Retour au menu

Quelques données pratiques de fertilisation du palmier à huile — Les engrais simples

En culture de palmier à huile, l'emploi **d'engrais simples** est considéré comme de nature à fournir aux arbres, d'une année à l'autre, les éléments nutritifs dont ils ont besoin dans les proportions qui leur conviennent le mieux. Cette courte note a pour objet de donner quelques informations pratiques sur leur utilisation.

Le tableau I (*) indique les teneurs en éléments nutritifs des engrais les plus communément employés, ainsi que les teneurs de certains anions.

Les constituants de certains engrais pouvant donner lieu à des réactions qui se soldent soit par des dégagements gazeux de matières fertilisantes, soit par une modification de l'état physique, on a résumé dans le tableau II la compatibilité des principaux d'entre eux.

D'une façon générale, il est toujours préférable de faire les mélanges le plus tard possible avant l'emploi. Pour limiter les erreurs, il est conseillé de ne pas mélanger les engrais ammoniacaux (l'urée fait exception) ni les superphosphates avec les engrais riches en chaux, tels que scories et phosphates naturels. Par contre, le mélange des engrais ammoniacaux et des superphosphates avec les engrais potassiques est toujours possible (ces derniers dans leur ensemble peuvent pratiquement se mélanger avec tous les engrais).

Bien des engrais n'ont aucun effet sur le pH du sol, mais il faut savoir que certains l'acidifient ou le neutralisent. A titre indicatif, on a résumé dans le tableau III quelques indices d'acidification ou de neutralisation.

Quelques produits peuvent absorber la vapeur d'eau de l'atmosphère. Les engrais en poudre sont souvent plus rapidement hygroscopiques que les engrais granulés. Le chlorure de magnésium est parmi les plus hygroscopiques (exposé à température ambiante en milieu tropical, il se liquéfie totalement en 3 heures). Par conséquent, les engrais utilisés en zones tropicales humides doivent faire l'objet de précautions au cours du stockage (sacs étanches, magasins secs) car ils risquent de perdre une partie de leurs éléments fertilisants, soit par dissolution (engrais hygroscopiques), soit par évaporation.

G. MARTIN.

Practical Advice on Fertilizing Oil Palms

Simple Fertilizers

In cultivating oil palms, simple fertilizers are considered to be the most apt to supply the nutrient needs of the trees from one year to another, in the proportions which suit them best. This brief discussion is intended to give a few practical tips on their utilization.

Table I (*) shows the nutrient element contents of the most commonly used commercial fertilizers, as well as their percentages of certain anions.

The constituents of some fertilizers may provoke reactions which cause the fertilizing elements to give off gases, or which bring about modifications of their physical states. Table II indicates the compatibility of the principal ones.

Generally speaking, it is always preferable to mix the fertilizers as late as possible before utilizing. To avoid errors, it is advised not to mix the ammonia fertilizers (with the exception of urea) or superphosphates, with lime-rich fertilizers such as slag and natural phosphates. However, it is always possible to mix both ammonia fertilizers and superphosphates with potassium fertilizers, which can be mixed with virtually all fertilizers.

Many fertilizers have no effect on the pH of the soil, but some will acidify or neutralize it. Table III gives a general indication of a few acidifying or neutralizing values.

Some products are capable of absorbing water vapor from the atmosphere. Powdered fertilizers are usually more readily hygroscopic than pelleted ones. Magnesium chloride is among the most hygroscopic compounds ; exposed to humid tropical temperatures, it liquefies completely in three hours. Consequently, the fertilizers used in humid tropical zones must be carefully stored in waterproof sacks and in dry warehouses. Otherwise a part of their fertilizing elements may be lost, either through dissolving, in the case of hygroscopic fertilizers, or through evaporation.

