

CHICKENS FED WITH HEMP AND NETTLE SEEDS LAY MORE EGGS IN WINTER

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CANNABIS SATIVA - data from literature

Until now we have been able to individualize six Renaissance authors as guarantors of the fact that hemp seeds have a positive effect on the number of eggs laid by the hens. Four of them published their works in XVI century, two did it in XVII century. Here they are. In chronological order based on the date when their jobs were published.

- 1 - Antonio Brasavola (1500-1555) - *Examen omnium simplicium medicamentorum* (1536)
- 2 - Amatus Lusitanus (1511-1568) - *In Dioscoridis Anazarbei de medica materia libros quique enarrationes eruditissimae* (1553)
- 3 - Pierandrea Mattioli (1500-1577) - *Commentarii in libros sex Pedacii Dioscoridis Anazarbei de medica materia* (1554)
- 4 - Castore Durante (1529-1590) - *Herbario nuovo* (1585)
- 5 - Olivier de Serres (1539-1619) *Le théâtre d'agriculture et mesnage des champs* (1600)
- 6 - Vincenzo Tanara (c. 1600 - c.1665/1669) - *L'economia del cittadino in villa* (1644)

Ulisse Aldrovandi (1522-1605) at page 231 of *Ornithologiae tomus alter* (1600) quotes Mattioli and Brasavola, Conrad Gessner (1516-1565) in *Historia animalium III* (1555) quotes Brasavola at page 426 and Amatus Lusitanus at page 432, omitting Mattioli. This omission is due to pure chronological reasons, since the *Historia animalium III* of Gessner was published as soon as one year after the *Commentarii in libros sex Pedacii Dioscoridis* of Mattioli.



Pl.293. Chanvre cultivé. Cannabis sativa L.

This positive effect on the reproductive apparatus of the hens is in opposition to what is affirmed by Dioscorides (I c. AD), who was claiming that the seed of the domestic hemp "mangiato copiosamente estingue la virtù del generare - copiously eaten extinguishes the power of begetting", as it sounds in the 1585 Italian translation of Mattioli's work and perhaps corresponding to that of 1557 when it was published the first time. But Dioscorides was only referring to the human beings, not to the animals.

Among the authors whose text we now will see, the only one is Mattioli to affirm - and only in the 1554 Latin version we have available - that such an effect was by him observed by direct experience. In the 1585 Italian version such important affirmation is lacking.

Dioscorides III,165 - καρπὸν στρογγύλον, ὃ σθιμένοσ πλεονσβ ννυσι τὸν γόνον - semen rotundum, quod largius sumtum genituram exstinguit (*Pedanii Dioscoridis Anazarbei de materia medica libri quinque* - Curtius Sprengel, Lipsiae 1829) - the seed is round, and eaten rather in abundance destroys the power of begetting.

Dioscorides in Mattioli III,148 (1554) - semine rotundo, quod largiore cibo genituram exstinguit. / the seed is round, and eaten rather in abundance destroys the power of begetting - in Mattioli III,159 (1585) I frutti produce vacui, & lunghi: e 'l seme tondo. Il quale mangiato copiosamente estingue la virtù del generare / It produces hollow and long fruits, and a round seed. Which eaten in abundance destroys the power of begetting.

Antonio Brasavola - De cannabi finem fecissem, quoniam opus non est res tam notas diu pingere, nisi in mentem venisset, gallinas hoc semine pastas per totam hyemem ova parere: quod et urticae semen facere certum est. - I would have put an end to the speech about the hemp, since it is not necessary to linger in giving prominence to so known things, if it had not come me in mind that the hens fed with this seed lay eggs for the whole winter: and it is ascertained that the same thing is doing the seed of the nettle.

Amatus Lusitanus - Huius porro semen comestum, hominibus genituram exstinguit, gallinis vero auget, videmus enim gallinas rigida hieme hoc semina pastas, ova parere, id quod aliis semen non comedentibus, non evenit. - Besides, by eating its seed, in the human beings it destroys the power of begetting, on the contrary in the hens it increases it, in fact we see that the hens fed with this seed during the rigid winter lay eggs, a thing which doesn't happen in the others not eating this seed.

