CLAIMS

What is claimed is:

1. A canola germplasm conferring on a canola seed at least 45% crude protein content and not more than 18% acid detergent fiber as determined by reference chemistry on an oil-free dry matter basis, wherein the seed further comprises at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

2. The canola seed of claim 1, further comprising at least 45% crude protein content on an oil-free, dry matter basis.

3. The canola seed of claim 1, further comprising not more than 18% acid detergent fiber content on an oil-free, dry matter basis.

4. The canola seed of claim 1, further comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

5. A canola plant comprising the canola germplasm of claim 1.

6. The canola plant of claim 5, further comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

7. The canola plant of claim 5, further comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

8. The canola plant of claim 5, wherein the canola plant produces a seed comprising at least 43% oil.

9. The canola plant of claim 5, wherein the canola plant produces a seed comprising reduced antinutritional components, as compared to a normal canola seed of the same species.

10. A field comprising the canola plants of claim 5, wherein the canola plants yield an average of at least 1700 kilograms of seed per hectare.

11. The canola plant of claim 5, wherein the canola plant is selected from the group consisting of CL065620 (ATCC No. PTA-11697), CL044864 (ATCC No. PTA-11696), CL121460H (ATCC No. PTA-11698), CL166102H (ATCC No. PTA-12570), and CL121466H (ATCC No. PTA-11699).

12. The canola plant of claim 5, wherein the plant is CL044864 (ATCC No. PTA-11696).

13. The canola plant of claim 5, wherein the plant is produced without genetic engineering or mutagenesis.

14. The canola plant of claim 5, wherein the canola plant produces a seed comprising a phosphorous content of more than 1.3% on an oil-free, dry matter basis.

15. A seed produced by the canola plant of claims 5 through 14.

16. A progeny plant grown from the seed of claim 15.

17. A seed produced by the canola plant of claim 5, wherein the seed is available under an ATCC deposit numbers selected from PTA11696, PTA11697, PTA11698, PTA11699 or (ATCC No. PTA-12570).

18. Canola meal produced from one or more of the seeds of claim 15.

19. The canola meal of claim 18, wherein the canola meal has a poultry mean true metabolizable energy of at least 2200 kcal/kg.

20. The canola meal of claim 18, wherein the canola meal has a swine mean net energy of at least 1800 kcal/kg

21. The canola meal of claim 18, wherein the canola meal has a favorable amino acid digestibility profile in swine.

22. The canola meal of claim 18, wherein the canola meal has a favorable amino acid digestibility profile in poultry.

23. The canola meal of claim 18, wherein said canola meal comprises an amino acid digestibility at least 90% of that of soybean meal (10% moisture content).

24. The canola meal of claim 18, wherein said canola meal comprises a digestible energy content or a metabolizable energy content at least 80% of that of soybean meal.

25. A canola seed which is genetically stable for producing meal comprising at least 45% crude protein content, and not more than 18% acid detergent fiber as determined by reference chemistry on an oil-free, dry mass basis, wherein the canola seed is produced from an elite canola cultivar, and wherein the canola seed is genetically stable for comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

26. The canola seed of claim 25, further comprising at least 45% crude protein content on an oil-free, dry matter basis.

27. The canola seed of claim 25, further comprising not more than 18% acid detergent fiber content.

28. The canola seed of claim 26, wherein the canola seed is genetically stable for comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

29. Canola meal produced from the seeds of any one of claims 25 through 28.

30. A method of introducing into a canola cultivar at least one desired trait selected from the group consisting of high protein content, low ADF content, high phosphorous content, and low polyphenolics, as compared to a normal canola seed of the same species, in a seed coat color-independent manner, wherein the method comprises:

crossing the plant of claim 6 with a plant of a second, different canola cultivar to produce F_1 progeny plants;

selecting one or more progeny plants that have the desired trait(s) to produce selected progeny plants;

backcrossing the selected progeny plants with the plant of claim 6 to produce backcross progeny plants;

selecting for backcross progeny plants that have the desired trait(s) and physiological and morphological characteristics of the second, different canola cultivar to produce selected backcross progeny plants; and

repeating the backcrossing and selection steps three or more times to produce inbred selected fourth or higher backcross progeny plants that comprise the desired trait(s).

31. The method according to claim 30, wherein the desired traits comprise high protein content, low ADF content, high phosphorous content, and low polyphenolic content, as compared to a normal canola seed of the same species.

32. A plant commodity product obtained from the canola plant of claims 5 through 9, 12 through 14, or 16.

33. A canola meal obtainable directly from a canola seed comprising, at least 45% crude protein content and not more than 18% acid detergent fiber as determined by reference chemistry on an oil-free, dry matter basis.

34. The canola meal of claim 33, further comprising at least 45% crude protein content.

35. The canola meal of claim 33, further comprising not more than 18% acid detergent fiber content.

36. The canola meal of claim 33, wherein the canola seed is genetically stable for comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

37. The canola meal of claim 33, wherein the canola seed is genetically stable for comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content, as compared to a normal canola seed of the same species.

38. The canola meal of claim 33, wherein said canola seed further comprises reduced levels of antinutritional factors, as compared to a normal canola seed of the same species.

39. The canola meal of claim 33, wherein said canola meal may replace other, different, conventional canola meal or soybean meal as a protein or energy supplement in the diet of poultry, swine, or ruminants.

40. The canola plant of claim 5, wherein the plant is CL166102H (ATCC No. PTA-12570).

41. A canola plant selected from the group consisting of CL065620 (ATCC No. PTA-11697), CL044864 (ATCC No. PTA-11696), CL121460H (ATCC No. PTA-11698), CL166102H (ATCC No. PTA-12570), and CL121466H (ATCC No. PTA-11699).