G. MARTIN.

Algunos datos prácticos sobre la fertilización de la palma de aceite — Los abonos simples

En el cultivo de la palma de aceite, se considera que el uso de abonos simples puede facilitar a los árboles de un año a otro los nutrientes que necesitan en las proporciones que más les convienen. En esta breve nota se dan algunas informaciones prácticas sobre el uso de abonos simples.

El cuadro I (*) indica los contenidos de nutrientes de los abonos de uso más común, como también los contenidos en algunos aniones.

Por poder los componentes de algunos abonos producir reacciones que ocasionan bien sea desprendimientos gaseosos de materias fertilizantes, o una modificación del estado físico, en el cuadro II se resume la compatibilidad de los principales componentes.

Por lo general, siempre es preferible hacer las mezclas lo más tarde posible antes de usar los productos. A fin de limitar los errores, no es de aconsejar la mezcla de abonos amoniacales (con excepción de la urea), y tampoco la de superfosfatos, con abonos ricos en cal como escorias y fosfatos naturales. En cambio siempre es posible la mezcla de abonos amoniacales y de superfosfatos con abonos potásicos (el conjunto de éstos casi se puede mezclar con todos los abonos).

Muchos abonos quedan sin efecto en el Ph del suelo, pero es de saber que algunos lo acidifican o lo neutralizan. Como indicación, en el cuadro III se resumió algunos índices de acidificación o neutralización.

Algunos productos pueden absorber el vapor de agua de la atmósfera. Muchas veces los abonos en polvo son más rápidamente higroscópicos que los abonos granulados. El cloruro de magnesio es de los más higroscópicos (en las áreas tropicales y exponiéndose a la temperatura ambiente, se liquida totalmente dentro de 3 horas). O sea que hay que tomar precauciones de almacenamiento para los abonos utilizados en las áreas tropicales húmedas (bolsas estancas, almecenes secos) porque corren el riesgo de perder parte de sus elementos fertilizantes, bien sea por disolución (abonos higroscópicos), o por evaporación.

G. MARTIN.

(*) Les tableaux I, II et III se trouvent aux pages suivantes (*Tables I, II and III are overleaf* — En las páginas siguientes se dan los cuadros I, II y III).

The second series (Table V) was only taken on plantable plants, on all the plants in the Temik treatments and on half of them in the two controls.

The difference between the shaded and unshaded treatments is still considerable. However, the plants in the control shaded for 4 months have caught up a little, not in height, as the plants were spindly, but in the number of leaves and in girth. The treated plants developed a little more slowly than the unshaded, untreated control between the two sets of measurements.

The same measurements were taken on the plants treated with carbofuran and phorate. With the latter product at the double rate, there was a depressive effect on plant development, although they were better grown than in the shaded control.

3. — Observations on the Entomofauna of the Plants.

Almost daily observations were made over the whole of the trials. The number of individuals per genus or per family were noted. No qualitative differences were found between the unshaded plots, whether treated or not. To be sure, the number of individuals was much smaller in the treated plots, and the insects there died rapidly, but the composition of the fauna was comparable in both cases.

Contrary to what might have been expected, the number of insects on the shaded plants is far from negligible and compares with that on the treated plants. However, there is one important difference in the composition of the fauna : members of the *Delphacidae* family are little represented under shade.

IV. — EFFICACITY OF THE TREATMENT ON OTHER PESTS OF YOUNG OIL PALMS

Nursery plants are very often attacked by various species of *Lepidoptera* belonging to the *Pyralidae* and *Noctuidae* families. In the course of these trials the incidence of such pests in the different treatments was also studied. Whilst in the controla 7-10 p. 100 of the plants were attacked, Temik at the rate of 4 g and Furadan at 2 g protected them completely, whether given monthly or twice monthly. At the single rates, protection is still excellent. On the other hand, Phorate and insecticides in spray form did not give sufficient protection.