Pierandrea Mattioli III,148 (1554) - Caeterum sativae semen in cibus sumptum plane contrarium efficit in gallinis, et in nobis: siquidem largius commanducatum nobis genituram exstinguit: gallinas vero



oviferaciores reddit. Experientia enim compertum habeo, gallinas, quae hyeme, quo tempore aliorum saevitia raro ova parere solent, Cannabis semine vescuntur, numerosiore ovorum partu gaudere: id quod frequenti cantu suo declarant. - On the contrary the seed of the cultivated hemp taken in the food makes sure that in the hens it happens utterly the contrary of what is happening in us: since eaten rather in abundance it destroys in us the power of begetting: on the contrary it makes the hens to lay a greater number of eggs. In fact according to my experience I have ascertained that the hens that in winter (season in which they are usual to rarely lay eggs because of the intensity of the cold) are feeding on the hemp seed, they enjoy laying a greater number of eggs: a thing they are notifying by their frequent cackling.

Pierandrea Mattioli III,159 (1585) - Il seme del domestico opera nelle galline il contrario di quello che ne scrive Dioscoride. Imperoche ne gli huomini spegne, & ruina la virtù del generare, & in quelle aumenta il generare delle uova. Percioche quelle galline, che mangiano il verno il seme del Canape, fanno uova abbondantissimamente, ancora che l'altre pochi ne facciano ne i gran freddi il verno. - The seed of the domestic hemp does in the hens the contrary of what Dioscorides writes. Since in humans it stifles and destroys the power of begetting, and in the former it increases the eggs laying. Then those hens eating in winter the seed of hemp are laying eggs very abundantly, while the others lay a few eggs in the strong winter colds.

Castore Durante - Il seme mangiato dalle galline, moltiplica l'ova. - The seed eaten by the hens multiplies the eggs.



Left: Dry female flowers of the hemp, with seeds. Photo: Dirk de Jong

Olivier de Serres V DE LA CONDUITE DU POULAILLER - LA PASTURE DE LA POULAILLE Du son bouilli et chaudement, leur donne-on pour l'espargne: et tant qu'on peut des miettes de la table, pour les provoquer à pondre, qu'à cela les conserve-on curieusement, comme l'on fait l'avoine pure, leur estant fort propre, le mil sarrazin aussi: mais par dessus toute autre viande, la graine de chanvre est da grande efficace a faire over. - THE FEEDING OF THE POULTRY In order to economize give them boiled and heated bran: and, to drive them to lay eggs, what is possible of crumbs of the table preserved with care to such purpose, as it is done for pure oats, being for them very proper, also the buckwheat: but, above all other foods, the seed of hemp is of great effectiveness in making to lay eggs. (transcribed and translated by Fernando Civardi, 2007)

FAIRE OVER EN HYVER L'orge bouilli et baille chaud, y est bon; l'avoine crue aussi: la graine de l'herbe appelee *esparcet*: les mietes venans directement de la table: toutes sortes de criblures des bleds: mais par sur toutes ces choses, la graine de chenevy est de

grande efficace à eschauffer les poules, non pour les en nourrir entierement (car la viande seroit trop chere) ains pour leur esveiller l'appetit, les en paissans par fois. - TO MAKE THEM TO LAY EGGS IN WINTER The boiled barley and served warm is all right; also the raw oats: the seeds of the grass called sainfoin - *Onobrychis viciaefolia*: the crumbs directly coming from the table: every sort of winnowing of the wheat: but above all these things the hemp seeds are very effective in heating the hens, not to feed them completely (because the food would be too much expensive) but to wake up their appetite, giving them sometimes these seeds to be eaten. (Transcribed and translated by Fernando Civardi, 2007)

Vincenzo Tanara – Ne è cosa, che faccia far più ova a' Polli, ò Piccioni di questo seme, ancorche {d'Inverno} <d'Inverno>, se bene rende l'Homme sterile. – Neither there is a thing making the fowls and the pigeons to lay more eggs than this seed, even though in winter, nevertheless it makes the humans sterile.

If we believe in these affirmations it is time to put them into practice. If we don't believe in them there is the starting point for verifying the reliability of our Renaissance naturalists. We are not of the Renaissance: for the verification we need reliable practical checks, but they must be corroborated by scientific data. We hope that what we have been able to scrape together on the latter subject - and that soon we will see - is reliable and therefore exploitable in a fancy aviculture as ours is.



