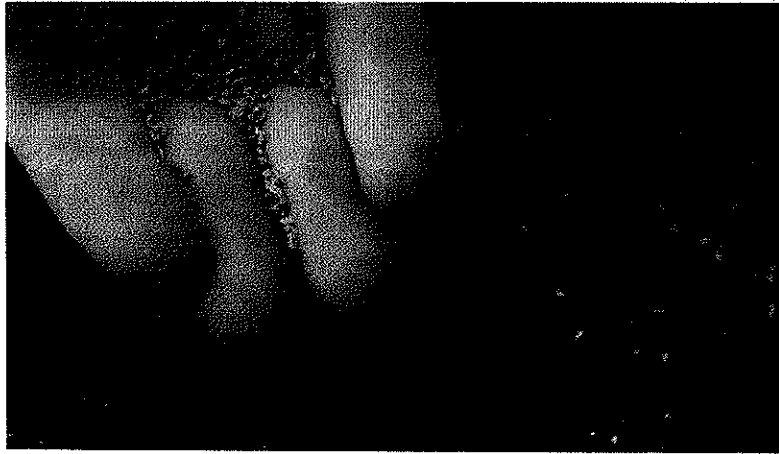


PRODUCCIÓN

DISTRIBUCIÓN

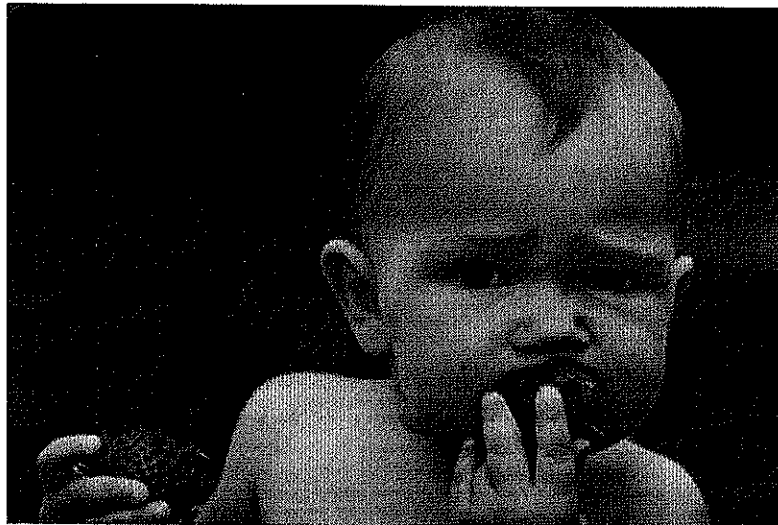
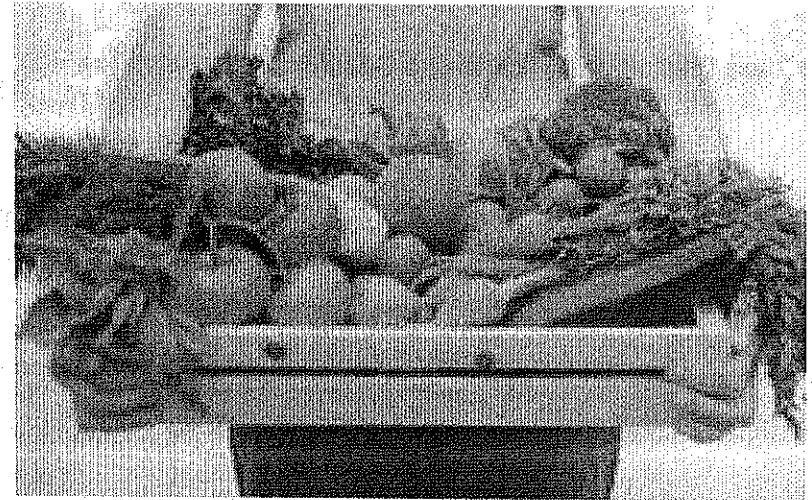