Heavy attacks of the *Temnoschoita* weevil are fairly rare, but they are always serious and very often kill the young plant. During the Blast trials a sudden and quite virulent attack affecting 6 p. 100 of the plants was observed in a shaded bed separating two treatments. This bed was sandwiched between two others treated with Temik in which not a single plant was attacked.

Finally, on the occasion of another trial, the plants in the control suffered heavy attacks of the cricket *Zonocerus*, whereas the beds treated with Temik were only very slightly defoliated.

V. — CONCLUSION

It has thus been possible to verify the hypothesis of a direct or indirect responsability of insects in Blast disease.

Whilst the etiology of the disease is still in the realm of hypothesis, it is now possible to guard against it by systemic insecticide treatments in pellet form. By comparison with standard shading these treatments have numerous advantages :

— they can cost anyting up to half as much, according to insecticide supply conditions ;

— shading checks the development of the plants quite considerably ; after 5 1/2 months in the nursery, 4 of them under shades, shaded plants have 34 p. 100 less girth and 21 p. 10 fewer leaves than unshaded and treated ones ;

— with the standard protection, and to economize on shading, the plants are placed at close spacing for the first 4 or 5 months in the nursery. After the Blast period, they have to be spaced out so that they can grow properly. With the chemical treatment this operation becomes unnecessary, as the plants are out at wide spacing as soon as they are pricked out in the nursery ;

— it is rare for a nursery to excape an attack by pests : different species of caterpillars, crickets, weevils. These attacks require treatment, which increases the cost of a shaded nursery still further. It has been seen that Temik treatments throughout the Blast period afford good protection against these predators.

Nevertheless, there is one requirement for this new method of control is that there must be an unfailing irrigation system. In effect, the ground must be thoroughly moistened so that the insecticide pellets break down and the plant absorbs the active ingredient. Moreover, evapotranspiration by the plants growing in bright sunlight is much greater than when they are shaded, and it is necessary to give about twice as much water.

It is now possible, therefore, to protect against by a simple insecticide treatment. Temik pellets containing 10 p. 100 aldicarbe give excellent protection at the rate of 4 g per plant and per month. Further experimentation should enable us to reduce at least the frequency of the treatments, if not the rates.

TABLEAU I

Teneurs en éléments nutritifs de quelques engrais commerciaux

(*Nutrient element content of several commercial fertilizers* — Contenidos de nutrientes en algunos abonos comerciales)