CLAIMS

What is claimed is:

1. A canola germplasm conferring on a canola seed at least about 45% crude protein content and not more than about 18% acid detergent fiber as determined by reference chemistry on a oil-free dry matter basis.

2. The canola seed of claim 1, further comprising at least about 45% crude protein content on an oil-free, dry matter basis.

3. The canola seed of claim 1, further comprising not more than about 18% acid detergent fiber content on an oil-free, dry matter basis.

4. The canola seed of claim 1, further comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

5. The canola seed of claim 1, further comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

6. A canola plant comprising the canola germplasm of claim 1.

7. The canola plant of claim 6, further comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content

8. The canola plant of claim 6, further comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

9. The canola plant of claim 6, wherein the canola plant produces a seed comprising at least 43% oil.

10. The canola plant of claim 6, wherein the canola plant produces a seed comprising reduced antinutritional components.

11. A field comprising the canola plants of claim 6, wherein the canola plants yield an average of at least 1700 kilograms of seed per hectare.

12. The canola plant of claim 6, wherein the canola plant is selected from the group consisting of CL065620, CL044864, CL121460H, CL166102H, and CL121466H.

13. The canola plant of claim 6, wherein the plant is CL044864.

14. The canola plant of claim 6, wherein the plant is produced without genetic engineering or mutagenesis.

15. The canola plant of claim 6, wherein the canola plant produces a seed comprising a phosphorous content of morethan 1.3% on an oil-free, dry matter basis.

16. A seed produced by the canola plant of claims 6 through 15.

17. A progeny plant grown from the seed of claim 16.

18. A seed produced by the canola plant of claim 6, wherein the seed is available under an ATCC deposit numbers selected from PTA11696, PTA11697, PTA11698, PTA11699 or PTA_____.

19. Canola meal produced from one or more of the seeds of claim 16.

20. The canola meal of claim 19, wherein the canola meal has a poultry mean true metabolizable energy of at least 2200 kcal/kg.

21. The canola meal of claim 19, wherein the canola meal has a swine mean net energy of at least 1800 kcal/kg

22. The canola meal of claims 19, wherein the canola meal has a favorable amino acid digestibility profile in swine.

23. The canola meal of claims 19, wherein the canola meal has a favorable amino acid digestibility profile in poultry.

24. The canola meal of claim 19, wherein said canola meal comprises an amino acid digestibility at least about 90% of that of soybean meal (10% moisture content).

25. The canola meal of claim 19, wherein said canola meal comprises a digestible energy content or a metabolizable energy content at least about 80% of that of soybean meal.

26. A canola seed which is genetically stable for producing meal comprising at least about 45% crude protein content, and not more than about 18% acid detergent fiber as determined by reference chemistry on an oil-free, dry mass basis, wherein the canola seed is produced from an elite canola cultivar.

27. The canola seed of claim 26, further comprising at least about 45% crude protein content on an oil-free, dry matter basis.

28. The canola seed of claim 26, further comprising not more than about 18% acid detergent fiber content.

29. The canola seed of claim 26, wherein the canola seed is genetically stable for comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

30. The canola seed of claim 27, wherein the canola seed is genetically stable for comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

31. Canola meal produced from the seeds of any one of claims 26 through 30.

32. A method of introducing into a canola cultivar at least one desired trait selected from the group consisting of high protein content, low ADF content, high phosphorous content, and low polyphenolics , in a seed coat color-independent manner, wherein the method comprises:

crossing the plant of claim 7 with a plant of a second, different canola cultivar to produce F_1 progeny plants;

selecting one or more progeny plants that have the desired trait(s) to produce selected progeny plants;

backcrossing the selected progeny plants with the plant of claim 7 to produce backcross progeny plants;

selecting for backcross progeny plants that have the desired trait(s) and physiological and morphological characteristics of the second, different canola cultivar to produce selected backcross progeny plants; and

repeating the backcrossing and selection steps three or more times to produce inbred selected fourth or higher backcross progeny plants that comprise the desired trait(s).

33. The method according to claim 32, wherein the desired traits comprise high protein content, low ADF content, high phosphorous content, and low polyphenolic content.

34. A plant produced by the method according to claim 32.

35. A plant commodity product obtained from the canola plant of claims 6 through 10, 13 through 15, 17, or 34.

36. An enhanced canola meal obtainable directly from a canola seed comprising, at least about 45% crude protein content and not more than about 18% acid detergent fiber as determined by reference chemistry on an oil-free, dry matter basis..

37. The enhanced canola meal of claim 36, further comprising at least about 45% crude protein content.

38. The enhanced canola meal of claim 36, further comprising not more than about 18% acid detergent fiber content.

39. The enhanced canola meal of claim 36, wherein the canola seed is genetically stable for comprising at least one additional trait selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

40. The enhanced canola meal of claim 36, wherein the canola seed is genetically stable for comprising at least two additional traits selected from the group consisting of reduced polyphenolic content and increased phosphorous content.

41. The enhanced canola meal of claim 36, wherein said canola seed further comprises reduced levels of antinutritional factors.

42. The enhanced canola meal of claim 36, wherein said enhanced canola meal may replace other, different, conventional canola meal or soybean meal as a protein or energy supplement in the diet of poultry, swine, or ruminants.

43. The canola plant of claim 6, wherein the plant is CL166102H.

44. A canola plant selected from the group consisting of CL065620, CL044864, CL121460H, CL166102H, and CL121466H