CONSUMO



PRODUCCIÓN
BIODIVERSA

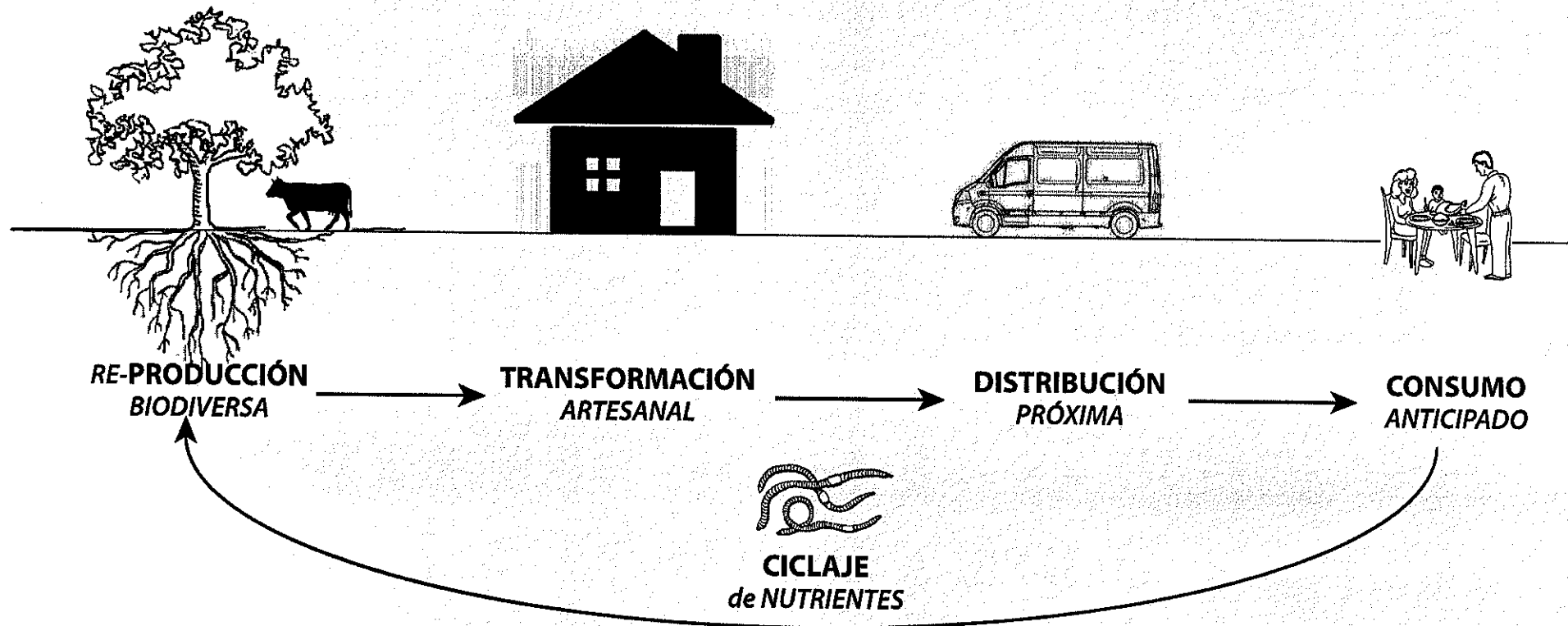
DISTRIBUCIÓN
CERCANA



CONSUMO
ANTICIPADO

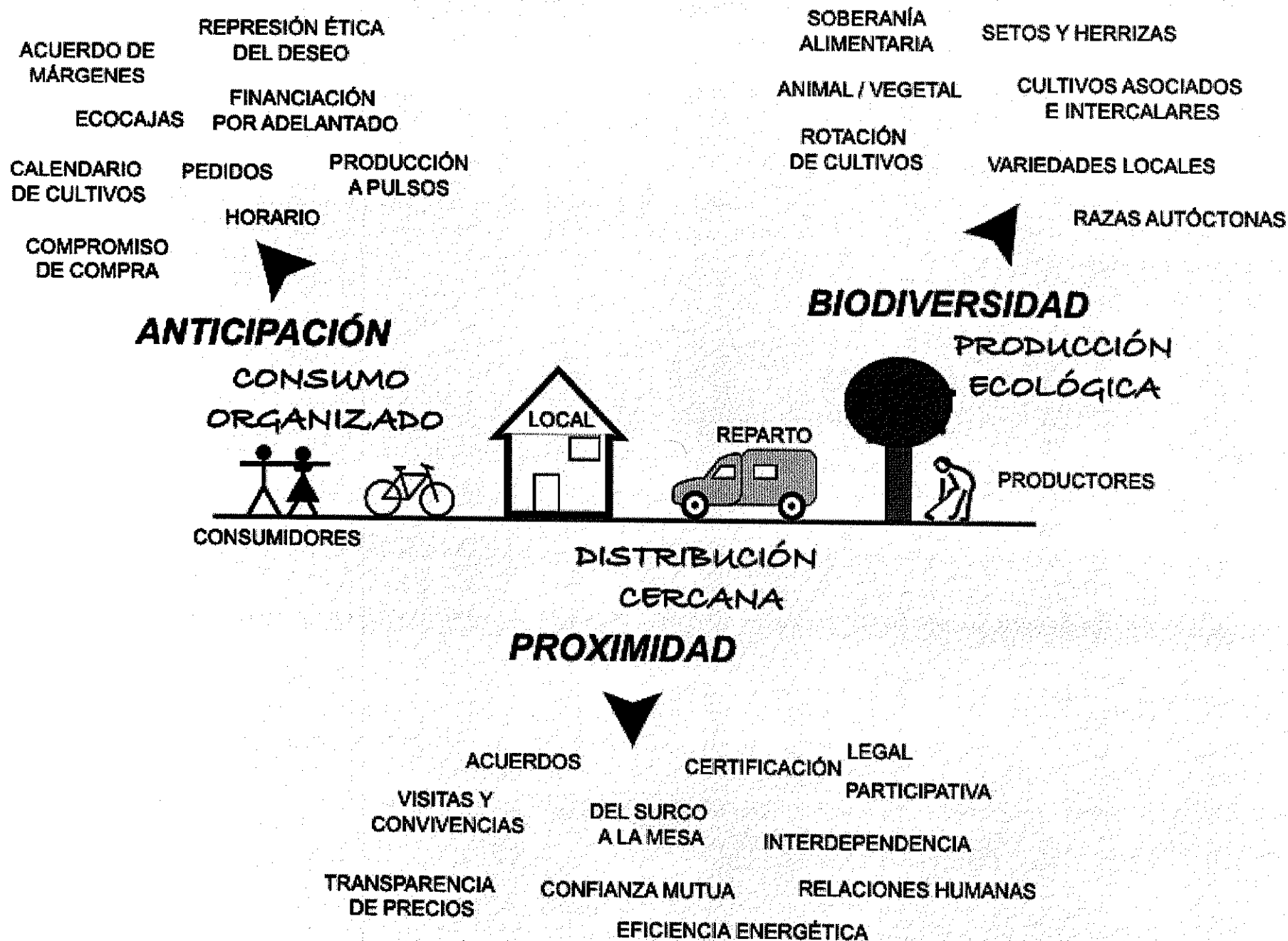
SOBERANÍA ALIMENTARIA

desde la AGROECOLOGÍA



Una alimentación sostenible se basa en:
la producción biodiversa,
la distribución próxima y
el consumo anticipado