	Teneurs en éléments principaux (*Content of principal elements* — Contenidos de elementos principales) **p. 100**	**Autres teneurs** (*Other elements* — Demás contenidos) **p. 100**
ENGRAIS AZOTÉS (*Nitrogen fertilizers* — Abonos nitrogenados)	**N**	
Sulfate d'ammoniaque (*Ammonium sulphate* — Sulfato de amoníaco)	20-21	23-24 (**soufre** — *sulphur* — azufre)
Urée (*Urea*)	45-48	
Chlorure d'ammonium (*Ammonium chloride* — Cloruro de amonio)	20-25	51-63 (**chlore** — *chlorine* — cloro)
Phosphate d'ammonium (*Ammonium phosphate* — Fosfato de amonio) :		
• **monoammonique** (*monoammoniac* — monoamónico)	10-12	48 (P_2O_5)
• **diammonique** (*diammoniac* — diamónico)	20-21	53 (P_2O_5)
Nitrate d'ammonium (*Ammonium nitrate* — Nitrato de amonio)	30-35	
Ammonitrate (Amonitrato)	21-34	
ENGRAIS PHOSPHATÉS (*Phosphate fertilizers* — Abonos fosfatados)	P_2O_5	
Superphosphate simple (*Single* — Superfosfato simple)	14-20 (**soluble**)	25-30 (**CaO**) 12 % **S**
Superphosphate triple (Superfosfato triple)	40-50 (**soluble**)	17-20 (**CaO**)
Phosphate bicalcique (*Bicalcic phosphate* — Fosfato bicálcico)	38-42 (**soluble citrate-**	30-33 (**CaO**)
Scories (*Slag* — Escorias)	14-22 soluble citrato)	45-47 (**CaO**)
Phosphates naturels (*Natural phosphates* — Fosfatos naturales)	26-35 (**insoluble**-insolubles)	45-55 (**CaO**)
ENGRAIS POTASSIQUES (*Potassium fertilizers* — Abonos potásicos)	K_2O	
Chlorure de potasse (*Potassium chloride* — Cloruro potásico)	58-60	45 (**chlore** — *chlorine* — cloro)
Sulfate de potasse (*Potassium sulphate* — Sulfato potásico)	48-52	18 (**soufre** — *sulphur* — azufre)
Patentkali	26-30	6-9 (**MgO**) 18-20 (**soufre** — *sulphur* — azufre)
Sulpomag	22-23	18 (**MgO**) 22 (**soufre** — *sulphur* — azufre)
ENGRAIS MAGNÉSIENS (*Magnesium fertilizers* — Abonos magnesianos)	**MgO**	
Sulfate de magnésie (*Magnesium sulphate* — Sulfato de magnesia)	16 (45 %)	**de pureté** 10-12 (**soufre** — *sulphur* — azufre)
Sulfate de magnésie — kieserite	27 (80 %)	(*pure* — 22 (**soufre** — *sulphur* — azufre)
Sulfate de magnésie — kieserite enrichie (*enriched* — enriquecida)	33 (98 %)	puro al...) 23 (**soufre** — *sulphur* — azufre)
Chlorure de magnésie (*Magnesium chloride* — Cloruro de magnesia)	20	35 (**chlore** — *chlorine* — cloro)
OLIGO-ÉLÉMENTS (*Trace elements* — Oligoelementos)	B_2O_3	
Borax	36 11,3	**en B élément** (*Boron* — B elemental)
Borax	46 14,3	
Borax	65 20,2	
DIVERS (*Miscellaneous* — Varios)		
Chlorure de sodium (*Sodium chloride* — Cloruro de sodio) **90 p. 100 de pureté** (*pure* — pureza)	48 (Na_2O)	54 (**chlore** — *chlorine* — cloro)

TABLEAU II. — **Compatibilité de quelques engrais**

(*Compatibility of several fertilizers* — Compatibilidad de algunos abonos)

	ENGRAIS AZOTÉS (*Nitrogen fertilizers* — Abonos nitrogenados)						**ENGRAIS PHOSPHATÉS** (*Phosphate fertilizers* — Abonos fosfatados)					**ENGRAIS POTASSIQUES** (*Potassium fertilizers* — Abonos potásicos)		**ENGRAIS MAGNÉSIENS** (*Magnesium fertilizers* — Abonos magnesianos)	
	Sulfate de N (*Ammonium sulphate* — Sulfato de N)	**Chlorure de N** (*Ammonium chloride* — Cloruro de N)	**Phosphate de N** (*Ammonium phosphate* — Fosfato de N)	**Urée** (*Urea*)	**Nitrate de NH_4** (*Ammonium nitrate* — Nitrato de NH_4)	**Ammonitrate** (Amonitrato)	**Superphosphate simple** (*Single* — Superfosfato simple)	**Superphosphate triple** (Superfosfato triple)	**Phosphate bicalcique** (*Bicalcic phosphate* — Fosfato bicálcico)	**Scories** (*Slag* — Escorias)	**Phosphates naturels** (*Natural phosphates* — Fosfatos naturales)	**Chlorure de K** (*Potassium chloride* — Cloruro de K)	**Sulfate de K** (*Potassium sulphate* — Sulfato de K)	**Sulfate double K-Mg** (*Dble potassium-magnesium sulphate* — Sulfato doble de K y Mg)	**Sulfate de Mg** (*Magnesium sulphate* — Sulfato de Mg)
ENGRAIS AZOTÉS (*Nitrogen fertilizers* — Abonos nitrogenados)															
Sulfate d'ammoniaque (*Ammonium sulphate* — Sulfato de amoniáco)															
Chlorure d'ammonium (*Ammonium chloride* — Cloruro de amonio)															
Phosphate d'ammonium (*Ammonium phosphate* — Fosfato de amonio)															
Urée (*Urea*)															
Nitrate d'ammonium (*Ammonium nitrate* — Nitrato de amonio)															
Ammonitrate (Amonitrato)															
ENGRAIS PHOSPHATÉS (*Phosphate fertilizers* — Abonos fosfatados)															
Superphosphate simple (*Single* — Superfosfato simple)															
Superphosphate triple (Superfosfato triple)															
Phosphate bicalcique (*Bicalcic phosphate* — Fosfato bicálcico)															
Scories (*Slag* — Escorias)															
Phosphates naturels (*Natural phosphate* — Fosfatos naturales)															
ENGRAIS POTASSIQUES (*Potassium fertilizers* — Abonos potasicos)															
Chlorure de potasse (*Potassium chloride* — Cloruro de potasa)															
Sulfate de potasse (*Potassium sulphate* — Sulfato de potasa)															
ENGRAIS MAGNÉSIENS (*Magnesium fertilizers* — Abonos magnesianos)															
Sulfate double de potasse magnésie (*Double potassium-magnesium sulphate* — Sulfato doble de potasa y magnesia)															
Sulfate de Mg (*Magnesium sulphate* — Sulfato de Mg)															