CANNABIS SATIVA – scientific data

The fruit of the *Cannabis sativa*, oval, flat, 3-5 mms long and 3-4 mms wide, is composed by a deciduous bract winding the seed. The seed is composed by a pericarp 0.2 mm thin easily opening itself into two valves leaving bare the true seed. One kg of seeds (we suppose dried, but Villavecchia & Eigenmann don't specify) contains around 40,000 of them. The seed, inclusive the pericarp, has the following percentage composition, which - nevertheless being incomplete - is interesting to us from a food and caloric point of view:

seed of Cannabis sativa

| | |
|---------------|--------|
| water | 9% |
| proteins | 18-19% |
| lipids | 32-36% |
| carbohydrates | 18% |
| cellulose | 26-27% |
| ashes | 5-5,5% |

A whole grain of yellow maize, omitting calcium, phosphorus, iron and vitamins, has the following percentage composition:

grain of yellow maize

| | |
|---------------|-------|
| water | 13,5% |
| proteins | 10% |
| lipids | 5% |
| carbohydrates | 68% |
| rough fibre | 2% |
| ashes | 1,5% |

Source: Vittorio Villavecchia & Gino Eigenmann
NUOVO DIZIONARIO DI MERCEOLOGIA E CHIMICA APPLICATA
Volume IV - Hoepli 1974



Above: Dried hemp plants with seeds. Photo: Dirk de Jong.

Then it is evident that in proteins and fats the hemp seed is winner in comparison with the seed of maize. And just the proteins (19% in hemp seed against 10% in maize grain) are not recommended in humans during the warm season since their metabolism makes to increase the body temperature thanks to the so-called specific dynamic action (SDA), which on the contrary is useful when it is cold, being that this action entails a 30% increment of the basal metabolism. If it was not enough, the high content in edestine (from the Greek $\delta\epsilon\sigma\tau$ ς *edestós*, eatable), along with the other globular protein, the albumin, does so that such proteins contains all the nine essential amino acids in a protein combination which is unique in the whole vegetable kingdom; so supplying our body with the base on which to create other proteins, as the immunoglobulines.

Obviously in order to produce heat they are extremely useful also the fats (32-36% against 5%), being endowed with a prominent energetic role: 9.3 Kcal/g against the 4.4 Kcal/g of the proteins and the 4.1 Kcal/g of the glucides (average values updated to 2003 - Dr Pier Antonio Marongiu).

The body temperature of the chicken is ranging between 39.6 and 43.6°C, then at night, nevertheless its physiological drop between 21 and 4 hours and which doesn't go down beyond the inferior limit, the basal metabolism of the chicken requires more

energy in comparison with human beings, who moreover don't sleep in a hen-pen usually not heated and whose average rectal temperature is 37.2°C, but doesn't have to overcome 37.5°C otherwise they have fever.

Turtle doves and pigeons, as well other birds, can run into a physiological nocturnal hypothermia (never under 30°C) and this allows to save up energy in case of reduced availability of food, or to facilitate in some cases the accumulation of fats in forecast of a migration. But this doesn't happen in the chicken. If at an ambient temperature of 23.3°C a chicken has a comb with 35°C and wattles with 33°C, that one of its vital organs has to keep among 39.6 and 43.6°C also when the frost is strong. And there the lipids prove very useful in keeping the organism of the chicken to such a high temperature if compared to the human one.

Not to forget in fact that in the chickens homozygous for the gene of the curled plumage (F/F - F = frizzling), who are practically naked, the thermal isolation is certainly scanty. To maintain constant the body temperature these subjects cannot do anything else than to produce more heat and to more permeate both the skin and the organs engaged in the maintenance of the homeothermy, and this requires an overwork for the heart, which therefore hypertrophies. These males reach more slowly the sexual maturity and the females lay eggs more lately and in lesser quantity.



Left: Hemp seeds, as they are offered for sale in pet shops as (bird)feed.

Photo: Aviculture Europe.

In *Summa Gallicana* of Elio Corti (vol. III - VIII.1.3.b. OVULAZIONE SPONTANEA - Spontaneous ovulation) we find an affirmation of which the author has not annotated the source, but certainly he didn't invent it. After having analysed the prehypophysial activity able in regulate the egg laying without the intervention of external stimuli and that certain external factors, particularly the light, are able to increase in marked way

the hypophysial activity and to anticipate the laying in prepubescent females, or to make the adult females to lay outside the normal sexual season, he writes this way: "The egg laying can be stimulated with the feeding: animal and vegetable proteins, some salts, cod-liver oil, to don't forget the minced food which aids the digestion." (La deposizione può essere stimolata con l'alimentazione: proteine animali e vegetali, alcuni sali, olio di fegato di merluzzo, da non scordare il cibo sminuzzato che favorisce la digestione.)