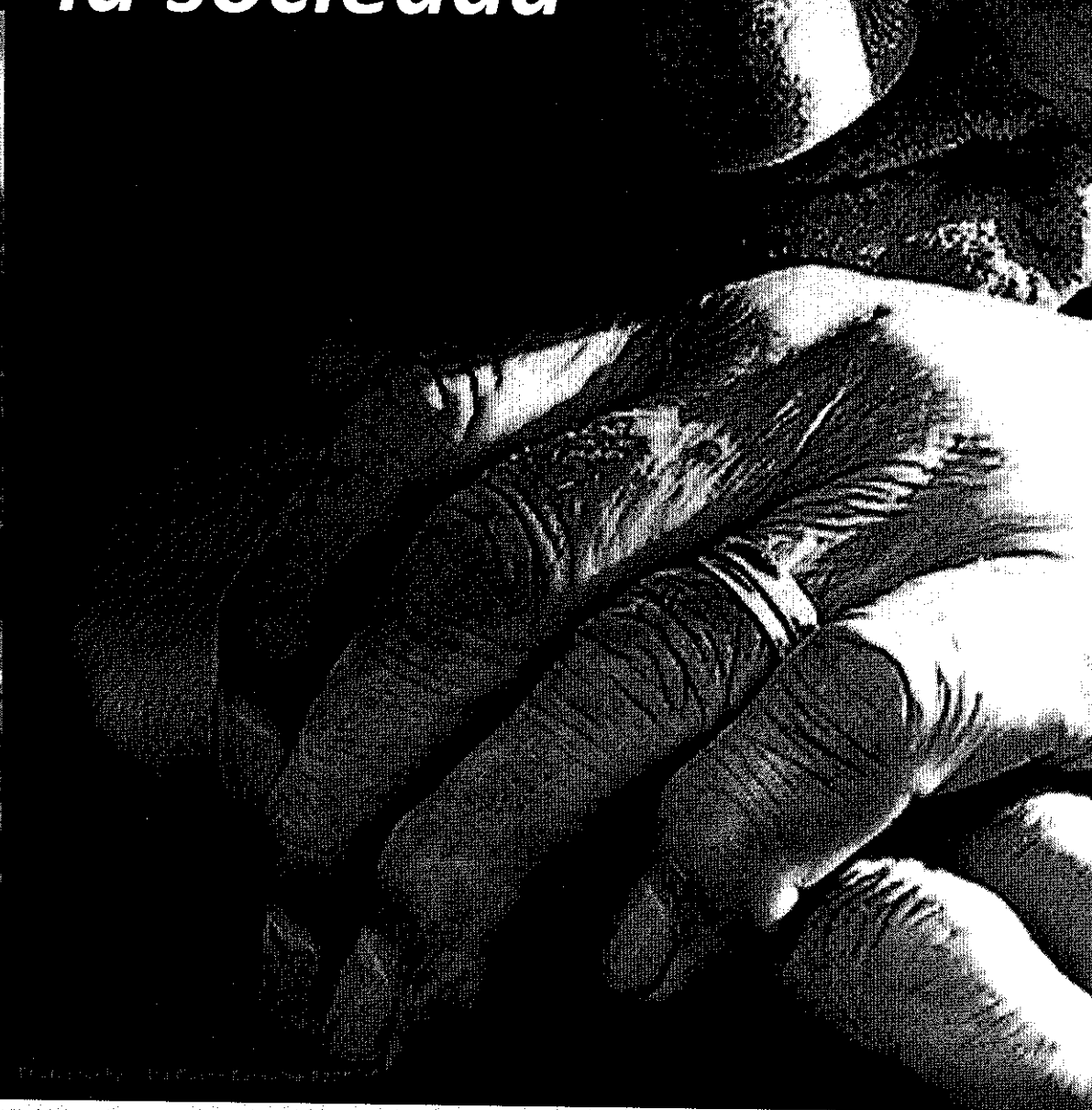
Grupo de pequeños productores que producen múltiples alimentos en su finca (**biodiversidad**), que se coordinan localmente para una distribución eficiente de estos alimentos a un grupo de consumidores, que viven en el entorno más cercano posible (**proximidad**) con los que están asociados para coordinar sus producciones a lo largo del tiempo y para establecer precios justos para ambas partes (**anticipación**)