: **Ne jamais mélanger** (*Not to be mixed* — Nunca hay que mezclarlos).

: **Mélanger peu de temps avant l'emploi** (*May be mixed just before use* — Mezclarlos poco tiempo antes de usarlos).

: **Mélange toujours possible** (*May always be mixed* — Siempre se puede mezclarlos).

TABLEAU III

Acidification ou neutralisation en kg de CO^3Ca/100 kg de quelques produits utilisés

(*Acidification or neutralization in kg-CO_3Ca/100 kg of product* — Acidificación o neutralización en kg-CO_3Ca/100 kg de algunos productos utilizados)

	Acidité équivalente (*Equivalent of acidity* — Acidez equivalente)	**Basicité équivalente** (*Equivalent of alkalinity* — Basicidad equivalente)
ENGRAIS AZOTÉS (*Nitrogen fertilizers* — Abonos nitrogenados)		
• **Sulfate d'ammoniaque** (*Ammonium sulphate* — Sulfato de amoníaco)	110	
• **Phosphate monoammonique** (*Monoammonium phosphate* — Fosfato monoamónico)	59	
• **Phosphate diammonique** (*Diammonium phosphate* — Fosfato diamónico)	88	
• **Urée** (*Urea*)	75	
• **Nitrate d'ammonium** (*Ammonium nitrate* — Nitrato de amonio)	60	
ENGRAIS PHOSPHATÉS (*Phosphate fertilizers* — Abonos fosfatados)		
• **Superphosphates** (Superfosfatos)	0	0
• **Phosphate tricalcique** (*Tricalcic phosphate* — Fosfato tricálcico) — **37 p. 100**		25
• **Phosphate naturel** (*Natural phosphate* — Fosfato natural)		**alcalin** (*alkaline* — alcalino)
ENGRAIS POTASSIQUES (*Potassium fertilizers* — Abonos potásicos)	0	0
• **Chlorure et sulfate** (*Chloride & sulfate* — Cloruro y sulfato)		

BIBLIOGRAPHIE

— Ministère de la coopération (1974). Mémento de l'agronome. Techniques rurales en Afrique.

— GROS A. (1969). — Les engrais. Guide pratique de la fertilisation. La Maison rustique, Paris.

— OLLAGNIER M., OCHS R., MARTIN G. (1970). — La fumure du palmier à huile dans le Monde. *Fertilité*, 36.