From the liver of the codfish - *Gadus morhua* - is extracted an oil rich in liposoluble vitamins A. and D (liposoluble as E and K), once especially used with a human medicinal purpose also for its contents of iodine in organic combination. But this oil, as that of other fishes, is renowned too for the contents in lipids of omega 3 group (polyunsaturated fatty acids) which, not being synthesized by the human body, must be introduced with the feeding, therefore said essential fatty acids. In the omega 3 lipids of the oil from codfish liver are present the eicosapentaenoic (EPA), docosahexaenoic (DHA) and alpha linolenic acids, all involved also in the energetic

processes. The following data are those of interest for us under a caloric point of view and are supplied by Agricultural Office of USA. The values are referring to 1 g of oil:

1 g of cod-liver oil

| | |
|------------|--------|
| Kcal | 9,02 |
| omega 3 | 0,2 g |
| vitamine A | 100 UI |
| vitamine D | 10 UI |

It is very likely that the affirmation to give cod-liver oil to hens in order to increase their eggs production is basing itself upon its content in lipids. It would be difficult to prove that also the liposoluble vitamins in it contained are important under such point of view.

To remain in human field, according to the medical nutritionist Udo Erasmus, author of the best seller *FATS THAT HEAL, FATS THAT KILL* - a true international authority in the field of the fats and the alimentary oils - the vegetable oil of hemp is the more balanced, thanks to the elevated content and the optimal ratio of the two essential fatty acids omega 3 and omega 6. "Any vegetable food can be compared to the hemp seeds as far as the nourishing value is concerning. Half a kilo of hemp seeds supplies all the proteins, the essential fatty acids and the fibre necessary to the human life for two weeks." (Dr Udo Erasmus in *FATS THAT HEAL, FATS THAT KILL* - Alive Books, 1993) Of great importance also the content of carbohydrates conferring a high energetic value (516 Kcals in 100 g). Good is also the percentage of raw fibre and mineral salts, among which prevail the iron and the phosphorus. Significant also the endowment in vitamins Á., E, PP, C and of the group B, with the exclusion of B12.

In conclusion: the hemp seed has a fatty fraction (32-36%) 7 times greater in comparison to that of maize (5%), it is of good quality and of balanced composition, constituted for 70-75% by a mixture of polyunsaturated fatty acids (fatty acids with long chain -18 or more carbon's atoms- with two or more double bonds) like the linoleic acid (parent of the series omega 6), the linolenic acid (parent of the series omega 3) and the gammalinolenic acid (irreplaceable, the latter, in the process of synthesis of the prostaglandins, substances regulating the activity of numerous glands, of the muscles and of the neuroreceptors).

Above and left:



A pullet and a cockerel eating hemp seed.

Photo: Dirk de Jong.

We hope that the same things expressed for the human feeding are applicable also to the chicken.

The fact is that the following ones are the conclusions of a research published in



Canada in 2002 entitled EFFECT OF FEEDING HEMP SEED MEAL TO LAYING HENS: "Hemp seed meal Khan be fed to laying hens with no adverse effects. It is to valuable source of protein, energy, and long chain fatty acids. Providing hemp seed meal in the diets of laying hens alters the fatty acid composition of the eggs."

Then the hemp seed is not only able to improve the composition of the egg with regard to omega 3 fatty acids, a datum which only us of the XXI century are able to understand and to appreciate. In fact, if we rely on the Renaissance authors we will get excellent eggs under the lipidic profile as well as in greater number, especially in one phase in which the ovary of the hens goes into forced vacation: during the rigours of winter.

URTICA DIOICA - data from literature

For simplicity we make reference to *Urtica dioica*, also called common or stinging nettle, whose height often overcomes the meter, sometimes reaching 2 m, and whose masculine and female flowers are carried by separate plants, just masculine and feminine, as it happens for laurel and kiwi. The *Urtica urens*, as well said annual / dwarf / small nettle, also has a wide spread, it has a smaller height oscillating between 20 and 60 cm, it goes high up in the mountains and is monoecious. Both are used for the same pharmacological and textile purposes.

Left: Stinging nettles. Photo Dirk de Jong.