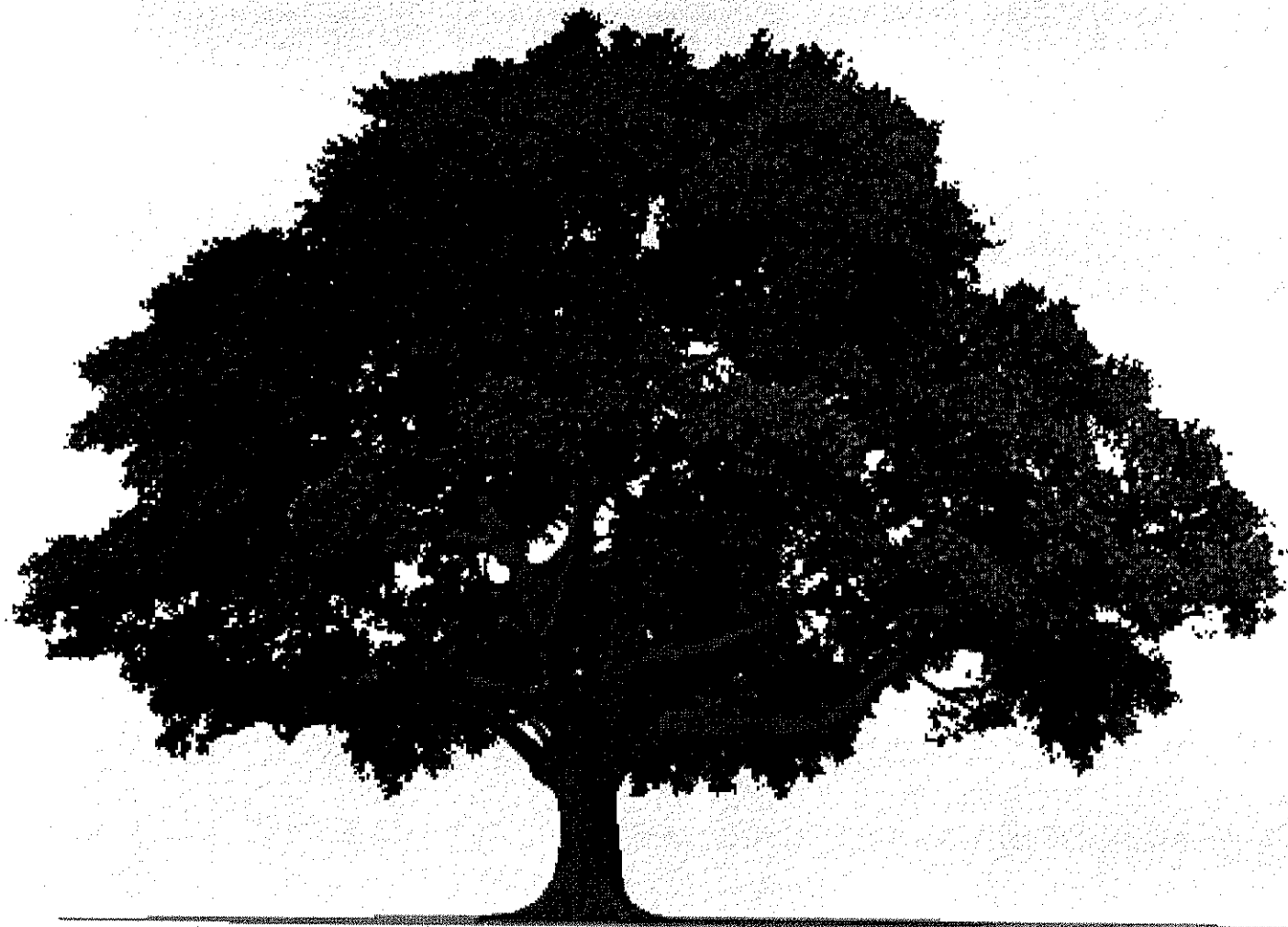


A black and white photograph of a woven basket, likely made of straw or a similar natural material. The basket has a wide, shallow shape with a slightly flared rim. It features a single handle on the left side and a latch mechanism on the right side. The interior of the basket is lined with a dark, patterned fabric. The basket is set against a dark, textured background.