Dioscorides, contrarily to what he reports when speaking of the hemp seeds, is categorical in affirming that the seeds of nettle are aphrodisiac. He is expressing himself this way in the Italian translation of Mattioli's *Commentarii in libros sex Pedacii Dioscoridis* (1985): The seed drunk with raisin wine moves to lust. - Il seme bevuto con vino passo, muove a lussuria. IV,92 Τ δ σπ ρμα η συνουσ αν παρορμ , πιν μενον μετ γλυκ ος. - Semen ex passo potum venerem stimulat. (*Pedanii Dioscoridis Anazarbei de materia medica libri quinque* - Curtius Sprengel, Lipsiae 1829)

Aldrovandi, always at page 231 of *Ornithologiae tomus alter* (1600), as soon as after having quoted Brasavola amplifies the subject about the seeds of nettle, but he doesn't report its source:

Sunt qui furfuribus coctis tanta There are some people mixing ripe nettle
crassitie, quanta sumi a Gallina seeds with bran cooked to as great a
poterunt matura Urticae semina thickness as the hen can consume, and they
immiscent, et sic per hyemem assure that thus they grow warmer during
incalescere, et foecundiores fieri the winter and more fertile. Some also dry
promittunt: aliqui etiam urticas out nettles, crumble them with their hands,
exiccant, manibus atterunt, in futuram save them for the coming winter and cook
hyemem servant, et in aqua pro them very well in water for feeding them, of
illarum cibo decoquant ob eandem course for the same purpose.
scilicet causam.

Soon we will have the confirmation that as usual the source of Aldrovandi is represented by Gessner who is duly eclipsed *thanks* to the Inquisition, and therefore we can think that such employment of the seeds of nettle was a common Swiss practice, considering that Gessner doesn't quote any source of it.

As confirmation of the download perpetrated by Aldrovandi, at page 426 of *Historia animalium III* (1555) of Gessner we find the quotation supplied by the Bolognese crafty old bugger: except an inversion of the phrases, it sounds exactly as that of his great Zürich colleague.

Urticae siccantur, atteruntur manibus, Nettles are dried out, crumbled with hands,
servantur in hyemem, et in aqua saved within view of winter, and they cook
fervefiunt pro gallinarum cibo per them very well in water as wintry food for
hyemem, ut inde foecundiores hens, so that they are more fertile. Some
reddantur. Sunt qui furfuribus coctis people are mixing ripe nettle seed with
tanta crassitie, quanta sumi a gallinis bran cooked to such a thickness as the
poterunt, matura urticae semina hens can take, and they assure that thus
immiscent: et sic eas per hyemem they grow warmer during the winter and
incalescere et foecundiores fieri aiunt. more fertile.

It is only Brasavola who, speaking of the hemp, is affirming that the same effect of the hemp seeds on the production of winter eggs can also be gotten with the seeds of nettle. But when discoursing about the seeds of nettle, both Brasavola and Mattioli as well as Amatus Lusitanus don't quote the positive effect of such seeds on hens' ovulation. But when speaking of the nettle we find both Durante and Tanara quoting its positive effects - of the seeds or of the whole dried plant - on the production of eggs.

Castore Durante. - *Herbario nuovo* (1585) - Fanno dell'uova tutto l'inverno le Galline daendosi loro ne i loro cibi dell'ortica secca. - The hens lay eggs the whole winter when giving them in their foods the seeds of dried nettle.

Vincenzo Tanara. - *L'economia del cittadino in villa* (1644) - Raccogliesi il seme dell'Ortica per dare alle Galline, con profitto di molt'ova. - The seed of the nettle is collected to be given to the hens with the profit of many eggs.



**Right: Stinging nettles *Urtica urens*.
Photo: Aviculture Europe.**



URTICA DIOICA – scientific data

Despite the other authors keep silent regarding the positive effect of nettle seeds on the ovulation of the hen, we can suppose that the merit must be attributed to the lipids contained in high percentage in both the seeds of nettle and hemp. We don't have certain numerical data, but the seed of *Urtica dioica* is extolled for its high content of linoleic acid, while its leaves contain the linolenic acid as predominant fat. From the seeds of nettle, rich of unsaturated fat acids, by cold pressing can be drawn a very good oil with stimulating activity that can find indication as adjuvant in case of asthenia.

Left: Nettle seeds. Photo: Dirk de Jong.

The data supplied by www.rione.it are the following and from biochemical as well as metabolic point of view they confirm the positive effect on the production of heat both from proteins and fats contained in the seeds of the common nettle.

seeds of *Urtica dioica*

| | |
|---------------|-----|
| proteins | 18% |
| lipids | 10% |
| carbohydrates | 0% |

Then, when it is cold, we have to try to heat our chickens also with the seeds of nettle or with mashes of dried leaves, with the hope to see to increase their eggs production.

See also <http://www.summagallicana.it/lessico/c/canapa.htm>



Above: Dirk de Jong's chickens eating hemp seed. Photo: Dirk de Jong.