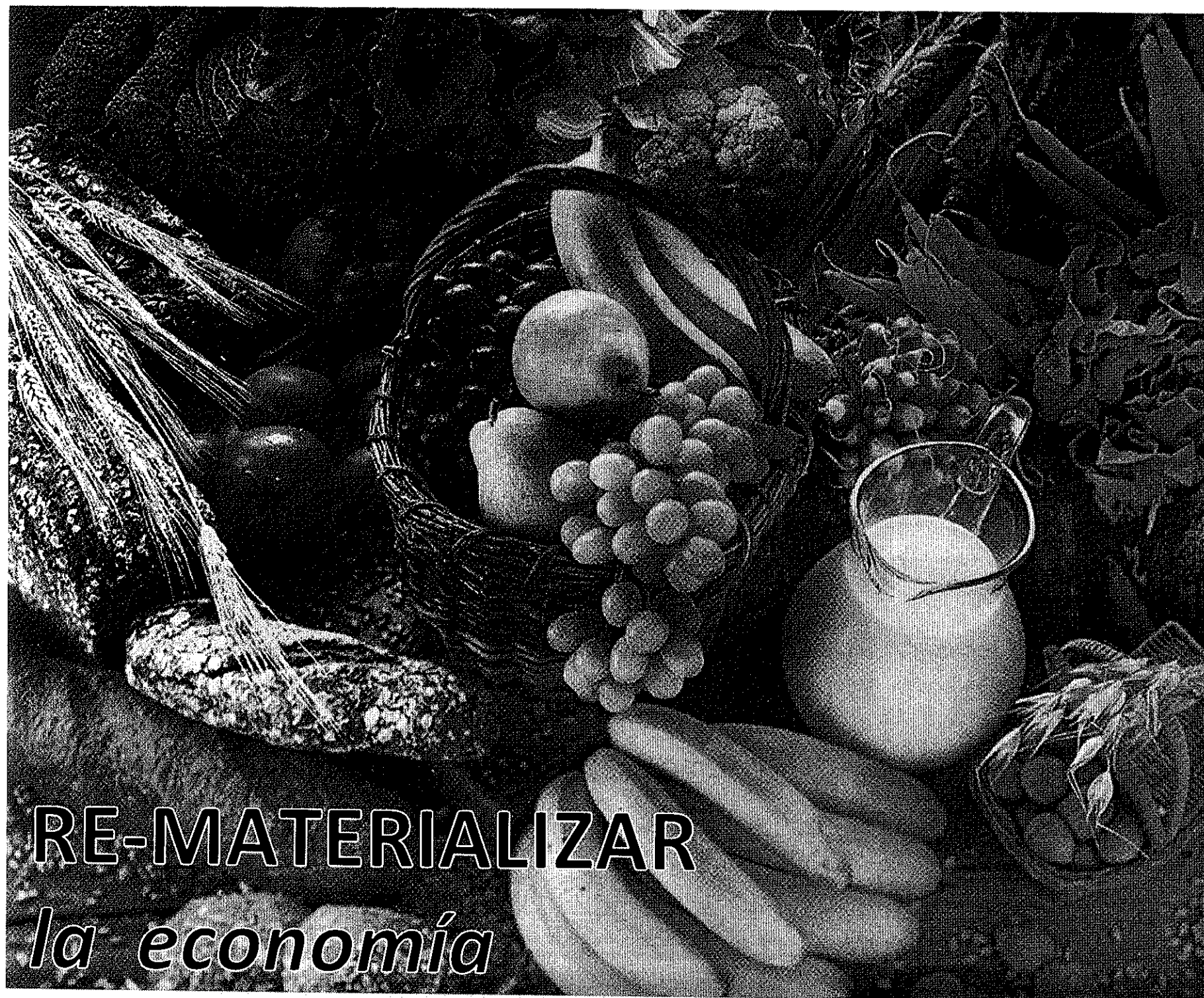
RE-LOCALIZAR
el comercio

RE-CAMPESINIZAR *la sociedad*



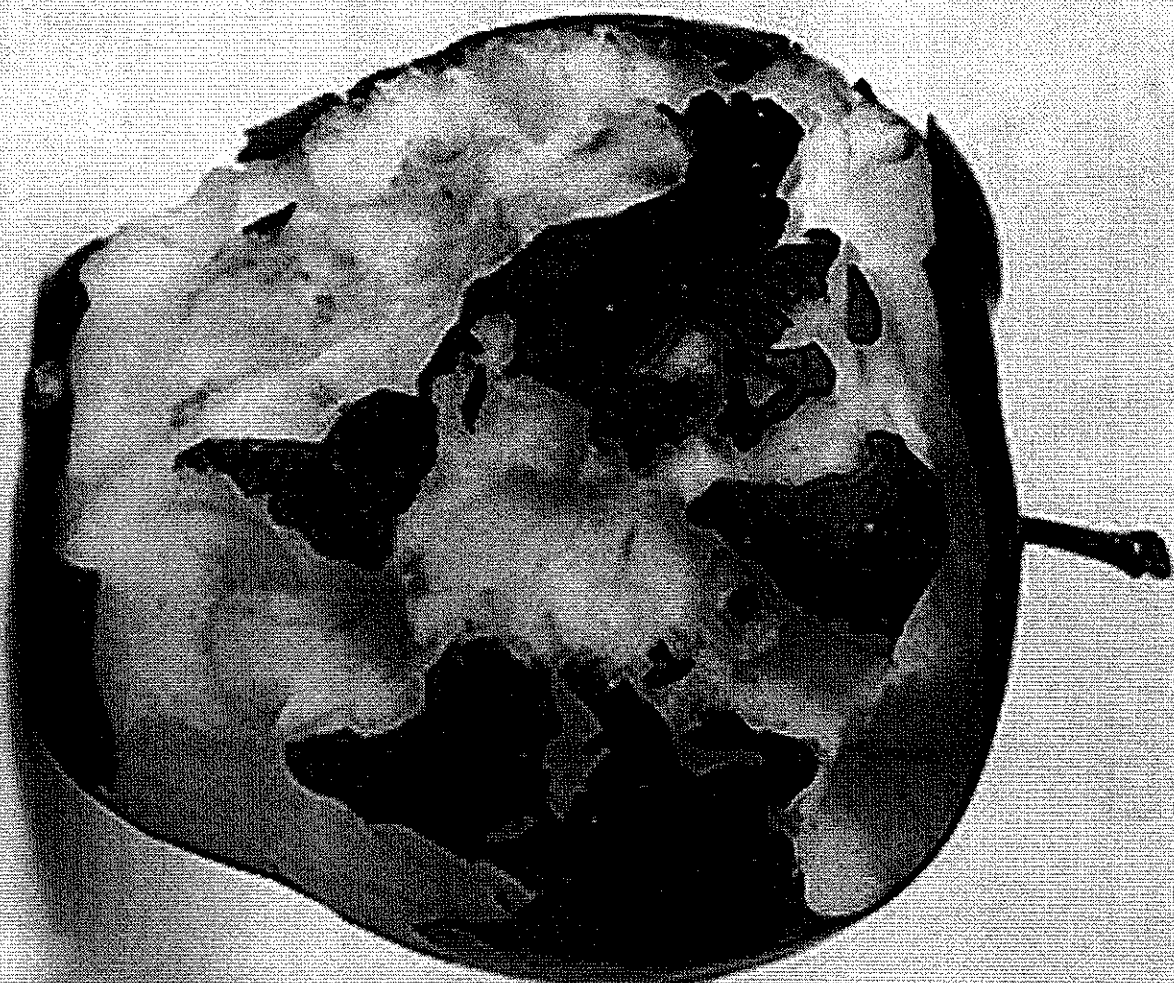


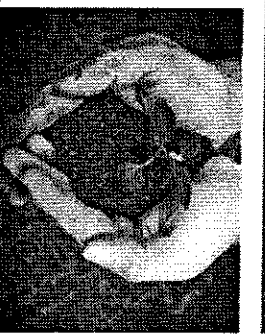
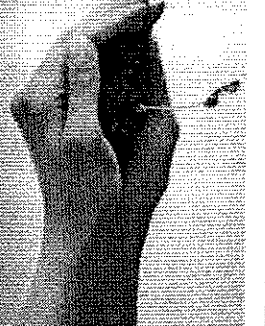
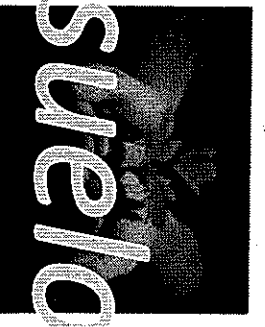
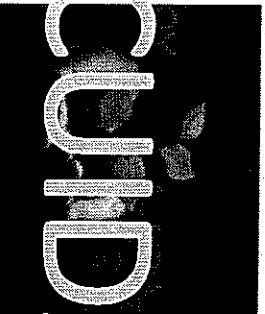
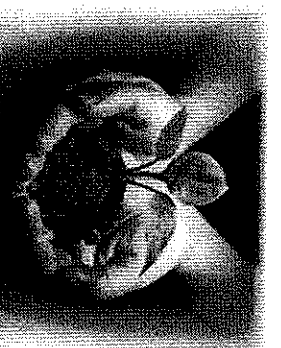
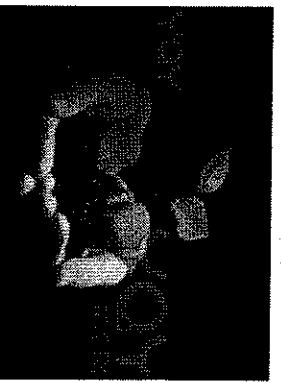
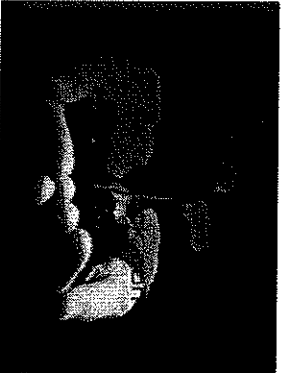
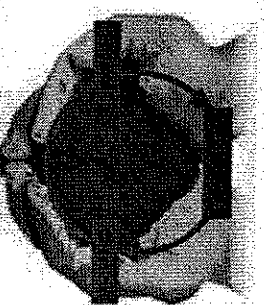
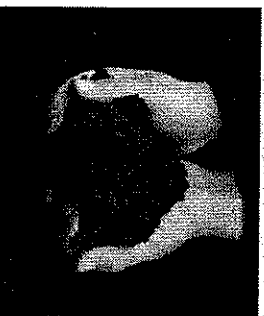
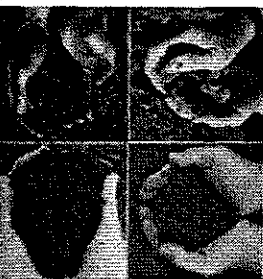
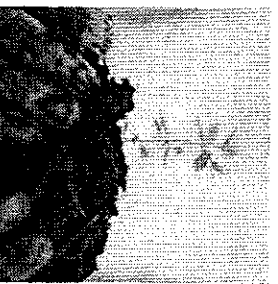
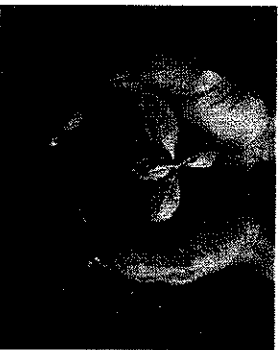
RE-ARBORIZAR
la naturaleza



RE-MATERIALIZAR
la economía

COMER con conciencia





CUIDAR el suelo

